



The 40th Asia-Pacific Academy of Ophthalmology Congress



In Conjunction with
The 83rd All India Ophthalmological Society Annual Meeting

YASHOBHOOMI

India International Convention and Expo Centre (IICC)
New Delhi, India

APRIL 3-6, 2025

ABSTRACT BOOK



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As part of the scientific program of the APAO 2025 Congress, this Abstract Book is compiled from all accepted abstracts in the international submitted program.

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Ranked #9 in 2024 among the World's SCI Eye Journals

Rank	Journal	Impact Factor
1	Progress in Retinal and Eye Research	18.7
2	Ophthalmology	13.2
3	JAMA Ophthalmology	8.0
4	Ocular Surface	6.0
5	Survey of Ophthalmology	5.2
6	Investigative Ophthalmology & Visual Science	5.0
6	Clinical and Experimental Ophthalmology	5.0
6	Annual Review of Vision Science	5.0
9	Asia-Pacific Journal of Ophthalmology	4.3
10	Eye and Vision	4.2
11	American Journal of Ophthalmology	4.1
11	Contact Lens & Anterior Eye	4.1
13	British Journal of Ophthalmology	3.8
14	Canadian Journal of Ophthalmology	3.3
15	Experimental Eye Research	3.0
15	Acta Ophthalmologica	3.0
15	Current Opinion in Ophthalmology	3.0



Remarks: The total number of SCI eye journals in Ophthalmology is 62.
IF indicates impact factor.

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Editorial Office

Email: apjo-mail@apaophth.org

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Application for the program opens from May 1 to June 30 every program year
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INSTRUCTION COURSES

Cataract

Apr 03, 2025 (Thu) 13:15 - 14:45

Venue: Amaltas Hall - B101 A

Tackling Posterior Capsule Rupture and Associated Complications: A Video Course

Chief Instructor: Priya NARANG

Instructor(s): Namrata SHARMA, Dr Shail VASAVADA, Lalit VERMA

Objective: Attendees will be able to effectively handle a case of posterior-capsule rupture (PCR) with adequate vitrectomy and will be able to retrieve a sinking nucleus/IOL followed by its effective placement.

Synopsis: The video-based course will showcase videos on various aspects of the inadvertent occurrence of posterior capsule rupture (PCR) during cataract surgery, followed by its effective management with vitrectomy followed by IOL implantation as per the surgical scenario. Associated complications subsequent to ineffective handling of PCR followed by its management will also be demonstrated.

Course Outline: The video-based course will highlight the following aspects: Management of posterior capsule rupture (PCR), 1. Early recognition of PCR, 2. Do's & don't's following a PCR, 3. Effective sealing of PCR, performing posterior capsulorhexis, sealing/plugging the posterior capsular opening, vitrectomy, 1. Principles of vitrectomy, 2. Effective methods of vitrectomy: Limbal & pars plana, residual nuclear fragment management, 1. Posterior assisted levitation (PAL), 2. Conversion to extra-capsular cataract surgery, 3. IOL scaffold, effective placement of an intraocular lens, 1. Optic capture, 2. Sulcus placement (Adequate capsulorhexis margin support), 3. Secondary IOL fixation, the management of associated complications: 1. Managing corneal edema

& complications, 2. Dropped nucleus, 3. Refixating the subluxated/ dislocated IOL

Apr 04, 2025 (Fri) 16:45 - 18:15

Venue: Palash Hall - Grand Ball Room B

Conquering Capsule Complications: My Best Teaching Videos

Chief Instructor: David CHANG

Instructor(s): HariPRIYA ARAVIND

Objective: To use more than 30 edited video cases to systematically review techniques of preventing, recognizing, and handling zonular or posterior capsular complications.

Synopsis: Carefully edited videos will illustrate a spectrum of techniques for zonular and posterior capsular complications: capsular dye, torn CCC, secondary CCC enlargement, flap tear-out rescue technique, sulcus fixation with CCC/optic capture, posterior CCC, early recognition of posterior capsule rupture, conversion from top/clear corneal incision to manual ECCE, posterior polar cataracts, IOL fixation with torn anterior or posterior capsule, CTR and capsule retractors for weak zonules, pars plana bimanual anterior vitrectomy (\pm triamicinolone), and dispersive OVD posterior-assisted levitation + trap for descending nuclei.

Course Outline: I. Phaco with Zonulopathy A. Techniques for the challenging capsulorhexis B. Phaco Technique (capsule retractors, phaco chop) C. IOL selection with zonulopathy or zonular dialysis II. Posterior Capsule Rupture / Vitreous Loss A. Preventing vitreous loss in the presence of pc rupture B. Managing PCR with the lens material present - avoiding a dropped nucleus C. Converting from phaco to manual ECCE D. PC IOL implantation with a torn pc (posterior CCC) E. IOL implantation without capsular support F. Patient counseling after complications

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Palash Hall - Grand Ball Room B

Different Management Strategies for a Wide Spectrum of White Cataracts

Chief Instructor: Manpreet KAUR
Instructor(s): Boris MALYUGIN, Rohit OM PARKASH, Namrata SHARMA, Jeewan TITIYAL, Abhay VASAVADA

Objective: The course will provide attendees with practical tips on understanding the intraoperative dynamics of different types of white cataracts and performing successful phacoemulsification even in intumescent cataracts and challenging scenarios.

Synopsis: The video-assisted session will highlight practical tips for the management of different types of white cataract. Pre-operative examination features and the role of imaging modalities in identifying raised intralenticular pressure will be discussed. Techniques to achieve continuous curvilinear capsulorhexis in intumescent cataract will be demonstrated, including both conventional manual techniques and automated laser devices such as FLACS, selective laser capsulotomy, and zepto. The role of intraoperative OCT in understanding and managing real-time dynamics of different morphological variants of white cataract will be discussed. Surgical tips will be imparted to manage complicated white cataract with fibrosed capsules, opacities, and subluxation.

Course Outline: 1) Pre-operative Evaluation & Role of Imaging in White Cataract - Dr. Manpreet Kaur 2) Conventional Capsulorhexis Techniques in Intumescent White Cataract - Dr. Namrata Sharma 3) Laser assisted capsulotomies in white cataract (FLACS, Zepto, and Selective laser capsulotomy) - Dr. Jeewan S Titiyal 4) Handling intraoperative challenges and rhexis related complications in white cataract - Dr. Rohit Omprakash 5) Managing white cataract with small pupil - Dr. Boris Malyugin 6) Challenging nucleotomy in white cataract (free-floating cataract, supra-hard cataract, PCR with white cataract) - Dr. Abhay Vasavada

Apr 05, 2025 (Sat) 11:30 - 13:00

Venue: Kesar Hall 202

Simplifying Subluxation and Scleral Fixation

Chief Instructor: Vignesh RAJA
Instructor(s): Minu MATHEN, Rodney MORRIS, Vaibhav SHAH, Nitin VERMA, Tun Kuan YEO

Objective: A video symposium on different techniques in the management of subluxated cataracts, IOLs, and Bag-IOL complexes.

Synopsis: Subluxated cataract or IOL can be managed by different techniques. This course highlights the step-by-step approach adopted by anterior segment surgeons and vitreo-retinal surgeons in the setting of subluxated cataracts or IOLs. Each technique of scleral fixation has its own risks and benefits, with this course helping highlight which technique works best in each clinical scenario.

Course Outline: Introduction: Prof. Nitin Verma. Management of subluxated cataract by anterior segment surgeon - Saving the bag: Dr. Minu Mathen, India. Scleral fixation of IOL with intrascleral haptic tuck: Prof. Rodney Morris, India. Scleral fixation using Yamane technique: Dr. Tun Kuan Yeo, Singapore. Four-point scleral fixation using Goretex suture: Dr. Vaibhav Shah, Australia. Scleral fixation of toric IOL: Dr. Vignesh Raja.

Apr 06, 2025 (Sun) 11:30 - 13:00

Venue: Brahmkamal Hall - Auditorium A

Perfecting Surgical and Refractive Outcomes in Wide Spectrum of New-Generation Premium Intraocular Lenses

Chief Instructor: Jeewan TITIYAL
Instructor(s): Soon-phaik CHEE, Manpreet KAUR, Boris MALYUGIN, Namrata SHARMA

Objective: The course will impart practical tips to the attendees to enable precise surgical and refractive outcomes in a wide range of premium IOLs, and perform problem-solving in challenging situations.

Synopsis: The video-assisted course will discuss practical tips to ensure precise refractive outcomes with new-generation premium IOLs, including multifocal, EDOF, and toric IOLs. Decision-making will be highlighted, with emphasis on posterior

corneal curvature, newer generation IOL power formulae, and selecting the right premium IOL for each patient. Methods of toric IOL alignment will be discussed, highlighting image-guided surgeries and intraoperative aberrometry. Challenging case scenarios such as small pupils, extended rhexis, bag dialysis, and PCR will be demonstrated. Post-phacoemulsification enhancement will be discussed, including corneal ablative and lens-based procedures to tackle residual refractive error and manage toric IOL misalignment.

Course Outline: 1. Preoperative Assessment & Planning for Premium IOL implantation (IOL Power calculation with emphasis on newer generation formulae and significance of posterior corneal curvature, Selecting the type of IOL- Decision Making, when not to implant premium IOLs)- Dr. Manpreet Kaur 2. Techniques of Toric IOL Alignment (Manual Methods of Marking, Image-guided surgery, Intraoperative Aberrometry)- Dr. Jeewan S Titiyal 3. Implantation of Premium IOLs in Challenging Situations: Extended Rhexis and Posterior Capsular Rent- Dr. Chee-Soon Phaik 4. Implantation of Premium IOLs in small pupil and bag dialysis- Dr. Boris Malyugin 5. Post-Surgical Enhancement After Premium IOL Implantation (Case-based presentation- Incisional keratotomies, Corneal Ablative Procedures, IOL Exchange and Piggyback IOLs)- Dr. Namrata Sharma 6. Management of Toric IOL Misalignment (Factors affecting toric IOL alignment, Assessment of Postoperative Toric IOL Alignment, and Re-alignment of Toric IOLs)- Dr. David Chang

Apr 06, 2025 (Sun) 09:45 - 11:15

Venue: Brahmkamal Hall - Auditorium A

When the Going Gets Tough in Cataract Surgery: A Video Symposium

Chief Instructor: Vignesh RAJA
Instructor(s): Siva KUMAR, Minu MATHEN, Sunil THANGARAJ, Madhu UDDARAJU, Tun Kuan YEO

Objective: This is a video symposium led by experts across the Asia-Pacific that shows how to deal with unexpected challenges or complications during cataract surgery.

Synopsis: With the advances in surgical technique and instrumentation, cataract surgery is one of the

safest surgeries in medicine today. However, every cataract surgeon comes across challenging cases, either from the word go or during the course of the surgery. How we learn from our own mistakes or from our peers helps us become better surgeons, enabling us to provide a fantastic outcome for our patients. With a variety of techniques, tips, and tricks, this video-based symposium will show you how to deal with an expected / unexpected challenge or complication during cataract surgery.

Course Outline: 1. Managing the small pupil: Dr. Madhu Uddaraju, India. 2. Zonular dialysis: Dr. Vignesh Raja, Perth, Western Australia, Australia 3. Managing posterior capsule rupture: Dr. Minu Mathen, Thiruvananthapuram, Kerala, India 4. Management of intumescent cataract with Argentinian flag sign: Dr. Shivkumar, India 5. Management of brown/black cataracts & when and how to abandon phaco: Dr. Sunil Thangaraj, Vijayanagaram, Andhra Pradesh, India 6. IOL implantation in the absence of capsular support: Dr. Tun Kuan Yeo, Tan Tock Seng Hospital, Singapore.

Cornea, Dry Eyes, External Eye Diseases and Eye Banking

Apr 04, 2025 (Fri) 16:45 - 18:15

Venue: Mogra Hall 404 A

Comprehensive Guide to Managing Ocular Complications of Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis in Asians

Chief Instructor: Kendrick SHIH
Instructor(s): Ka Wai KAM, Koji KITAZAWA, Alex NG, Hon Shing ONG

Objective: Attendees will be able to recognize risk factors, salient ophthalmic signs, and complications of SJS/TEN. They will prescribe appropriate treatment during the acute inflammatory phase and plan long-term visual rehabilitation.

Synopsis: Stevens-Johnson syndrome and toxic epidermal necrolysis are severe cutaneous adverse reactions with high mortality and significant long-term morbidity. The ocular surface is the most common mucosa involved and results in

severely debilitating damage and deformity. The ophthalmologist plays a crucial role in both the initial phase, where minimizing ocular surface damage is key, and in the long-term management, where visual rehabilitation may maximize patient reintegration into normal life. This is a comprehensive course delivered by expert cornea surgeons from across Asia to make the management of this condition more systematic and accessible to all ophthalmologists.

Course Outline: The course is aimed at general ophthalmologists, and the format is through didactic lectures, case-based discussions, and surgical video presentations. The course is interactive and aims to incorporate feedback from the audience. Through this mode of learning, we will cover the following important information about SJS/TEN: - Diagnosis, HLA-genotyping, and classification of Stevens-Johnson syndrome/toxic epidermal necrolysis - The use of aggressive local and systemic treatment in the acute ocular inflammatory phase of SJS/TEN: pros, cons and techniques - Surgical options, including mucous membrane grafting, cultivated oral mucosal epithelial transplantation, limbal stem cell transplantation and keratoprosthetics in the late phase for visual rehabilitation - Non-surgical options for visual rehabilitation, including use of scleral contact lenses.

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Champa Hall 304

Keratitis Kaleidoscope – Asian Perspective & Practice Pearls

Chief Instructor: Vanathi MURUGESAN
Instructor(s): Lim LI, Vilavun PUANGRICHARERN, Revathi RAJARAMAN, Radhika TANDON, Stephanie WATSON

Objective: This course aims to enhance participant's knowledge in decision making in keratitis, primarily updating the audience on various management strategies that have evolved recently, dealing specifically with the latest developments.

Synopsis: The course will feature the various types of keratitis that are commonly encountered in general ophthalmology practice along with management strategies and will highlight practical approaches to common clinical queries in keratitis associated with

allergy, contact lens wear, collagen crosslinking (CXL), refractive surgery, neurotrophic conditions, and polymicrobial microbial keratitis. Interactive panel discussions and question-and-answer sessions will be useful for the audience attending the session.

Course Outline: Course and Speaker: Introduction - Prof. Dr. M Vanathi; Course Speakers Narratives: Post-Collagen Crosslinking Keratitis – Prof. Dr. Lim Li; Contact Lens Keratitis – Prof. Dr. Stephanie Watson; Peripheral Ulcerative Keratitis – Prof. Dr. Radhika Tandon; Mycotic keratitis Lessons Learnt From MUTT – Dr. Revathi Rajaraman; Pythium Keratitis – Prof. Dr. Vilavun Puangricharern; Keratitis in Children, Dry Eye & Ocular Allergy – Prof. Dr. M Vanathi; Panel Interaction; Question & Answers Session

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Gulmohar Hall 302

Approach to Dry Eye Disease – Addressing an Emerging Ocular Epidemic

Chief Instructor: Varsha BHAMBHANI
Instructor(s): Nilakshi BARUAH, Kunjall SEJPPAL, Amrita SINGH, Shweta AGARWAL

Objective: To provide an in-depth understanding of Dry Eye Disease by exploring its historical and clinical assessment foundations, modern diagnostic tools, pharmaceutical treatments, interdisciplinary management strategies, and advanced therapeutic options.

Synopsis: This instructional course outlines a systematic method for managing dry eye disease (DED) in clinical practice. It emphasizes thorough history-taking, detailed clinical exams, and the use of modern diagnostic tools like tear osmolarity and ocular surface imaging. It highlights the importance of rheumatologist involvement for systemic autoimmune conditions linked to DED. Advanced treatments beyond artificial tears, such as cyclosporine A, LipiFlow, and punctal occlusion, are discussed, along with lifestyle and environmental modifications. The course aims to enhance patient care by integrating these approaches and promoting collaboration among ophthalmologists, rheumatologists, and other specialists.

Course Outline: Foundations of Assessment: History and Clinical Examination: Comprehensive history-taking and clinical examination focusing on symptom assessment, tear film stability, ocular surface integrity, and meibomian gland function. 2. Modern Tools for Assessing Dry Eye Disease: Utilization and interpretation of diagnostic tools like tear osmolarity measurement and ocular surface imaging. 3. Dry Eye Management: Pharmaceutical Interventions: Evaluation of various artificial tear substitutes and their efficacy based on clinical grades of dry eye. Overview of anti-inflammatory medications and newer molecules, including when and how to use them effectively. 4. Interdisciplinary Approaches to Management: The role of interdisciplinary collaboration with rheumatologists and other specialists in managing complex cases of dry eye disease. 5. Management Strategies Beyond Artificial Lubricants: Advanced therapeutic options such as IPL, LipiFlow, punctal occlusion, and tarso procedures, along with lifestyle and environmental adjustments, tailored to different clinical grades of dry eye.

Apr 06, 2025 (Sun) 11:30 - 13:00

Venue: Neelkamal Hall 305

Tips and Tricks to Make Descemet's Membrane Endothelial Keratoplasty Simple and Efficient

Chief Instructor: Niveditha NARAYANAN
Instructor(s): Nidhi GUPTA, Sujatha MOHAN, Audrey ROSTOV, Rajesh FOGLA

Objective: To provide attendees with a clear understanding of simplified graft preparation, loading, insertion, and unfolding techniques, as well as strategies for managing potential complications.

Synopsis: With experience, we refine surgical steps to perfection, avoiding complications. Our experts simplify and explain the different stages of DMEK surgery so that our attendees will learn the surgical steps properly by the end of the course. In case of difficulties, we also cover how to salvage the situation. The included surgical steps are optimized DMEK graft preparation, correct DMEK graft loading, oriented DMEK graft injection, DMEK graft unfolding and stabilization techniques, and postoperative care. Additionally, our simple DMEK graft marking technique preserves the stromal portion of the donor

cornea for its efficient use in the other lamellar keratoplasties.

Course Outline: Following a brief introduction, the course begins with DMEK graft preparation with a straightforward method for marking the graft to preserve the stromal portion, allowing the donor tissue to be used for anterior lamellar keratoplasty. The course then covers the simplified procedures for loading, injecting, and unfolding DMEK grafts. Finally, our instructors will explain the management of intra-operative complications.

Glaucoma

Apr 03, 2025 (Thu) 13:15 - 14:45

Venue: Neelkamal Hall 305

Angle-Closure Glaucoma in the Young: Exploring the Unexplored

Chief Instructor: Shikha GUPTA
Instructor(s): Tin AUNG, Viney GUPTA, Monisha NONGPIUR, X SUN, Liu XING

Objective: To help understand the angle closure glaucoma in the young, as well as its aetiology, genetics, clinical characteristics, and management.

Synopsis: This course will highlight the clinical features of angle closure glaucoma in the young, a rare disease which is nowadays commonly seen. By highlighting the differences in this clinical condition, over and above the late-onset angle closure glaucoma, the course aims to create awareness amongst glaucoma physicians that the disease in the young is different clinically and needs to be dealt with differently in terms of management, too. By highlighting the genetics that go with the disease, the IC can open up new avenues into future disease-related research.

Course Outline: Speaker 1: Genetics of angle closure glaucoma in the young: The Indian context: Prof. Viney Gupta: 10+2 min; Speaker 2: Genetics of angle closure glaucoma and nanophthalmos: The Singaporean context: Prof. Tin Aung: 10+2 min; Speaker 3: Angle-closure glaucoma in the young and retinal dystrophies: What is the association: Xing Liu: 10+2 min; Speaker 4: Differences between

angle closure glaucoma in the young versus the late-onset angle closure glaucoma: Xinghuai Sun: 10+2 min; Speaker 5: Plateau iris in angle closure among the young: Monisha Nongpiur: 10+2 min; Speaker 6: Management options and outcomes of angle closure glaucoma in young: Shikha Gupta: 10+2 min
Questions and answers

Neuro-Ophthalmology

Apr 04, 2025 (Fri) 11:30 - 13:00

Venue: Mogra Hall 404 A

Approach to a Patient With Double Vision

Chief Instructor: Rashmin GANDHI
Instructor(s): Selvakumar AMBIKA, Manjushree BHATE, Rohit SAXENA, Clement TAN

Objective: This course aims to equip the attendees with the knowledge and skills necessary to accurately assess, diagnose, and manage double vision (diplopia) in patients.

Synopsis: This comprehensive course will delve into the approach to diplopia in various case scenarios. Participants will acquire the skills to differentiate between monocular and binocular double vision, identify the underlying causes, and conduct thorough assessments. The course will encompass a wide array of diagnostic techniques and clinical approaches.

Course Outline: The course will be divided into different case scenarios, covering potentially dangerous fellow travelers in patients with double vision. The cases covered will be 1. Diplopia with red eyes 2. Horizontal Double vision 3. Vertical double vision 4. Diplopia and ptosis 5. Diplopia and loss of vision 6. Challenging cases

Ocular Imaging

Apr 05, 2025 (Sat) 09:45 - 11:15

Venue: Javakusum Hall 303

Instructional Course Ultrasound and UBM: Basic Exam and Clinical Cases

Chief Instructor: Mario DE LA TORRE

Objective: Explore ocular ultrasound: principles, diagnostics, and limitations of B mode and UBM. Master probe positioning, scanning techniques, differentiate findings, and learn about new technologies like annular devices.

Synopsis: This course covers when and how to use ocular ultrasound. Despite the emergence of new imaging studies, it remains valuable for diagnosis. Many ophthalmologists are unfamiliar with its precise indications, scope, limitations, proper use of the equipment, and image interpretation. This course aims to fill this gap and address the basic physics and principles of ultrasound images.

Course Outline: Introduction. Overview of ocular ultrasound and UBM. Importance and clinical applications. Basic physical principles fundamentals of ultrasound physics. Sound wave propagation and interaction with tissues. Principles of B mode and UBM imaging. Diagnostic Potential and Limitations. Capabilities and limitations of B mode and UBM Systematic Examination Techniques. A step-by-step guide to performing ocular ultrasound. Instructions on probe positions and scanning techniques (15, 20, 50MHz). Hands-on practice with models. Interpretation of findings. Differentiating normal from abnormal findings. Case studies of common ocular conditions. Making presumptive diagnoses. Advanced topics and new technologies. New advancements in ocular ultrasound. Overview of annular devices and clinical implications. Future directions. Clinical case discussions. Interactive case reviews. Applying techniques to real scenarios. Group discussions and problem-solving. Q&A and Hands-On Practice. Open Q&A session. Additional hands-on practice with instructor guidance. Feedback and improvement tips. By the course end, participants will proficiently perform basic ocular ultrasound and apply their skills clinically.

Ocular Oncology and Pathology

Apr 03, 2025 (Thu) 09:45 - 11:15

Venue: Mogra Hall 404 A

Challenging Cases in Ocular Oncology

Chief Instructor: Arun SINGH

Instructor(s): Bhavna CHAWLA, Swathi KALIKI, Vishal RAVAL, Gavin TAN

Objective: Tumors of the eye and ocular adnexa include a spectrum of neoplasms with varied presentation. However, controversies underscore the complexity of decision-making in these cases.

Synopsis: This IC aims to create a better understanding of the topmost five controversies in ocular oncology and focuses on key points in decision-making in such complex cases. Thus, this IC will help ophthalmologists implement appropriate treatment strategies in cases like iris tumors, retinoblastoma, optic disc tumors, choroidal tumors, and orbital malignancies. Each case must be evaluated individually, considering factors such as tumor characteristics, patient preferences, potential side effects, and the goal of treatment (e.g., tumor control, preservation of vision, or cosmetic outcomes).

Course Outline: This instruction course includes ocular oncology specialists presenting a unique, challenging case either in terms of diagnosis or management. Panel discussion will be done among the specialists to understand the complexity of the case and learn from each other. The audiences at the end of IC should be having clinical pearls on how to diagnose and manage such challenging intraocular and orbital tumors.

Apr 04, 2025 (Fri) 09:45 - 11:15

Venue: Mogra Hall 404 B

Imaging in Ocular Oncology

Chief Instructor: Rolika BANSAL

Instructor(s): Santosh HONAVAR, Raksha RAO

Objective: To emphasize the importance of various modalities used in imaging in the field of ocular oncology for tailored management.

Synopsis: Imaging plays a pivotal role in the field of Ocular oncology, thus enabling precise diagnosis and treatment planning. Various modalities, such as ultrasound (USG), computed tomography (CT), magnetic resonance imaging (MRI), and optical coherence tomography (OCT), contribute to a comprehensive understanding of ocular tumors. Multimodal imaging, combining different modalities, allows for a holistic approach to ocular oncology. Real-time imaging facilitates intraoperative guidance, ensuring precise tumor resection and minimizing damage to healthy tissue. The evolving landscape of imaging in ocular oncology continues to redefine diagnostic standards and therapeutic strategies, ultimately improving patient outcomes and preserving visual function.

Course Outline: Presenter 1: 20 mins Anterior segment - Optical coherence tomography (AS-OCT) Anterior segment - Optical coherence tomography angiography (AS-OCTA) Anterior segment - Fluorescein angiography Ultrasound biomicroscopy - Anterior segment applications. Presenter 2: 20 mins Ultrasonography (A- and B-scan) Ultrasound biomicroscopy - Posterior segment applications Fundus autofluorescence Fundus fluorescein angiography Indocyanine green angiography (ICGA) Posterior segment - Optical coherence tomography (OCT) Posterior segment - Optical coherence tomography angiography (OCTA). Presenter 3: MRI in ocular oncology: 15 mins. Presenter 4: CT in ocular oncology: 15 mins Discussion: 10 mins.

Apr 04, 2025 (Fri) 16:45 - 18:15

Venue: Mogra Hall 404 B

Retinoblastoma 2025 - They Live and See

Chief Instructor: Santosh HONAVAR

Instructor(s): Rolika BANSAL, Fairouz MANJANDAVIDA, Kaustubh MULAY

Objective: To enable to incorporate recent advances in diagnosis and management of retinoblastoma into their practice, improving life, eye, and vision salvage.

Synopsis: Recent advances in the diagnosis and management of retinoblastoma have dramatically improved outcomes. Validated staging and grouping are used. Modern diagnostic and treatment strategies

such as wide-field imaging; OCT, OCTA, transpupillary thermotherapy; brachytherapy; and intravenous, intra-arterial, periocular, intravitreal intracameral and bicameral chemotherapy are effective in improving eye and vision salvage. There is a new management protocol for retinoblastoma seeds. Adjuvant therapy for histopathologic risk factors identified following enucleation has reduced the risk of metastasis. A multimodal protocol is effective in orbital retinoblastoma. Genetic studies enable prenatal diagnosis and screening. This course will highlight the current standard of care for retinoblastoma.

Course Outline: 1. Introduction 2. Examination and diagnosis 3. Classification of retinoblastoma - grouping and staging 4. Management of retinoblastoma (a.) Focal therapy (b.) Local therapy (c.) Chemotherapy - intravenous, intra-arterial, periocular, intravitreal, intracameral, bicameral (d.) Recent concepts in retinoblastoma seeds - classification and management protocol (e.) Protocol for the management of advanced retinoblastoma (f.) Histopathology-based adjuvant therapy (g.) Mortality in retinoblastoma (h.) Systemic metastasis (i.) Pinealoblastoma (j.) Second malignant neoplasm 5. Protocol for histopathologic examination 6. Role of liquid biopsy and molecular diagnostics in retinoblastoma 7. Genetics of retinoblastoma 8. Results of recent multicentric studies – an evidence-based approach 9. Interactive case presentation 10. Discussion

Orbital and Oculoplastic Surgery

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Kesar Hall 202

Lower Eyelid Blepharoplasty and Rejuvenation – Achieving Finesse and Optimising Outcomes

Chief Instructor: Vanessa Naseem MASNSURALI
Instructor(s): Richard ALLEN, Peter DOLMAN, Tomoyuki KASHIMA, Siow Wei TAN, Stephanie YOUNG

Objective: The instructional course aims to explore the various techniques in surgical rejuvenation of the lower eyelid with an individualised patient approach. Preoperative patient selection, techniques and complication management are discussed.

Synopsis: Lower eyelid blepharoplasty is one of the most common yet challenging aesthetic eyelid surgeries. There are many considerations and techniques to master for high patient satisfaction and optimal patient outcomes. Here, we discuss the surgical rejuvenation of the lower eyelid in a comprehensive and systematic manner. Various techniques of lower eyelid blepharoplasty with surgical videos will be described by experts in the field. Experts will highlight their experiences that can be crucial in prevention and management of complications.

Course Outline: The course starts with the applied clinical anatomy of the lower eyelid and patient evaluation. Then, various techniques of lower eyelid blepharoplasty will be discussed. The first technique to be discussed will be transconjunctival lower eyelid blepharoplasty with fat repositioning. Following this, the transcutaneous technique of lower eyelid blepharoplasty with fat excision will be described. Subsequently, various approaches will be discussed in combining lower eyelid blepharoplasty with adjunct procedures to enhance and improve outcomes. Post-surgical care and complication management will then be explained. The most common complication of lower eyelid blepharoplasty is lower eyelid retraction. Hence, last but not least, special techniques for the management of lower eyelid retraction will be described. The topics will be conducted by accomplished experts with detailed surgical videos. The session aims to be interactive and the question and answer session will be at the end of every topic.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Champa Hall 304

Asian Blepharoplasty and Its Intricacies

Chief Instructor: Stephanie YOUNG
Instructor(s): Kasturi BHATTACHARJEE, Alice GOH, Min Joung LEE, Kyung In WOO, Vanessa Naseem MASNSURALI

Objective: To explore the intricacies of Asian Blepharoplasty techniques, from suture to full incision procedures and adjunct procedures such as epicanthoplasty, while emphasizing effective complication management strategies.

Synopsis: Our instruction course provides a comprehensive exploration of Asian Blepharoplasty through expert-led sessions on varied techniques like suture, mini-incision, full incision, and extended blepharoplasty. We will also explore adjunctive procedures such as epicanthoplasty and its role in enhancing outcomes in Asian Blepharoplasty. We will also provide insights into potential complications and their effective management strategies, ensuring optimal patient care and safety. Surgical videos and photographs will enhance the learning value of the course.

Course Outline: 1. Suture Blepharoplasty 2. Mini incision Blepharoplasty 3. Full incision Blepharoplasty 4. Extended Blepharoplasty 5. Epicanthoplasty and Its Usefulness in Asian Blepharoplasty 6. Asian Blepharoplasty - Complications and Management

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Gulmohar Hall 302

When You Don't Get It Right the First Time – Revision of Oculoplastic Surgeries

Chief Instructor: Gangadhara SUNDAR
Instructor(s): Steven COUCH, Santosh HONAVAR, Erin SHRIVER, Timothy SULLIVAN, Kyung In WOO

Objective: To share experience, perspectives and techniques to tackle previously failed eyelid, lacrimal, and orbital procedures, which both ophthalmologists and oculoplastic Surgeons and their patients are likely to benefit from.

Synopsis: Eyelid, lacrimal, and orbital surgeries are commonly performed in children, adults, and the elderly. Despite the best techniques, suboptimal outcomes and failures occur, which is disheartening for patients, families & surgeons. This instruction course, by Global experts, will share details of analyzing failed cases, planning appropriate treatment, and tailoring patient-specific approaches to deliver the best outcome possible. Principles of conventional and innovative techniques will be addressed. The course is aimed not only at general ophthalmologists but also at beginners and advanced practitioners of oculoplastic surgery.

Course Outline: Revision of Ptosis surgery – Congenital: Tim Sullivan; Revision of Ptosis surgery – Adult: Kyung In Woo; Revision of DCR - Erin Shriver; Revision of Orbitotomy - Santosh Honavar; Revision

of Orbital Decompression: Steven Couch; Revision of Orbital Fractures: Gangadhara Sundar

Pediatric Ophthalmology and Strabismus

Apr 03, 2025 (Thu) 09:45 - 11:15
Venue: Parijat Hall 201

Managing Complex Strabismus
Chief Instructor: Rohit SAXENA

Instructor(s): Rahul BHOLA, Saurabh JAIN, Andrea MOLINARI, Swati PHULIHELE, An-guor WANG

Objective: To provide a surgical management approach to the strabismus practitioner, for the complex strabismus conditions.

Synopsis: This instruction course is designed to provide the audience with a practical, evidence-based discussion on how to approach and manage important clinical conditions which are of contemporary interest to strabismus practitioners. Various speakers of international repute will share their approach and experience in dealing with challenging situations. The course covers complex strabismus topics like Duane's syndrome, strabismus in myopia, superior oblique palsy, thyroid-associated strabismus, superior oblique palsy, and monocular elevation deficit.

Course Outline: The course is directed towards strabismus specialists who often encounter complex strabismus in their practice. The course will provide a case-based approach to difficult strabismus conditions by experienced strabismus surgeons to provide an algorithm for the management of such conditions. By the end of the course, the target audience would be able to (1) understand the indications of Botox use in challenging situations, (2) learn the surgical approach for management of different variants of Duane's syndrome, (3) learn about loop myopexy (Yokoyama's procedure) for treatment of strabismus fixus due to myopia (4) deal with strabismus secondary to thyroid ophthalmopathy (5) diagnose and treat superior oblique palsy (6) surgically treat cases of monocular elevation deficit.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Parijat Hall 201

Pediatric Corneal Disorders – the Spectrum and Its Challenges

Chief Instructor: Shweta AGARWAL
Instructor(s): Sumana CHATTERJEE, Jaya GUPTA, Murlidhar RAMAPPA, Rishi SWARUP

Objective: To provide a comprehensive overview of common pediatric corneal diseases, discussing their causes, symptoms, and diagnostic methods and emphasizing the significance of appropriate management to mitigate visual impairment.

Synopsis: The course provides an overview of the common pediatric corneal disorders, their causes, symptoms, diagnostic methods, and treatment. Case-based discussions covering commonly encountered ocular surface disorders, congenital cloudy cornea, infections, and ectatic disorders will be the primary focus. Etiology, clinical presentation, and management strategies to aid in early diagnosis and prompt treatment to help mitigate visual impairment will be highlighted.

Course Outline: 1. Insights into Pediatric Ocular Surface Disorders: A Spectrum Unveiled"- Dr. Shweta Agarwal "Deciphering Clouded Corneas: Strategies for Diagnosis and Management"-Dr. Murlidhar Ramappa "Exploring Childhood Ectasia: Insights and Interventions"-Dr. Rishi Swarup "Infective Keratitis in Children: Unraveling Causes and Effective Management"- Dr. Sumana Chatterjee "Mastering Pediatric Ocular Trauma: Pearls of Treatment Excellence"- Dr. Jaya Gupta

Refractive Surgery

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Palash Hall - Grand Ball Room B

Troubles in Topography: A Tutorial in Corneal Mapping

Chief Instructor: Tulika CHAUHAN
Instructor(s): Garvita DABAS, Kruthika SIDDAPPA HIKKALAGUTTI, Kanika BHARDWAJ, Raghav MALIK

Objective: The objective of this instruction course is to study corneal topography and its varied applications in ophthalmology and planning refractive surgeries.

Synopsis: Corneal topography is a pivotal intersection of advanced technology and the detailed world of eye anatomy. It maps intricate details of the corneal surface, offering invaluable insights for eye care professionals in various endeavors—be it contact lens fitting, refractive surgeries, corneal disease diagnosis, or post-operative monitoring.

Course Outline: As we journey through this course, we will delve into the basics of corneal geography, familiarize ourselves with the latest topographical devices, master the art of map interpretation, and explore their multifaceted clinical applications. From seasoned ophthalmologists to budding residents, this course promises a comprehensive and enlightening dive into the world of corneal mapping.

Retina (Medical)

Apr 04, 2025 (Fri) 16:45 - 18:15

Venue: Gulmohar Hall 302

Central Serous Chorioretinopathy: Case-Based Discussion on Imaging Findings and Management Challenges

Chief Instructor: Jay CHHABLANI

Instructor(s): Anand RAJENDRAN, Paisan RUAMVIBOONSUK, Srinivas SADDA, Sobha SIVAPRASAD, Lihteh WU

Objective: To discuss challenging situations in the management of central serous chorioretinopathy (CSCR) using multimodal imaging and available treatment options.

Synopsis: The presenters will share interesting cases of CSCR, discussing a variety of situations, including the subfoveal location of the leak, bullous exudative retinal detachment, CSCR with choroidal neovascularization, and CSCR masqueraders. We will be discussing the use of multimodal imaging in the management of CSCR and showcase interesting findings. Various treatment options for treatment will be discussed while discussing the real-life challenges of the unavailability of PDT, and the use of oral medications and subthreshold laser/surgical interventions.

Course Outline: A series of cases with CSCR will be discussed by the speakers.

Apr 04, 2025 (Fri) 13:15 - 14:45

Venue: Gulmohar Hall 302

Mystery Retina Cases

Chief Instructor: Lihteh WU

Instructor(s): Jay CHHABLANI, Timothy LAI, Paisan RUAMVIBOONSUK, Srinivas SADDA, Sobha SIVAPRASAD

Objective: The clinical instructors of this course will present diagnostically challenging cases based on multimodal images of the posterior segment. Audience participation will be encouraged.

Synopsis: By participating in this course, attendees will be better able to (1) assess and evaluate a

wide variety of diagnostically challenging cases, (2) establish a complete differential diagnosis, and (3) make the best use of ancillary diagnostic tests in order to establish a diagnosis and formulate a definitive treatment plan.

Course Outline: Case 1 Case 2 Case 3 Case 4 Case 5 Case 6

Retina (Surgical)

Apr 03, 2025 (Thu) 11:30 - 13:00

Venue: Mogra Hall 404 B

Understanding Scleral Buckling (SB) and Pneumatic Retinopexy (PnR) in Post Vitrectomy Era

Chief Instructor: Nawazish SHAIKH

Instructor(s): Surbhi AGRAWAL, Rohan CHAWLA, Shakha GUPTA, Somya KUMARI, Aarush DEORA

Objective: To understand the nuances of scleral buckling and pneumatic retinopexy ranging from patient selection, conventional techniques, modifications and peri-operative complications in post-vitrectomy era.

Synopsis: With the advent of technology, vitrectomy has gradually progressed towards being a minimally invasive vitrectomy surgery (MIVS). This transition has affected the choice of primary surgery in patients who present to us. The art of scleral buckling and pneumatic retinopexy appears to have been lost, with more and more surgeons preferring vitrectomy. However, through this instruction course, we intend to share our experiences with scleral buckling and pneumatic retinopexy and its resurgence in our clinical practice, especially in a resource-limited setting.

Course Outline: Introduction to Scleral Buckling and Pneumatic Retinopexy: Finding the Break and Patient Selection (15mins) Basics of Scleral Buckling (10 mins) How to Adapt Scleral Buckling for Versatile Scenarios: (15 mins) Pneumatic Retinopexy: How to Maximize Outcomes with a Minimal Approach (15mins) How to Tackle Perioperative Complications in Scleral Buckling and Pneumatic Retinopexy (10mins) From Retinal Attachment to 20/20 Vision: Addressing Postoperative Complications (10mins) Discussion

Apr 06, 2025 (Sun) 11:30 - 13:00

Venue: Palash Hall - Grand Ball Room A

Vitreo-Retinal Surgeon's Nightmares

Chief Instructor: Bhuvan CHANANA

Instructor(s): Ajay AURORA, Andrew CHANG, Paisan RUAMVIBOONSUK, Shih Jen CHEN

Objective: At the end of the session, the audience will learn to detect and manage vision-threatening complications at the earliest. The course will be especially beneficial for young retinal surgeons.

Synopsis: In this symposium, we will discuss some of the gravest complications which may occur during vitreo-retinal surgery. These complications can lead to poor visual outcomes and give surgeons nightmares. Appropriate and timely intervention may salvage vision in most eyes. Detailed lectures will be presented, discussing a step-by-step approach to detecting and managing such complications.

Course Outline: 1. Sub-macular hemorrhage during vitrectomy for retinal detachment: How to proceed?
2. My infusion cannula is not in position: Subretinal or Suprachoroidal displacement of infusion cannula. 3. Slippage of Giant Retinal Tear flap: What to do next?
4. Uncontrolled bleeding during Diabetic Vitrectomy.
5. Intra-operative Suprachoroidal Hemorrhage: Is there any hope left?

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FREE PAPERS

2

AI, Digital Innovation and Virtual Health

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Accuracy of Seven Artificial Intelligence-Based Intraocular Lens Power Calculation Formulas in Medium-Long Eyes: Two-Center Study

First Author: Wiktor STOPYRA
Co-Author(s): Andrzej GRZYBOWSKI, Oleksiy VOYTSEKHIVSKYY

Purpose: To compare seven artificial intelligence (AI) based intraocular lens (IOL) power calculation formulas in medium-long eyes (24.50 – 25.99 mm) in terms of root mean square absolute error (RMSAE), median absolute error (MedAE) and percentage of eyes with prediction error (PE) within ± 0.50 D.

Methods: The data of patients who underwent uneventful phacoemulsification between May 2018 and September 2023 were reviewed. The power of the implanted IOL was randomly selected from the outcomes of one of the following formulas, i.e., SRK/T, Holladay 2, or Barrett Universal II. Three months after phacoemulsification, refraction was measured. Post-surgery IOL power calculations were performed utilizing the following formulas: Hill-RBF 3.0, Kane, PEARL-DGS, Ladas Super Formula AI (LSF AI), Hoffer QST, Karmona, and Nallasamy. RMSAE, MedAE, and percentage of eyes with PE within ± 0.25 D, ± 0.50 D, ± 0.75 D, and ± 1.00 were calculated.

Results: Two hundred fourteen eyes with axial lengths ranging between 24.50 mm and 25.97 mm were studied. The Hill-RBF 3.0 formula yielded the lowest RMSAE (0.368) just before Pearl-DGS (0.374) and Hoffer QST (0.378). In terms of MedAE, the best outcome was obtained by Hill-RBF 3.0 (0.200), followed by LSF AI (0.210) and Kane (0.228). The

highest percentage of eyes with prediction error within ± 0.50 D was achieved by Hill-RBF 3.0, LSF AI, and Pearl-DGS (86.45%, 85.51%, and 85.05%, respectively). **Conclusions:** The Hill-RBF 3.0 formula provided highly accurate outcomes in medium-long eyes. All studied AI-based formulas yielded good results in IOL power calculation.

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Development and Clinical Deployment of a Smartphone-Based Visual Field Deep Learning System for Glaucoma Detection

First Author: Deming WANG
Co-Author(s): Fei LI

Purpose: By 2040, ~100 million people will have glaucoma. To date, there is a lack of high-efficiency glaucoma diagnostic tools based on visual fields (VFs). Herein, we develop and evaluate the performance of 'iGlaucoma', a smartphone application-based deep learning system (DLS) in detecting glaucomatous VF changes.

Methods: A total of 1,614,808 data points of 10,784 VFs (5542 patients) from seven centers in China were included in this study, divided over two phases. In Phase I, 1,581,060 data points from 10,135 VFs of 5105 patients were included to train (8424 VFs), validate (598 VFs), and test (3 independent test sets—200, 406, 507 samples) the diagnostic performance of the DLS. In Phase II, using the same DLS, iGlaucoma cloud-based application further tested on 33,748 data points from 649 VFs of 437 patients from three glaucoma clinics. With reference to three experienced expert glaucomatologists, the diagnostic performance (area under curve [AUC], sensitivity, and specificity) of the DLS and six ophthalmologists were evaluated in detecting glaucoma.

Results: In Phase I, the DLS outperformed all six ophthalmologists in the three test sets (AUC of 0.834–0.877, with a sensitivity of 0.831–0.922 and a specificity of 0.676–0.709). In Phase II, iGlaucoma had a 0.99 accuracy in recognizing different patterns in pattern deviation probability plots region, with corresponding AUC, sensitivity and specificity of

0.966 (0.953–0.979), 0.954 (0.930–0.977), and 0.873 (0.838–0.908), respectively. **Conclusions:** The ‘iGlaucoma’ is a clinically effective glaucoma diagnostic tool to detect glaucoma from Humphrey VFs, although the target population will need to be carefully identified with glaucoma expertise input.

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Suryamukhee Hall 401

EyeCLIP: A Visual–Language Foundation Model for Multi-Modal Ophthalmology Image Analysis

First Author: Danli SHI

Purpose: To build a multimodal visual-language foundation model got ophthalmic image analysis.

Methods: We developed a visual-language foundation model named EyeCLIP using a large multimodal ophthalmology image dataset across China, which contains 11 modalities, and corresponding text data. To fully leverage the large multimodal unlabeled and labeled data, we introduced a pretraining strategy that combines self-supervised reconstructions, multimodal image contrastive learning, and image-text contrastive learning. We evaluated EyeCLIP using a diverse set of 14 benchmark datasets, covering multimodal ophthalmic disease diagnosis, systemic disease prediction, cross-modal retrieval on rare diseases, and visual question answering.

Results: After training on a vast dataset of 2,777,593 multimodal images and 11,180 reports from 128,554 patients across China, EyeCLIP excels in zero-shot and few-shot classification, significantly outperforming other models in diagnosing ophthalmic diseases using CFP and OCT modalities. EyeCLIP also demonstrates superior performance in fine-tuning for various ophthalmic tasks, systemic disease prediction, and visual question-answering. Additionally, it enables zero-shot cross-modal retrieval, proving effective in biomedical applications such as research cohort identification and rare disease presentations. Overall, EyeCLIP sets a new benchmark in ophthalmic AI, showcasing robust performance across multiple tasks and datasets.

Conclusions: EyeCLIP can effectively learn a shared representation of multi-examinations, perform zero-shot disease diagnosis, and improve language ability. This makes it a step forward in foundational model development, providing a new paradigm for other medical foundation models, which is expected to advance not only ophthalmic research but also general healthcare.

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Suryamukhee Hall 401

EyeFound: A Multimodal Generalist Foundation Model for Ophthalmic Imaging

First Author: Danli SHI

Co-Author(s): Mingguang HE, Weiyi ZHANG

Purpose: Artificial intelligence (AI) plays a crucial role in ophthalmology, addressing tasks such as diagnosis, classification, and visual question answering (VQA). However, current AI models often require extensive annotations and are task-specific, limiting their clinical applicability. This study aims to develop a versatile foundation model for ophthalmology capable of handling various tasks and imaging modalities.

Methods: We introduce EyeFound, a multimodal foundation model designed for ophthalmic images. EyeFound learns generalizable representations from unlabeled multimodal retinal images, enabling efficient model adaptation across multiple applications. It was trained on a dataset of 2.78 million images from 227 hospitals across 11 ophthalmic modalities.

Results: EyeFound facilitates generalist representations and diverse multimodal downstream tasks, including the detection of challenging rare diseases. It outperforms the previous model, RETFound, in diagnosing eye diseases, predicting systemic disease incidents, and zero-shot multimodal VQA.

Conclusions: EyeFound provides a generalizable solution to improve model performance and reduce the annotation burden on experts, facilitating widespread clinical AI applications for retinal imaging.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

A Machine Learning Model on Orthokeratology Lens Fitting Based on Corneal Topography Data

First Author: Wei XU
Co-Author(s): Fusheng XU, Qirong LIN

Purpose: To investigate the performance of machine learning (ML) framework in orthokeratology lens fitting based on the relevant corneal topography maps and compare the accuracy and reliability of different machine learning algorithms.

Methods: A total of 5,242 corneal topographical maps were collected from 3,650 myopic patients who received orthokeratology. The data were randomly divided into two groups: the training data set (70%, sample number 3,669) and the test data set (30%, sample number 1,573). In the study, Logical Regression (LR), Random Forest classification (RF), and eXtreme Gradient Boosting classification (XGBoostC) algorithms were constructed to predict the type of orthokeratology lens (standard lens or circular lens). The best algorithm was determined by comparing each precision, accuracy, recall, and receiver operating characteristic curve (ROC curve).

Results: The XGBoostC algorithm had the best outcome, with an accuracy rate of 86.14%, in deciding the type of orthokeratology lens. Besides, the XGBoostR algorithm better predicted the FK and SK parameters of the orthokeratology lens. In the test data set, the mean square error (MSE) is 0.1172 and 0.2938, the mean absolute error (MAE) is 0.2430 and 0.4175, and the goodness of fit (R^2) is 92.01% and 85.83%, respectively.

Conclusions: The XGBoostC and XGBoostR algorithms could provide practitioners with reasonable models for fitting orthokeratology lenses. Based on the corneal topographical map, the XGBoostC algorithm could suggest the type of orthokeratology lens, and the XGBoostR algorithm could predict the SK and FK values, which are especially useful during initial clinical consultation with orthokeratology lens wearers.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

AI-Based Quantification of Retinal Vasculature Parameters in Uveitis: Vein Tortuosity Differentiates Uveitis With Active Tuberculosis From Latent Tuberculosis Uveitis and Toxoplasmosis Uveitis

First Author: Ikhwanuliman PUTERA
Co-Author(s): Willem DIK, Rina LA DISTIA NORA, Jose Vargas QUIROS, Saskia ROMBACH, P.Martin VAN HAGEN

Purpose: To utilize artificial intelligence (AI) for the quantitative analysis of retinal vasculature parameters to differentiate uveitis with active tuberculosis (TB) from latent TB uveitis and toxoplasmosis uveitis using fundus photographs.

Methods: Medical records and stored fundus images of uveitis patients from a cohort at the Department of Ophthalmology, University of Indonesia, were analyzed. Three groups of patients were included: active TB uveitis, latent TB uveitis, and toxoplasmosis uveitis. Fundus images were processed using the Retinalysis models package for segmentation and quantification of retinal vasculature parameters.

Results: The study included 9 patients (13 eyes) with active TB uveitis, 38 patients (48 eyes) with latent TB uveitis, and 26 patients (39 eyes) with toxoplasmosis uveitis. Significant differences were found in vein tortuosity parameters, with active TB uveitis eyes showing lower tortuosity compared to latent TB ($p=0.030$) and toxoplasmosis uveitis eyes ($p=0.013$). The area under the curve (AUC) of vein tortuosity for active TB uveitis against latent TB uveitis is 0.749 (95% CI: 0.606–0.892), with a sensitivity of 67.3% and specificity of 76.9%. The AUC of vein tortuosity for uveitis with active TB against toxoplasmosis uveitis is 0.803 (95% CI: 0.658–0.948), with a sensitivity of 74.4% and a specificity of 84.6%. In active TB uveitis, vein tortuosity tended to normalize upon complete treatment and uveitis resolution.

Conclusions: AI-based quantification of retinal vasculature parameters, particularly vein tortuosity, can differentiate uveitis with active TB from latent TB uveitis and toxoplasmosis uveitis. This approach shows promise for enhancing diagnostic accuracy in ocular TB and potentially guiding treatment response.

2

FREE PAPERS

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

Accuracy of Mobile Application-Based Visual Acuity Screening in School-Age Children: A Meta-Analysis

First Author: Florentina PRISCILIA
Co-Author(s): Michael HARTONO, Yeni Dwi LESTARI

Purpose: This meta-analysis aims to elucidate the accuracy of application-based visual acuity screening tools for the school-age population.

Methods: This study followed PRISMA guidelines and was registered in the PROSPERO database. The study's risk of bias was assessed using QUADAS-2 for a cross-sectional study and the Jadad scale for a randomized control trial. The data were further analyzed with Meta-Disc software and Review Manager for meta-analysis.

Results: Vision impairment from childhood has more negative consequences of permanent vision loss or amblyopia. Preventing this condition requires an effective school-based eye care program; however, there are limitations in resources, especially in developing countries. To address these challenges, a mobile application-based visual acuity screening was developed for school-age children. The accuracy of mobile application-based visual acuity screenings was measured in two methods: sensitivity-specificity analysis and LogMar mean difference. Both outcomes yielded promising results; the Area Under Curve (AUC) for the summary of Receiver Operating Characteristic (S-ROC) was 0.887, indicating good test quality, and the LogMar mean difference was 0.02 ($p = 1.0$), showing no significant difference compared to the gold standard. Moreover, this study reveals factors that can enhance accuracy, such as being conducted by trained non-professional examiners and under appropriate illumination settings.

Conclusions: Mobile application-based visual acuity screening demonstrates good accuracy for assessing the visual function of school-age children. This application can be integrated into school screening programs, especially in areas with limited resources, along with coordination and cooperation with other sectors.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

Advancing Glaucoma Screening: Medios AI's Real-World Validation Across Multiple Ethnicities and Device-Agnostic Capabilities

First Author: Divya RAO
Co-Author(s): Venkatesh R, Florian SAVOY, Sirisha SENTHIL, Sujani SHROFF, Swati UPADHAYA

Purpose: To assess the effectiveness of Medios AI in enhancing glaucoma screening by validating its performance across various ethnic groups and its device-agnostic capabilities.

Methods: Medios AI was evaluated using datasets from diverse ethnic populations. The first dataset was the Rotterdam EyePACS AIROGS dataset, which included data from 500 different screening sites, various ethnicities, and multiple camera systems, graded according to the European Optic Disc Assessment Trial guidelines. The second dataset consisted of a pooled analysis from three clinical tertiary centers involving South Asian populations, using portable fundus cameras integrated with Medios AI. Image grading was based on pre-defined criteria: referable glaucoma, no referable glaucoma, or ungradable. The AI output was compared to the final grading provided by human graders.

Results: The AIROGS dataset comprised 101,442 images from 54,274 participants, with 3,270 (3.2%) cases of referable glaucoma. The sensitivity for detecting referable glaucoma was 90.96% (95% CI: 89.92%-91.92%), and the specificity was 92.2% (95% CI: 92.03%-92.37%). The pooled analysis showed a sensitivity of 87.7% (95% CI: 83.9%-90.7%) and a specificity of 90.9% (95% CI: 72.3%-97.5%).

Conclusions: Medios AI demonstrates a significant advancement in glaucoma screening, showing effective performance across diverse ethnic groups and various fundus imaging devices. It has the potential to transform global glaucoma care, enhancing accessibility and outcomes for patients, regardless of demographic or technological constraints.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

Comparison of Image Review Parameters From Two Different Optical Coherence Tomography Analytical Workflows

First Author: Harvey UY
Co-Author(s): Jose Carlo ARTIAGA, Pik Sha CHAN, Franz Marie CRUZ, Erika Jean SALVAME, Paul SIOPONGCO

Purpose: To compare image review time, treatment decision agreement rate, treatment decision confidence, ease-of-use, and inter/intra-rater reliability of two optical coherence tomography (OCT) image review workflows.

Methods: Ten retina specialists reviewed OCT image sets from 30 eyes being treated with intravitreal medications using print and digital formats. Prior treatment information for each image set was provided. Each reviewer rendered a treatment decision based on the most recent image of each set. The main outcome measures were: 1) image review time; 2) self-rated treatment-decision confidence level (0-10); 3) ease-of-use rating (0-10). Inter-rater and intra-rater reliability rates were also determined.

Results: The mean image review time (SD) for print and digital image sets were 55.5 (37.2) and 28.6 (16.5) seconds, respectively ($P = 0.007$). The mean treatment-decision confidence levels using print and digital workflows were 8.0 (0.9) and 8.5 (0.8), respectively ($P = 0.0015$). The mean ease-of-use ratings for print and digital workflows were 6.3 (1.7) and 9.5 (0.5), respectively ($P = 0.0008$). The mean inter-rater agreement rates for print and digital workflows were 81 (17%) and 79 (15%), respectively ($P = 0.998$). The mean intra-rater treatment-decision reliability rate was 71.0 (6.1%) (range 63.3 to 80.0).

Conclusions: Compared to conventional print workflow, digital image workflow resulted in shorter review times, higher treatment-decision confidence levels, and enhanced ease of use. Similar agreement rates among different graders were achieved using either format, while a good intra-rater agreement rate was attained. Digital workflows appear to optimize OCT image review efficiency.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

Deep Learning Automated Diagnosis and Grading of Cataracts Using Colour Fundus Images: The Fundus Cataract-AI Project

First Author: Kendrick SHIH
Co-Author(s): Angie FONG, David HUNG, Allie LEE, Christopher LEUNG, Ian WONG

Purpose: The Fundus Cataract-AI project aims to automate cataract diagnosis and grading using deep learning techniques applied to a single standard macula-centric fundus photo.

Methods: A dataset was utilized, comprising 11544 fundus images from Chinese patients aged 50 and above from a cross-sectional random population-based study. The subjects underwent comprehensive eye assessment by an ophthalmologist, including presenting visual acuity (PVA), best-corrected visual acuity (BCVA), automatic and subjective refraction, IOP, slit-lamp examination of the anterior segment, and funduscopy examination of the posterior segment. Fundus photography was performed using the Daytona Ultra-widefield Fundus Camera (Optos, Inc., Dunfermline, Scotland, UK). The images were categorized into three classes: 'normal', 'early cataract', 'visually significant cataract' based on face-to-face assessment by the Ophthalmologist and BCVA. A ResNet152 convolutional neural network, pre-trained and fine-tuned via transfer learning, was employed for classification. The dataset was split into training (60%), validation (20%) and testing (20%) sets. To address class imbalance, weighted sampling and transfer learning strategies were applied. The main outcome measure was the area under the curve (AUC) with accuracy, sensitivity, and specificity.

Results: A total of 6961 images were used for the dataset in total. The distribution of 'normal', 'early cataract', and 'visually significant cataract' was 31.7%, 45.9%, and 13.0%, respectively. The preliminary model demonstrated an overall performance accuracy of 80%. A review of hot spots shows the optic disc and macula area highlighted as areas of interest by the algorithm.

Conclusions: Machine learning may be able to accurately assist in the diagnosis and grading of cataracts using fundus photos alone.

2

FREE PAPERS

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

Effectiveness of Artificial Intelligence Based Diabetic Retinopathy Screening in Primary Care and Endocrinology Settings in Australia: A Pragmatic Trial

First Author: Sanil JOSEPH
Co-Author(s): Mingguang HE, Thulasiraj RAVILLA, Yueye WANG, Zhuoting ZHU

Purpose: Opportunistic screening of patients with diabetes in non-eye care settings can enhance early detection of diabetic retinopathy (DR). We investigated the diagnostic accuracy, feasibility, and end-user experiences of an AI-based DR screening model in real-world Australian primary care settings.

Methods: A pragmatic trial was conducted in five sites, including general practice and endocrinology clinics, between August 2021 and June 2023. Patients aged 50 years or older and those 18 years or older diagnosed with diabetes were included. One site included patients aged 18 years or older with suboptimally controlled diabetes (HbA1c \geq 9.0%, diabetes duration \geq 10 years, or insulin dependence \geq 3 years). The AI algorithm, integrated with an automated, non-mydratic fundus camera, instantly analyzed the retinal images. Patients detected with referable DR were referred for a detailed eye examination. A satisfaction survey was administered among participants and care providers.

Results: We enrolled 863 participants with a mean (SD) age of 62.6 (13.2) years, and 53.0% were women. The AI system showed a high accuracy of 93.3% (95% CI: 91.4% – 95.5%) for detecting referable DR with a sensitivity of 83.7% (95% CI: 78.2% – 88.3%), specificity of 96.1% (95% CI: 94.7% – 97.2%), and an AUROC of 0.899 (95% CI: 0.874 – 0.924). Most (86%) patients and care providers (85%) were satisfied with the AI system.

Conclusions: The AI-assisted DR screening model was accurate and well-received in Australian primary care and endocrinology clinics. This screening model holds promise for enhancing early detection of DR and preventing vision loss on a considerable scale.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

Feasibility and Patient Experience of a Pilot Artificial Intelligence-Based Diabetic Retinopathy Screening Program in Northern Ontario

First Author: Vishaal BHAMBHWANI
Co-Author(s): Hunter CHERWEK, Alonso OJEDA, Jennifer PATNAIK, Jim SCALI, Noelle WHITESTONE

Purpose: To provide real-world evidence on the feasibility, implementation, and patient experience of an autonomous artificial intelligence-based diabetic retinopathy (DR) detection tool.

Methods: This was a prospective cohort study. Consenting adult participants previously diagnosed with diabetes were screened for DR using retinal imaging with autonomous artificial intelligence (AI) interpretation at their routine primary care appointment. Demographic (age, sex, race) and clinical (type and duration of diabetes, last reported eye exam) data were collected using a data collection form. A 5-point Likert scale questionnaire was completed by participants to assess patient experience following the AI exam.

Results: Among 202 participants (38.6% women) with a mean age of 70.8 \pm 11.7 years included in the study and screened by AI, the exam was successfully completed in 93.6% (n=189), with only 1.5% (n=3) requiring dilating eyedrops. The most common reason for an unsuccessful exam was small pupils with patient refusal for dilating eyedrops (n=4). Among participants with successful eye exams, 22.2% (n=42) had referable diabetic retinopathy detected and were seen by an ophthalmologist. 184 participants completed the satisfaction questionnaire; the mean score (out of 5) for satisfaction with the AI eye exam was 4.77 \pm 0.64.

Conclusions: Screening for DR using autonomous AI in a primary care setting is feasible and acceptable. AI for DR screening has advantages for physicians (reducing ophthalmologist and primary care physician workload), and patients (early diagnosis of DR, avoidance of additional appointments and wait times, unnecessary travel and days off work), and can potentially reduce costs to the healthcare system, while achieving high patient satisfaction.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

Optimizing Pathways for Large-Scale Refractive Screening in Children From Xinjiang

First Author: Xiangwen KONG
Co-Author(s): Xuehan QIAN

Purpose: This study aims to make large-scale refractive screening feasible in the vast Xinjiang region by optimizing screening pathways, considering the unique light environment of the Xinjiang desert areas.

Methods: Large-scale refractive screening was conducted for children in Xinjiang using an initial empirical pathway not optimized by Artificial Intelligence (AI). Subsequently, AI assistance was employed to develop Matlab code, optimizing the initial empirical pathway using three intelligent algorithms: Genetic Algorithm, Large Neighborhood Search Algorithm, and Particle Swarm Optimization. To validate the effectiveness of the method, a simulation and comparative analysis of the screening process were conducted using mapping software, calculating the distances of the new AI-assisted pathways.

Results: 1. The initial empirical screening pathway covered 364.4 km. Optimization with the Genetic Algorithm reduced it to 352.9 km, saving 11.5 km (approximately 3%). Both the Large Neighborhood Search Algorithm and Particle Swarm Optimization Algorithm reduced the distance to 317.7 km, saving 46.7 km (14.6%). 2. The optimization code was also applied to the Tibet region, reducing the initial pathway from 1477.7 km to 1439.8 km, saving 37.9 km. This demonstrates that AI can effectively develop intelligent algorithm codes and that by modifying basic parameters, the code can be adapted for other regions.

Conclusions: This study demonstrates AI's practical value in optimizing epidemiological surveys and its potential in resource-limited regions' public health planning. By reducing screening distances and time, AI enhances resource efficiency, coverage, and service quality. Future research will explore AI's broader public health applications, especially in optimizing healthcare service pathways by integrating multidimensional factors.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

The Application of Large Language Models in the Patient Education of Diabetic Retinopathy

First Author: Ju LIU
Co-Author(s): Fei GAO, Xiaorong LI

Purpose: To evaluate the accuracy, completeness, and reproducibility of domestic open-source large language models (LLMs) in patient education on diabetic retinopathy (DR), and to explore their potential as intelligent virtual assistants for DR patient education.

Methods: A cross-sectional clinical research study was conducted to collect 41 questions related to DR patient education, and all the questions were repeatedly entered into three open-source LLMs in the form of a "new dialogue" twice, and all the answers were recorded. 3 fundus physicians independently evaluated the responses on a 6-point Likert scale for accuracy, and a 3-point Likert scale for completeness and repeatability, and for each response, the evaluator was asked to give a recommendation between the LLM responses and the manual answers.

Results: For all questions answered, Kimi chat answered longer than manual response words, with a statistically significant difference, and the accuracy of the second response was better than the first (5.67 vs. 5.33, $P = 0.013$). Kimi chat performed better than diagnosis, treatment and prognosis in risk factors, screening and examination, symptoms and staging. The proportion of evaluators choosing LLM responses as superior was 73.2%, and the reasons for non-selection included lack of characteristic answers, poor question-answer fit, inclusion of too much irrelevant information, and lack of responses to questions requiring a high degree of medical expertise.

Conclusions: LLM answers to DR-related questions with high accuracy, completeness, and reproducibility. Although it still cannot completely replace the role of ophthalmologists, the value of LLMs should not be underestimated, considering their high accuracy, accessibility, and low cost.

2

FREE PAPERS

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

Time-Series Quantitative Automated Assessment for Age-Related Cataract

First Author: Yuanjun SHANG
Co-Author(s): Haotian LIN, Lixue LIU, Zhenjun TU, Xiaohang WU, Dongyuan YUN

Purpose: This study aims to develop an objective, accurate, and comprehensive method for assessing early and advanced age-related cataract (ARC), addressing the limitations of traditional and existing intelligent grading systems.

Methods: A multicenter clinical trial enrolled 500 patients with initial cortical ARC, conducting 9 follow-up visits over 104 weeks. Anterior segment slit-lamp images, BCVA, and objective visual indicators (OSI, MTF cut-off, SR) were collected. A temporal multimodal model integrating multi-dimensional image feature extraction, temporal feature extraction, and progression prediction was constructed. Model performance was evaluated using MAE and MSE through five-fold cross-validation, external validation, and human-machine comparative experiments.

Results: From 500 subjects, 6,707 image sets were collected. The temporal multimodal model demonstrated superior grading accuracy for cortical (C), nuclear (N), and posterior subcapsular (P) cataract opacities compared to traditional models. Optimal performance was achieved with a sequence length of 3 over a 24-month follow-up (MSE: C 0.127, Sd 0.016; N 0.160, Sd 0.016; P 0.115, Sd 0.011). The model showed high accuracy in visual function assessment, with MSEs for lens vision intervals of 0-0.2, 0.2-0.4, and 0.4-1.0 being 0.007 (Sd 0.001), 0.050 (Sd 0.007), and 0.408 (Sd 0.073), respectively. OSI, MTF cut-off, and SR indicators also demonstrated high accuracy (MSE: OSI 1.444, Sd 0.145; MTF cut-off 1.997, Sd 0.009; SR 0.011, Sd 0.000).

Conclusions: The temporal multimodal model significantly improves cataract assessment by integrating spatial and temporal features of sequential images, providing precise grading of cataract opacity and accurate visual function assessment, enhancing ARC clinical management and drug trials.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

Universal Optimization of AI-Based Diabetic Retinopathy Diagnosis Through Cross-Camera Image Enhancement

First Author: Sanil JOSEPH
Co-Author(s): Xiaotian CHEN, Zongyuan GE, Mingguang HE, Chi LIU, Thulasiraj RAVILLA

Purpose: To propose a universal adaptation model for images captured using different fundus cameras, towards enhancing the accuracy of AI-based diabetic retinopathy (DR) diagnosis.

Methods: We utilized paired retinal images from 365 outpatients who attended a tertiary eye hospital in southern India, captured using Optain and Topcon fundus cameras. An InceptionNeXt model assessed the disparities in retinal parameters between the two image sets. We used an SCR-Net-based image enhancement model to align the image styles from the two cameras. We conducted a series of experiments with different training datasets, model structures and image resolutions for the model to achieve the best performance gain in predicting Optain images.

Results: After exploring different scenarios, we found that using mixed images (original and adapted) for training and adapted images for inference was the best optimization model. This model had nearly 5 5-point gain in accuracy compared with the baseline model. Using the baseline images, the AI system had an accuracy of 88.65% with a sensitivity of 98.77%, specificity of 74.12%, and AUROC of 0.9740. Whereas, by using the adapted images, the accuracy improved to 93.51% with a sensitivity of 96.33%, specificity of 89.47%, and AUROC of 0.9814.

Conclusions: Our findings underscore the potential of cross-camera AI adaptation techniques in enhancing diagnostic accuracy across diverse populations and making the AI algorithm universally adaptable to images captured using different fundus cameras. This approach might be useful to optimize the range of camera systems to be used in AI-based DR screening models.

2

FREE PAPERS

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

Utilizing Artificial Intelligence for Cataract Diagnosis From Portable Slit-Lamp Video Images

First Author: Eisuke SHIMIZU
Co-Author(s): Tadashi HATTORI, Rohan Jeetendra KHEMLANI, Shintaro NAKAYAMA, Hiroki NISHIMURA, Jun OHASHI

Purpose: The application of artificial intelligence (AI) for diagnosing anterior segment eye conditions is currently limited due to the scarcity of standardized images and analysis models. We addressed this challenge by augmenting the pool of standardized optical images using a video-recordable slit-lamp device and explored the efficacy of a machine learning (ML) AI algorithm in diagnosing cataracts from videos recorded using this technology.

Methods: We collected 79,275 cataract frames from 1,150 videos of cataract-affected eyes. Ophthalmologists assessed the degree of nuclear sclerosis using the Emery-Little grading system. These evaluations were used to train and validate an ML algorithm (EfficientNetV2 ML model). A validation dataset was employed to assess the accuracy of AI in diagnosing and grading cataracts compared to ophthalmologists' evaluations.

Results: The AI model demonstrated high efficacy in cataract diagnosis with an accuracy of 91.8% (95% CI: 0.912-0.924), sensitivity of 95.6% (95% CI: 0.952-0.960), specificity of 77.6% (95% CI: 0.761-0.791), and an Area Under the Curve (AUC) of 0.866 (95% CI: 0.853-0.880). The model also performed robustly in severity grading with a correlation of 0.770 (95% CI: 0.759-0.779).

Conclusions: Our ML-based diagnostic model for cataracts achieved performance metrics comparable to those of conventional diagnostic methods, demonstrating its potential as a precise and reliable AI tool for automated cataract diagnosis.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Moulshree Hall 402

Validation of an Online Perimetry Software (Melbourne Rapid Fields) Compared to Humphrey Field Analyzer SITA-Faster (HFA SITA-Fr) for Glaucoma

First Author: Yu Xiang George KONG
Co-Author(s): Selwyn PREA, Joyce TIANG, Algis VINGRYS

Purpose: Web-browser-based online perimetry (MRF) provides a device-independent, portable method of visual field testing that could be used in the clinic as well as home monitoring for glaucoma patients. This study validates MRF online perimetry compared to HFA SITA-Fr.

Methods: A total of 178 consecutive stable glaucoma or glaucoma suspect patients were included in this study. All patients had a 24-2 perimetry test using MRF online running on an LG 27-inch desktop computer with Google Chrome browser. Results of the 24-2 perimetry were compared to HFA SITA-Fr outcomes by the same patient (within ~6 months).

Results: The ages of patients participating in this study ranged from 21-92 (avg 61, SD 16). Based on the most recent SITA-Fr MD, 72 had normal outcomes (MD>-2); 66 had mild loss (-2>MD>-6); 13 had moderate loss (-6>MD>-12); 13 advanced (-12>MD>-20) and 14 severe (MD<-20) loss. MRF online took, on average, 1 min longer than the 24-2 HFA SITA-Fr test. The mean deviations of both tests were highly correlated (ICC=0.93), and the linear regression had a slope of 0.98 (Figure 1). Bland-Altman methods found a bias of -0.4 dB for MD with 95% Limits of Agreement of -2.2 dB to 1.4 dB in normal observers.

Conclusions: MRF online allows patients to have visual field tests performed using a web browser independent of the device (applicable for tablets, laptops, and desktop computers), with outcomes comparable to HFA SITA-Fr. This software has significant applications as an alternative to standard perimetry, particularly in low-resource settings.

Academia, Research, Teaching and Education in Ophthalmology

Apr 05, 2025 (Sat) 09:45 - 11:15

Venue: Suryamukhee Hall 401

A Survey of Asia-Pacific Academy of Ophthalmology Members' Attitudes Toward Operating Room Waste and Sustainability Efforts

First Author: Wendy SEE

Co-Author(s): David CHANG, Seng-kheong FANG, Muiz MAHYUDIN

Purpose: Cataract extraction is the most frequently performed surgery in ophthalmology, and the carbon footprint from cataract surgery waste has increasingly become the subject of global sustainability discussions. Surveys conducted with North American and European ophthalmologists reported in 2020 and 2023, respectively, revealed a strong willingness among ophthalmic surgeons to adopt sustainable practices in the operating room (OR). In contrast, the Asia Pacific region has a different demographic profile, characterized by varying levels of income and limited resources, hence local practices are oriented more toward cost-effectiveness and resource efficiency. This survey aims to assess the Asia-Pacific Academy of Ophthalmology (APAO) members' attitudes toward OR waste and sustainability efforts within the OR.

Methods: An online questionnaire comprising 23 multiple-choice questions, developed by the Ophthalmic Instrument Cleaning and Sterilization (OICS) Task Force, will be distributed via email to all APAO members by September 2024. This is the same questionnaire used by the North American and European Cataract Surgeons to allow direct regional comparison.

Results: The questionnaire seeks opinions on the causes of OR waste and willingness to reuse a multitude of surgical drugs, supplies, and devices, The quantitative data from the survey are not available at the time of this abstract.

Conclusions: This survey is the first major investigation into the sustainability attitude of ophthalmologists in the Asia Pacific region funded by the APAO. It will determine whether these attitudes align or differ from those of their counterparts in North America and Europe.

Apr 05, 2025 (Sat) 09:45 - 11:15

Venue: Suryamukhee Hall 401

Census Data Reveals Inequity in Self-Identified Visual Disability in New Zealand/Aotearoa

First Author: Esmeralda LO TAM

Co-Author(s): Akilesh GOKUL, Charles MCGHEE, Rachael L NIEDERER, Jie ZHANG

Purpose: To analyse the data collected in the 2018 Census to assess the relationship between self-identified visual impairment and demographics in Aotearoa, New Zealand.

Methods: Since 1851, a national Census has been conducted in New Zealand/Aotearoa to capture a snapshot of the demographics and changes over time in society, the economy and epidemiology. In 2018, disability questions were incorporated into the survey, visual disability was self-reported by answering the question, "Do you have difficulty seeing, even if wearing glasses?". Data collected on demographics and visual impairment from the census was collated and analysed.

Results: Data was examined from 4,699,755 individuals (16.5% Māori and 8.1% Pacific peoples). Self-identified visual disability was answered by 3,678,441 (78.3%). Subjects were more likely to answer if they were older (OR 1.030, $p < 0.001$) or female (OR 1.228, $p < 0.001$), and less likely to answer if they were Māori (OR 0.438, $p < 0.001$) or Pacific peoples (OR 0.385, $p < 0.001$). On multivariate analysis, older age was associated with an increased likelihood of reporting a self-identified visual disability (OR 1.032, $p < 0.001$) as was female gender (OR 1.174, $p < 0.001$), Māori ethnicity (OR 1.892, $p < 0.001$) and Pacific ethnicity (OR 1.768, $p < 0.001$).

Conclusions: Significant differences are observed in self-identified visual disability, with higher proportions in Māori, Pacific peoples, older individuals and women. Future research should focus on identifying

and addressing the reasons for these differences with the ultimate goal of achieving equity in vision-related health outcomes across Aotearoa.

Apr 05, 2025 (Sat) 09:45 - 11:15

Venue: Suryamukhee Hall 401

Combining MSC Exosomes and Cerium Oxide Nanocrystals for Enhanced Dry Eye Syndrome Therapy

First Author: Yiquan ZHANG

Purpose: Dry eye syndrome (DES) is a multifactorial ocular disorder characterized by diminished tear production and/or increased tear evaporation, leading to ocular surface discomfort. This can negatively impact vision-related quality of life and interfere with daily activities. As a chronic condition that necessitates continuous management, there is an urgent demand for the development of innovative therapies.

Methods: We developed a synergistic therapeutic nanoparticle approach for the in situ growth of cerium oxide (Ce) nanocrystals on mesenchymal stem cell-derived exosomes (MSCExo), which integrates the three-dimensional approach of "anti-inflammatory, ROS clearance, and tissue repair" for the treatment. While employing MSCExo as a carrier, the MSCExo membrane can function as a template to subtly adjust the nanocrystals' size and proportion of Ce, thereby amplifying the efficiency of ROS clearance. Its efficacy and biosafety were verified by an in vitro cell experiment and an in vivo animal experiment.

Results: Specifically, we have successfully achieved in situ crystallization of Ce nanocrystals onto the membrane of MSCExo as a specific implementation method, enabling efficient ROS scavenging. What's more, the experimental results demonstrate the enhanced therapeutic effects of the MSCExoCe formulation. The MSCExoCe particles exhibit a unique ability to simultaneously mitigate inflammation, clear ROS, and promote tissue repair, providing a comprehensive treatment strategy for DES. Finally, MSCExoCe was proved to be highly biocompatible and well tolerated by various tissue sections and intraocular pressure.

Conclusions: Our study presents valuable insights into innovative approaches for ocular disorder therapy and will contribute to the advancement of the field.

Apr 05, 2025 (Sat) 09:45 - 11:15

Venue: Suryamukhee Hall 401

Knowledge and Attitude About Eye Donation Among Medical and Nursing Students in a Tertiary Care Centre in Western India

First Author: Afrid JAIPURI

Co-Author(s): Sanjeevani AMBEKAR

Purpose: To assess the knowledge and attitude of medical (undergraduate and postgraduate) and nursing students toward eye donation at a tertiary care centre in Western India.

Methods: A cross-sectional, descriptive study in which 500 medical & nursing students were selected as participants. Knowledge and attitude were assessed regarding eye donation by using a self-designed, pre-validated questionnaire, which contained 13 questions (8- knowledge domain; 5- attitude domain). Descriptive statistics were used to elaborate on the participants' demographic characteristics. The categorical variable was measured in percentage, while the continuous variable was conveyed as mean \pm SD. A P-value <0.05 was considered statistically significant. All analysis was performed using (SPSS) 20.

Results: Out of 500 distributed questionnaires, 204 were male, 296 were female. It was seen that 47 participants (9.4%) had excellent knowledge, 355 participants (71%) had good knowledge, and 98 participants (19.6%) had poor knowledge about eye donation. Only 245 participants (49%) were willing to donate their eyes. Unwillingness or undecidedness was attributed to a lack of information about eye donation in 42.6% of the participants.

Conclusions: There is a need to impart knowledge and modify attitudes about eye donation among medical and nursing students since they will be playing a major role in educating and motivating potential donors regarding eye donation. Mass education and awareness programs are also needed to encourage the attitude of a family as a unit since many of the participants were hesitant to donate because of a lack of support from the family.

Apr 05, 2025 (Sat) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Simulation-Based Ophthalmology Education for Medical Students in Canada: A Pilot Project

First Author: Vishaal BHAMBHWANI
Co-Author(s): Shikha BANSAL

Purpose: Ophthalmology is an under-represented specialty in many western medical school curriculums resulting in a lack of confidence in medical students/clinicians when dealing with eye conditions. Our study evaluates the impact of a low-cost simulation-based education (SBE) workshop/mini-elective to train medical students in ophthalmology to increase their interest, confidence, and knowledge/skills.

Methods: Second-year medical students were invited to participate in a two-day (eight-hour) simulation-based ophthalmology workshop. Standardized patients, free-to-use simulators, and low-cost eye models were used to teach learners eye anatomy, physiology, common pathologies, skills (slit-lamp, ophthalmoscopy, etc.), and steps of common eye procedures (cataract surgery, eye lasers, etc.). Learners filled out questionnaires to evaluate their ophthalmology interest, confidence, and knowledge before and after the workshop and answered a feedback survey on the quality and usefulness of the workshop.

Results: Nine students (6F/3M) participated. Pre-workshop, learners' mean self-reported confidence in dealing with ophthalmology patients was 1.8/5, and mean self-reported interest in pursuing an ophthalmology residency was 2.6/5. Pre-workshop, learners scored a mean of 8.4/15 on an ophthalmology knowledge questionnaire. Post-workshop, their mean self-reported confidence was 3.4/5 ($p=0.0001$), interest in pursuing an ophthalmology residency was 3.2/5 ($p=0.022$), and their score on the ophthalmology questionnaire was 13/15 ($p=0.0001$). The feedback survey showed that all students found the workshop relevant, comprehensive, and easy to understand and that they gained knowledge/skills that they will apply to their future clinical practice.

Conclusions: SBE provides learners with a safe environment to obtain hands-on experience to improve knowledge, skills, and confidence using an approach they find interesting and enjoyable, with low cost and time investment.

Apr 05, 2025 (Sat) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Understanding the State of Ocular Disease and Inequity of Disease Burden Among Pasifika in New Zealand/Aotearoa

First Author: Esmeralda LO TAM
Co-Author(s): Akilesh GOKUL, Rachael L NIEDERER, Jie ZHANG

Purpose: To review the literature on eye diseases in Pasifika populations residing in New Zealand/Aotearoa and determine if they have higher rates of sight-threatening diseases compared to other ethnicities.

Methods: A literature search was conducted via the PubMed electronic database in September 2023. Appropriate keywords included: 'Pasifika, Pacific, Polynesian' AND 'New Zealand, Aotearoa, NZ' AND 'eye, ophthalmology, optometry, vision' AND 'health, disease, disorders, care, disability, impairment, blindness' AND 'barrier, barriers' AND 'access, accessibility' AND 'keratoconus, dry eye disease, cataract, retinal disease, retinal diseases, diabetic retinopathy, glaucoma, myopia, hyperopia, presbyopia, trauma, eye disease. After removing duplicates, 123 articles were assessed.

Results: Pasifika face disproportionately poorer health outcomes and a higher burden of eye diseases throughout their lives, despite only making up 7% of the New Zealand population. Pasifika develop cataract ten years younger than non-Pasifika with significantly worse visual acuity at presentation. Pasifika populations account for 43% of corneal transplants for advanced keratoconus. A fifth of Pasifika children (15.2%) and 18.8% of teens reported having sought eye care at least once within the last two years. Suggesting that visual impairment for Pasifika can be improved with access and use of services.

Conclusions: Although Pasifika have lived in Aotearoa for over 100 years, their health status remains poorer than other ethnicities. Theoretically, all New Zealanders have equal access to publicly funded services, however, barriers related to cultural and socioeconomic differences may result in Pasifika patients receiving less than optimal care. It is important to consider Pasifika models of health for cultural appropriateness and delivery of health care services.

Apr 05, 2025 (Sat) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Vitamin D and Common Eye Diseases: An Umbrella Review of Systematic Reviews and Meta-Analyses

First Author: Pei-yuan HE

Purpose: This research aims to analyze the relationship between vitamin D deficiency and the onset of common eye diseases by compiling data on vitamin D concentrations at the onset of these conditions.

Methods: A systematic review and meta-analysis umbrella review of the linkage between vitamin D and common eye diseases was conducted by searching PubMed, Web of Science, Embase, and Cochrane databases up to 25 May 2024. In addition, observational studies of ocular diseases not yet included in existing meta-analyses were also retrieved. Effect values and 95% confidence intervals for vitamin D in patients with ocular diseases and healthy populations from more than three studies of the same type of disease were calculated using a random-effects model and included in existing meta-analyses, finalize an umbrella review of systematic reviews and meta-analyses.

Results: This study included 13 meta-analyses and 17 observational studies (13 case-control, 4 cross-sectional) covering 104 unduplicated original studies on 9 different ocular diseases. Decreased levels of vitamin D were associated with an elevated risk of cataract development (OR = -4.49, 95%CI = -9.21, 2.60), Glaucoma (OR = -0.60, 95%CI = -1.60, 0.40), Non-infectious Uveitis (OR = -0.39, 95%CI = -0.71, -0.07), Myopia (OR = -0.08, 95%CI = -0.13, -0.03), and Pterygium (OR = -2.29, 95%CI = -2.68, -1.90),

Increased vitamin D increases risk of Conjunctivitis (OR=0.30, 95%CI =-5.20, 5.80).

Conclusions: Evidence indicates that reduced Vitamin D levels correlate with an elevated risk of most eye diseases. Consequently, we recommend closely monitoring vitamin D levels and supplementation to prevent and treat eye diseases.

Cataract

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Suryamukhee Hall 401

A Novel Concept of Correcting Pseudophakic Residual Presbyopia Using Off-Label Presbyopic Phakic Diffractive Intraocular Lens

First Author: Anand BAGMAR

Purpose: We report a case of a pseudophakic patient with residual presbyopia who received off-label placement of a presbyopic phakic intraocular lens (pIOL) resulting in improved near visual acuity.

Methods: Report of the case: A 48-year-old female patient, a beautician by profession, came with a history of cataract surgery with EDOF (Non-Diffractive) PCIOL implantation done in both eyes one year back and came with a complaint of difficulty in near vision in the Right eye. She also gave a history of another surgery done for the Left eye with piggyback PCIOL implantation. After examination, she was emmetropic for distance vision 6/6 and unaided J5 for near vision. She required +2.D for J1 near vision in the right eye. In the left eye, she was unaided 6/18 for distance, improved with -.2 .0 D to 6/6, and unaided J2 for near vision. After examining visual acuity on different distances, refractive status, corneal topography, endothelial cell density, anterior chamber depth, white-to-white, mesopic pupil size, and intraocular pressure, we decided to implant this novel phakic IOL with the diffractive optic in the right eye.

Results: At the follow-up, 4 weeks after surgery operated eye was emmetropic 6/6 (20:20) for distance and J1 (20:20) for near. Near vision was excellent without the need to wear reading glasses. There was neither a significant change in IOP nor

a significant surgical impact on endothelial cells. Patient satisfaction was high. **Conclusions:** Our case demonstrates the successful use of the presbyopic phakic IOL by a piggyback technique in a pseudophakic patient with residual presbyopia, resulting in improved near visual acuity.

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Suryamukhee Hall 401

A Prospective Study of Vivivity & Vivivity Toric IOL in Taiwan: Results and Analysis

First Author: Chen-cheng CHAO
Co-Author(s): Chao-kai CHANG

Purpose: The aim of our study is to evaluate the quality of vision after bilateral Vivivity or Vivivity toric EDOF IOL implantation in Taiwan.

Methods: Our study was a prospective, single-arm study. The inclusion criteria for this study were the presence of cataracts in both eyes who received bilateral Vivivity IOL implantation after cataract surgery. Outcome measurements include binocular uncorrected and corrected far, intermediate (66cm), and near (40cm) visual acuity; visual quality measurement including International Reading Speed Test (IREST), Questionnaire for Visual Disturbances (QUVID), and Intraocular Lens Satisfaction (IOLSAT) questionnaire were performed before and after surgery for 3 months.

Results: There were 72 patients and 144 eyes included, with 37 patients targeting emmetropia and 35 patients targeting mini-monovision. The mean age was 62.0±9.2 years old, with female predominance (62%). The uncorrected binocular far, intermediate, and near visual acuity were 0.03±0.05, 0.22±0.15, and 0.34±0.19 logMAR, respectively. Corrected binocular far visual acuity was 0.00±0.01 logMAR, while intermediate and near visual acuity were 0.16±0.22 and 0.20±0.19 logMAR. The postoperative reading speed was significantly improved compared to the preoperative reading speed. (P<0.05). For the subjective quality of vision questionnaire outcomes, only 10.5% of patients complained about halos and glares, and the other 10.5% complained about the need to wear reading spectacles for near visual tasks.

Conclusions: Vivivity or Vivivity toric IOL could achieve good far and intermediate vision, with acceptable near visual acuity. For possible photopic problems, less halo and glare were complained of.

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Analysis of the Results of Implantation of a Toric Intraocular Lens in Congenital Cataracts

First Author: Dana ABDULLINA
Co-Author(s): Neilya ALDASHEVA, Lukpan ORAZBEKOV, Kairat RUSLANULY

Purpose: To assess the functional and refractive outcomes after the implantation of toric IOLs in children with CC and CA.

Methods: A case-control study was conducted on 37 children (37 eyes) over 6 years old with visually significant CC and CA greater than 1.25 diopters who underwent lens aspiration with the implantation of monofocal non-toric (19 eyes) and toric (18 eyes) IOLs from June 2021 to December 2022. Preoperative and postoperative visual acuity on the fifth day, uncorrected and corrected distance and near visual acuity, keratometry data, and residual astigmatism were assessed.

Results: The average CA before surgery was 2.84 ± 0.51 D in the toric group and 3.05 ± 0.79 D in the non-toric group (P = 0.563). At the final follow-up, postoperative refractive astigmatism was 0.96 ± 0.53 D in the toric group and 2.31 ± 0.69 D in the non-toric group (P < 0.001). Distance visual acuity of 0.3 LogMAR or better was achieved in 83.3% (n = 15) and 57.9% (n = 11) of eyes in the toric and non-toric groups, respectively. Corrected near visual acuity of 0.3 LogMAR or better was achieved in 100% (n = 18) and 78.9% (n = 15) of eyes in the toric and non-toric groups, respectively.

Conclusions: The study showed that CC surgery with concomitant CA with toric IOL implantation is an effective method of correcting pre-existing CA and achieving better distance and near visual acuity compared to children after spherical IOL implantation.

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Venue: Suryamukhee Hall 401

Anterior Chamber and Retropupillary Iris Claw IOL Fixation Comparison of Clinical Outcomes: A Systematic Review

First Author: Khaled MOGHIB
Co-Author(s): Yasmeen ABDELGLEL, Ammar SALAH

Purpose: During cataract surgery, the ideal IOL placement is in the capsular, but when the capsular support is inadequate, alternative techniques like scleral-sutured IOLs, anterior chamber IOL, and iris-fixated IOLs (anterior chamber or retropupillary) may be used. The choice depends on factors like surgeon experience, patient anatomy, and clinical scenario, with the anterior chamber iris-claw IOL being more straightforward, while the retropupillary approach may offer benefits but require more advanced skills.

Methods: We followed the Preferred Reporting Items for Systematic Review (PRISMA statement) in the process of preparing this manuscript. We conducted a computerised literature search on PubMed, Cochrane Central, Scopus, and Web of Science up to May 2024, with the following search terms in the method section. An online data extraction sheet was constructed using a pre-specified uniform data extraction sheet that included the following domains in data extraction

Results: Out of the nine included studies, two studies were RCTs while the other seven studies were observational and varied between cohort and case series studies. Seven hundred and fourteen patients were included in our review. Out of them, 295 (41.3%) were female and 419 (58.7%) were male, with a mean and standard deviation of age 60.11(10.22).

Conclusions: These studies further highlight the continued debate surrounding the optimal surgical approach for IOL implantation in cases of inadequate capsular support. While both anterior and posterior techniques have demonstrated efficacy, there appear to be some potential advantages to retropupillary iris-claw IOL implantation through a scleral tunnel incision.

Apr 05, 2025 (Sat) 13:15 - 14:45
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Cataract Detection Through Community Empowerment Program in Rural Areas in Selangor, Malaysia

First Author: Norasyikin MUSTAFA
Co-Author(s): Joanne Shalini CHEWA RAJA, Nyi Nyi NAING, Mohamad Aziz SALOWI, Siti Nurhuda SHARUDIN, Wan Radziah WAN NAWANG

Purpose: Age-related cataracts are the leading cause of visual impairment and avoidable blindness among older adults. Many significant cases, particularly in rural areas, remain undiagnosed. Many cataract finder programs had previously been initiated in the country but failed to sustain. This study aims to describe the process/procedures, output, and funding of a newly developed community-led program for detecting cataracts called myCATARACTfinder.

Methods: This is a descriptive study of a pilot program detecting cataract in the community. It targets Activity Centres for Older Persons in two rural areas in Selangor, Malaysia, with 490 members aged 60 years and above. Almost all of them fall in the lowest 40 percent national income group. Each centre has trained volunteers among the community to perform visual acuity examinations using a clinically validated Peek Acuity mobile application. Those with visual acuity worse than 6/18 in the best eye are referred to a nearby hospital.

Results: We report the total number of people screened, the level of visual acuity, the number of people referred for further cataract assessment, and who go for cataract surgery. Corporate and private companies' involvement in funding the surgery and logistic costs are highlighted. In addition, we report the interrater agreement of visual acuity between volunteers and healthcare workers.

Conclusions: Empowering community members in detecting cataract among themselves using Peek Acuity is effective and cost-efficient. A well-structured program that includes cataract detection and ease of referral until its treatment is important in ensuring corporate involvement and program sustainability.

Apr 05, 2025 (Sat) 13:15 - 14:45
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Clinical Outcomes of an Integrated Femtosecond Laser and Phacoemulsification System

First Author: Harvey UY

Purpose: To report the early clinical outcomes of femtosecond cataract surgery (FLACS) using a novel integrated femtosecond laser (FSL) phacoemulsification (PHACO) system.

Methods: We included 63 eyes that underwent cataract surgery using an integrated FSL-PHACO machine (ALLY, LENSAR, FL, USA). The comparator group was a cohort of 24 non-study eyes that underwent standard FLACS cataract surgery using separate FSL (GEN-1, LENSAR FL USA) and PHACO machines (CATARHEX 3, OERTLI, SWITZERLAND) during the same time frame. The main outcome measures included cataract grading, rate of successful FLACS, laser time, transition time and PHACO case time, visual outcomes, and adverse events.

Results: All eyes underwent successful cataract surgery with VA improvement. The mean nuclear opalescence cataract grade, as assessed by the LOCS III cataract grading scale, was 3.43 ± 1.88 for all eyes. For the integrated FSL-PHACO group, the laser, transition, and PHACO case times were: 115 seconds, 60 seconds, and 10.2 minutes, while for the separate FSL and PHACO group, 164.4 seconds, 414 seconds, and 12.3 minutes, respectively. There was a time reduction of 43% ($p < 0.001$), 86% ($p < 0.001$), and 16% ($P = 0.01$) for each respective surgical phase. No serious ocular adverse events were observed in either group.

Conclusions: An integrated FSL-PHACO system was effective and safe for FLACS and significantly shortened operative times compared to surgery performed using separate FLACS and PHACO systems. Surgical efficiency was enhanced by reducing procedure times for all phases of the FLACS procedure and by allowing surgeons to perform FLACS in one seating and one setting.

Apr 05, 2025 (Sat) 13:15 - 14:45
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Comparative Evaluation of Morphological and Visual Outcomes Using Two Laser Capsulotomy Devices

First Author: Jeewan TITIYAL

Co-Author(s): Manpreet KAUR

Purpose: To compare capsulotomy characteristics of selective laser capsulotomy (SLC) and femtosecond laser capsulotomy (FSL).

Methods: Prospective comparative study of 30 eyes undergoing phacoemulsification; laser capsulotomy performed with SLC (n=15) or FSL (n=15). The primary outcome was capsulotomy morphology. Secondary outcomes were intraoperative complications and visual acuity at 1 month.

Results: The mean deviation from intended capsulotomy (5 mm) was -0.68 ± 0.24 mm in SLC and 0.1 ± 0.1 mm in FSL ($p < 0.001$). Mean circularity index, continuity, and complete IOL coverage were comparable ($p > 0.05$). Anterior capsulotomy extension was observed in 2 cases in the FSL group only ($p = 0.14$). In the white cataract, SLC had complete capsulotomy with a slow release of milky fluid after the completion of the laser; FSL had a burst of fluid laser interrupting the laser with microadhesions. Visual outcomes were comparable.

Conclusions: Laser-assisted capsulotomies are well-centered, circular, and continuous. FSL leads to more predictable size; SLC has increased continuity in white cataract.

Apr 05, 2025 (Sat) 13:15 - 14:45
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Comparison of Combined Phacoemulsification With Dexamethasone Implant vs Anti-VEGF Injections in DME

First Author: Aditya KELKAR

Co-Author(s): Jai KELKAR, Subhasree DUTTA

Purpose: To compare the best corrected visual acuity (BCVA) and central macular thickness (CMT) outcomes of combined phacoemulsification with intravitreal dexamethasone implant (DEX-I) (54 eyes) versus anti-VEGF injections (47 eyes) in patients with diabetic macular edema (DME).

Methods: Changes in BCVA, CMT, and IOP were assessed over 3 months.

Results: At 1 and 3 months, both groups showed significant BCVA improvement and CMT reduction ($P < 0.05$), whereby the CMT reduction was more pronounced in the DEX-I group ($P < 0.05$). Transient IOP rise was noted in 14.8% of DEX-I eyes at 1 month, which normalized with topical medications by 3 months. The DEX-I group required fewer treatments, with no repetitions, while all eyes in the anti-VEGF group required three injections ($p < 0.0001$).

Conclusions: Combined phacoemulsification with DEX-I offers significant improvements in BCVA and CMT with fewer injections compared to anti-VEGF in DME, though close IOP monitoring is essential.

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Efficacy of Combined Intracameral Phenylephrine and Ketorolac in Cataract Surgery: A Systematic Review and Meta-Analysis

First Author: Amr ELROSASY
Co-Author(s): Shrouk F. MOHAMED, Kareem KHALEFA

Purpose: This meta-analysis aims to evaluate the efficacy and safety of intracameral phenylephrine and ketorolac (PE/K) 1.0%/0.3% in maintaining mydriasis and managing postoperative ocular pain compared to vehicle and epinephrine.

Methods: We conducted this meta-analysis according to the PRISMA guidelines 2020. We searched (PubMed, Scopus, Web of Science, Embase, Cochrane and Embase, and screened the retrieved records using Rayyan to detect the included studies. The data were extracted by two independent authors using standardized online sheets and then the risk ratios (RR) and their 95% confidence intervals (CI) were analyzed using RevMan 5.4 software.

Results: We included seven studies with a total of 219675 patients. Compared to the vehicle and epinephrine groups, the PE/K group showed a significantly lower number of patients taking any pain medications (RR = 0.72, 95% CI [0.60 to 0.86], $P = 0.0003$) and (RR = 0.44, 95% CI [0.24 to 0.81], $P = 0.008$) respectively. Patients with pupil diameter

less than 6.0 mm in the PE/K group were also significantly less than the vehicle and epinephrine groups (RR = 0.16, 95% CI [0.10 to 0.26], $P < 0.00003$) and (RR = 0.26, 95% CI [0.08 to 0.87], $P = 0.03$) respectively. **Conclusions:** Intracameral PE/K 1.0%/0.3% effectively maintains mydriasis and reduces postoperative ocular pain better than vehicle and epinephrine, requiring less pain medication and achieving optimal pupil dilation.

Apr 05, 2025 (Sat) 13:15 - 14:45
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Impact of Perioperative Dry Eye Treatment With Longer-Acting Diquafosol Sodium on Visual Outcomes After Cataract Surgery

First Author: Takeshi TESHIGAWARA

Purpose: We hypothesized that perioperative dry eye treatment with longer-acting diquafosol (LA-DQS) can improve postoperative tear film stability, ocular surface conditions, and visual outcomes in cataract operation with diffractive trifocal IOL implantation.

Methods: This multi-center, prospective, open-label study included 124 eyes of 62 patients with dry eye planning cataract surgery with diffractive trifocal IOL implantation for both eyes. For all patients, perioperative dry eye treatment with LA-DQS was performed from 4 weeks preoperatively to 3 months postoperatively only on one eye (treatment group), but not on the fellow eye (control group). Tear break-up time (TBUT), high-order aberrations (HOAs), superficial punctate keratopathy in the central part of the cornea (C-SPK), corrected distance visual acuity (CDVA), and contrast sensitivity were assessed at 1 week, 1 month, and 3 months postoperatively.

Results: Mean TBUT was significantly higher, mean C-SPK and HOAs were significantly lower, and mean CDVA was significantly better in the treatment group than in the control group at each assessment point ($P < 0.001$). Mean contrast sensitivity in the treatment group was significantly better than the control group throughout the period (< 0.001), and these tendencies were more remarkable in higher spatial frequencies.

Conclusions: We can expect perioperative dry eye treatment with LA-DQS to raise patients' satisfaction levels with diffractive multifocal IOL implantation.

Therefore, perioperative dry eye treatment with LA-DQS can become a more common approach than it currently is for patients with dry eye requiring cataract surgery with diffractive multifocal IOL implantation.

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One-Year Surgical Outcome of Combined Surgical Peripheral Iridectomy, Goniosynechialysis, and Goniotomy for Advanced PACG Without Cataracts

First Author: Fengbin LIN

Purpose: To evaluate the efficacy and safety of surgical peripheral iridectomy (SPI), goniosynechialysis (GSL), and goniotomy (GT) in advanced primary angle-closure glaucoma (PACG) eyes without cataract.

Methods: A prospective multicenter observational study was performed for patients who underwent combined SPI, GSL, and GT for advanced PACG without cataract. Patients were assessed before and after the operation. Complete success was defined as achieving intraocular pressure (IOP) between 6-18 mmHg with at least a 20% reduction compared to baseline, without the use of ocular hypotensive medications or reoperation. Qualified success adopted the same criteria but allowed medication use. Factors associated with surgical success were analyzed using logistic regression.

Results: A total of 61 eyes of 50 advanced PACG were included. All participants completed 12 months of follow-up. Thirty-six eyes (59.0%) achieved complete success, and 56 eyes (91.8%) achieved qualified success. Preoperative and postsurgical at 12 months mean IOPs were 29.7±7.7 and 16.1±4.8 mmHg, respectively. The average number of ocular hypotensive medications decreased from 1.9 to 0.9 over 12 months. The primary complications included IOP spike (n=9), hyphema (n=7), and shallow anterior chamber (n=3). Regression analysis indicated that older age (odds ratio [OR]=1.09; P=0.043) was positively associated with complete success, while a mixed angle closure mechanism (OR=0.17; P=0.036) reduced success rate.

Conclusions: The combination of SPI, GSL, and GT is a safe and effective surgical approach for advanced PACG without cataract. It has great potential as a first-line treatment option for these patients.

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Outcome Analysis in Patients Undergoing Immediate Sequential Bilateral Cataract Surgery (ISBCS) by Phacoemulsification and Manual Small Incision Cataract Surgery

First Author: Shruthy Vaishali RAMESH
Co-Author(s): Prasanna Venkatesh RAMESH

Purpose: The aim of the study was to evaluate safety, refractive outcomes, and patient satisfaction of immediate sequential bilateral cataract surgery. This is the first study worldwide involving two surgical procedures, phacoemulsification (n=606) with foldable IOL implantation and manual small incision cataract surgery (n=520) with rigid IOL implantation. This is the sixth-largest study done globally.

Methods: The data was gathered retrospectively from electronic medical records from June 2020 to 2022 over a period of 24 months. ISBCS was considered in patients with visually significant bilateral cataracts in both eyes who did not have any ocular comorbidities requiring combined procedures. ISBCS was abandoned in cases that have intraoperative complications in the first eye, which prevented the completion of surgery. SPSS version 20 was used for statistical analysis.

Results: Target postoperative refractive outcome was achieved in 92.04% in phacoemulsification and 89.36% in MSICS (p = 0.101). There was no incidence of endophthalmitis. The most common postoperative complication that was documented was striate keratopathy (78.04% in phacoemulsification, 68.75% in MSICS). None of the patients experienced complications in both eyes. The other complications experienced (phacoemulsification: MSICS) were posterior capsular rupture (9.76%: 6.25%), transient corneal oedema (2.44%: 18.75%), iris prolapse (4.88%: 6.25%) and vitreous thrust (4.88% in phaco). The complication rate was similar in both procedures (p = 0.242). Patient satisfaction was 95.6% in phacoemulsification and 92.05 % in MSICS.

Conclusions: This study provides evidence that ISBCS by experienced surgeons is likely to be a safe and efficient procedure and is positively received by patients.

Apr 05, 2025 (Sat) 13:15 - 14:45
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Peculiarities of Tactics and Clinical and Functional Results of Cataract Extraction in Patients With Keratoprosthesis

First Author: Valeriya MANTSOVA
Co-Author(s): Andrey GOLOVIN, Aleksandra PROSHKO

Purpose: To evaluate the results of cataract extraction in patients with keratoprosthesis.

Methods: An optical reconstructive surgical treatment of 30 patients (30 eyes) with severely damaged cornea included keratoprosthesis and cataract extraction at different times. All patients were divided into three groups. Group I included 10 eyes (10 patients) in which cataract extraction was performed simultaneously with corneal prosthetic complex transplantation. Group II included 15 eyes (15 patients) in which cataract extraction was performed during the 2nd stage of keratoprosthesis through the optical cylinder aperture or during optical cylinder replacement. Group III included 5 eyes (5 patients), in which cataract extraction was performed after keratoprosthesis by phacoemulsification or intracapsular cataract extraction.

Results: All 30 eyes had no intraoperative complications. The postoperative course was standard, with intraocular pressure normalization and edema resorption. The best corrected visual acuity was 0.05±0.3 after one week, - 0.05±0.6 after 1 month, and 0.1±0.7 after 3 months. **Conclusions:** Cataract extraction in patients after keratoprosthesis requires a differentiated approach and depends on lens density and concomitant ocular pathologies.

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Prospective Study of Small-Aperture Intraocular Lens Implantation in Eyes With Previous Refractive Procedures

First Author: Robert ANG

Purpose: To assess visual outcomes in cataract patients with contralateral implantation of a small-aperture IC-8 intraocular lens (IOL) in eyes with a history of either corneal inlay or laser refractive surgery.

Methods: Prospective, single-site study of 29 cataract patients with prior corneal refractive surgery. Sixteen patients had a history of keratorefractive surgery (post-refractive group [RG]), and 13 subjects were previously treated with a corneal inlay (post-inlay group [IG]). Both groups were treated in one eye with an IC-8 IOL, with a refractive target of -0.75D. Monocular and binocular uncorrected (UC), distance (D), intermediate (I), and near (N) visual acuity (VA), depth of focus, and visual symptoms were assessed at 12 months.

Results: For the RG, mean logMAR ± standard deviation (SD) monocular UCDVA, UCIVA, and UCNVA in IC-8 eyes at 12 months were 0.05±0.06 (20/22), 0.04±0.14 (20/22), and 0.09±0.13 (20/25), respectively. Binocular values were 0.02±0.05 (20/21), 0.02±0.11 (20/21), and 0.08±0.12 (20/24), respectively. For the IG, mean logMAR ± SD monocular UCDVA, UCIVA, and UCNVA in IC-8 eyes at 12 months were 0.10±0.09 (20/25), 0.05±0.08 (20/22), and 0.05±0.09 (20/22), respectively. Binocular values were 0.06±0.09 (20/23), 0.05±0.08 (20/22), and 0.05±0.09 (20/22), respectively. Defocus curve testing yielded 2.32D and 2.33D depth of focus in the RG and IG, respectively. Most visual symptoms were mild to very mild in both groups.

Conclusions: These results demonstrated that the small-aperture IOL provides good distance, intermediate, and near visual acuity for cataract patients with a history of prior corneal refractive surgery.

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The MF15 Optic in Slightly Compromised Eyes

First Author: David BECKERS
Co-Author(s): Lena BECKERS, Detlev BREYER, Florian KRETZ

Purpose: The purpose of this study was to evaluate the performance and safety of the MF15 OPTIC OF Extended Depth of Focus (EDOF) intraocular lensES (IOLS) from Teleon in patients with slightly compromised eyes, such as those with early-stage glaucoma or mild retinal diseases. The aim was to determine whether the MF15 optic can enhance visual outcomes and maintain high visual acuity in these challenging cases.

Methods: Patients with early-stage glaucoma or mild retinal diseases received the MF15 EDOF IOLs. Clinical evaluations assessed visual acuity at various distances. Patient-reported outcomes were collected to gauge satisfaction, adaptation, and quality of life improvements. The incidence of visual disturbances, such as halos and glare, was recorded to evaluate the optic's effectiveness.

Results: Patients with the MF15 optic achieved excellent visual acuity at far and intermediate distances, as well as functional near vision. The MF15 optic effectively minimized visual disturbances, contributing to a stable and clear visual field. Patients reported high levels of satisfaction, seamless adaptation, and significant quality of life improvements. The safety profile of the MF15 optic was confirmed, with no significant adverse events reported.

Conclusions: The MF15 optic from Teleon is a safe and effective choice for patients with slightly compromised eyes, such as those with early-stage glaucoma or mild retinal diseases. The study supports the use of the MF15 optic in these conditions, highlighting its potential to enhance visual outcomes, maintain high visual acuity and improve patient satisfaction and quality of life.

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Use of Selective Laser Capsulotomy for Mature White Cataracts: Initial Experience in Indian Eyes

First Author: Jai KELKAR
Co-Author(s): Harsh JAIN, Richard PACKARD

Purpose: To report the initial experience of performing capsulotomy in eyes with mature white cataracts using selective laser capsulotomy (SLC) in Indian eyes.

Methods: This was a prospective non-comparative open-label study. All adults presenting to our institution with mature cataracts whose pupils dilated >6mm and willing for phacoemulsification were invited to participate. During surgery, after staining the anterior capsule with CAPSULBlue (proprietary trypan blue), the CAPSULaser device was used to create a capsulotomy of size ranging from 5 to 5.5 mm, and phacoemulsification was carried out. The primary outcome was the size, centration, and continuity of the capsulotomy edge at the end of the surgery. Secondary outcomes were the surgical time for the capsulotomy, capsulotomy centration on the IOL at 3 months, and adverse effects.

Results: Thirty eyes of 30 patients were recruited with a mean age of 66.4 ± 8.3 years of which 17 (57%) were men. The intraoperative size of the capsulotomy was the same as intended in all eyes, and the edges were smooth. None of the eyes experienced any visible capsular tears or runout events; one had a capsular tag. The time for capsulotomy, including capsular staining, was 3 ± 0.23 minutes. All IOLs were well-centred at 3 months, with a capsulotomy size remaining the same. The endothelial cell count had dropped by 8% at 3 months post-op and vision improved significantly to 0.03 logMAR. None of the eyes experienced any intraoperative complications or laser-induced adverse effects.

Conclusions: SLC was a safe and effective technique providing precise, well-centered anterior capsulotomies in mature white cataracts.

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Venue: Suryamukhee Hall 401

Variation of Preoperative Cataract Surgery Assessments Using the Heine Lambda 100 Retinometer and Post-Phacoemulsification Visual Acuity in Cataract Patients as Determined by the Buratto Grading System

First Author: Humairah BACHMID

Co-Author(s): Ahmad ASHRAF, Hamzah HAMZAH, Muhammad Abrar ISMAIL

Purpose: The most common method for cataract surgery is phacoemulsification. Predicting post-operative visual acuity is crucial, and retinometer is a technique that utilizes light interference patterns on the retina as light passes through the pupil to provide patients with information about the potential outcomes of phacoemulsification surgery.

Methods: A prospective cohort study was conducted on 120 cataract patients who underwent phacoemulsification. The research sample was divided based on Buratto grading II-V without ocular and systemic complications. Retinometer was assessed before the surgery, and visual acuity was evaluated 30 days after phacoemulsification.

Results: The average age of the sample in this study was 61-70 years, with the majority female (55%). According to Buratto, the highest cataract grades in this study were grades II and V, at 25.8%. Pre-cataract surgery retinometer showed that 80.8% of patients were in the mild or no visual impairment category, while post-cataract surgery retinometer showed that 96.7% were in the mild or no visual impairment category. Best-corrected visual acuity (BCVA) post-cataract surgery revealed that 90% of patients were in the normal vision category. Significant differences were found between pre-surgery retinometer and post-surgery BCVA ($p < 0.05$). A relationship was also found between the difference in pre-surgery retinometer and post-surgery BCVA based on Buratto cataract grading ($p < 0.05$).

Conclusions: Retinometer is particularly helpful before cataract surgery, especially in cases of wide pupils, because it can help educate patients about the postoperative visual results of cataract surgery.

Apr 05, 2025 (Sat) 13:15 - 14:45

Venue: Suryamukhee Hall 401

Visual Performance of the Enhanced Monofocal Intraocular RayOne EMV[®] Lens After Cataract Surgery

First Author: Maria Isabela DE GUIA

Co-Author(s): Victor CAPARAS, Keshia Lourdes DUYONGCO

Purpose: To evaluate the visual outcome after bilateral implantation of the Enhanced Monofocal Intraocular Lens (IOL) RayOne EMV (Rayner, UK).

Methods: Fifteen patients (30 eyes) who underwent phacoemulsification for cataract at a single institution in Metro Manila, Philippines, were implanted with the RayOne EMV[®] IOL. At 2-8 days (T1) and 30-45 days (T2) from surgery, monocular/binocular uncorrected and distance-corrected visual acuity (VA) was tested at distances 4m (UDVA/CDVA), intermediate 80cm and 63cm (UIVA/DCIVA), near 40cm (UNVA/DCNVA), and near 33cm (UNVA/DCNVA). In addition, binocular defocus, contrast sensitivity (CS), glare/halos, and light/spectacle independence were tested.

Results: Mean spherical refraction (\pm SD) was $-0.12(\pm 0.21)$ diopters (D) at T1 and $-0.15D(\pm 0.23)$ at T2. Mean (\pm SD) binocular UDVA 4m, UIVA 80cm, UIVA 63cm, and UNVA 40cm at T2 were $-0.13(\pm 0.12)$, $0.37(\pm 0.12)$, $0.29(\pm 0.12)$, and $0.43(\pm 0.13)$ logMAR respectively; while mean (\pm SD) binocular CDVA 4m, DCIVA 80cm, DCIVA 63cm, and DCNVA 40cm at T2 were $-0.17(\pm 0.10)$, $0.39(\pm 0.10)$, $0.33(\pm 0.13)$, and $0.30(\pm 0.14)$ logMAR respectively. Binocular defocus curve revealed a VA from +2D up to -4.0D. 100% and 86% of subjects experienced H1 halos and G1 glares. Far and near mean monocular CS (\pm SD) at T2 were $1.36(\pm 0.09)$ logCS and $1.33(\pm 0.17)$, while mean binocular CS were $1.55(\pm 0.16)$ logCS and $1.56(\pm 0.16)$ logCS, respectively.

Conclusions: Implantation with the Enhanced Monofocal RayOne EMV provided an excellent postoperative VA for far distances and a very good vision for intermediate and near distances. These features, along with outstanding contrast sensitivity and very low level of halos and glare phenomena, yielded a high degree of patient satisfaction after surgery.

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FREE PAPERS

Apr 05, 2025 (Sat) 13:15 - 14:45

Venue: Suryamukhee Hall 401

Vivity IOL: Visual Outcomes, Quality of Life, and Patient Satisfaction in Cataract Surgery

First Author: Rabia NAAZ

Co-Author(s): Muskan MANGAL, Apurva MUKADAM

Purpose: To evaluate the visual outcomes, quality of life (QoL), and patient satisfaction with the Vivity Extended Range of Vision Intraocular Lens.

Methods: A total of 170 patients (mean age 61.67[±10.25] years; M: F = 105: 65) underwent Vivity IOL implantation. Outcome measures included binocular uncorrected distance visual acuity (UCDVA), uncorrected intermediate VA (UIVA), uncorrected near VA (UNVA), QoL, and patient satisfaction.

Results: At 1 month, all patients achieved UCDVA and UIVA of 6/6. Notably, 87% of patients achieved N8 or better on the UNVA, with 48.8% attaining N6, 38.2% N8, 12.4% N10, and 0.6% N12. Patient satisfaction was 54.7% for distant, 40.6% for intermediate, and 40.0% for near. 9% reported night driving difficulty and 1.8% glare.

Conclusions: The Vivity IOL provides excellent distance and intermediate vision with high patient satisfaction. Near vision outcomes were favorable, albeit few patients had night driving issues and glare.

Cornea, Dry Eyes, External Eye Diseases and Eye Banking

Apr 03, 2025 (Thu) 09:45 - 11:15

Venue: Suryamukhee Hall 401

A Paediatric Male Patient of Celiac Disease Having Trichomegaly

First Author: Syeda Ghazala SHAHNAWAZ

Purpose: Celiac disease is a chronic immune disorder triggered by gluten ingestion. Trichomegaly refers to eyelashes measuring more than 12mm in length accompanied by curling, thickening, and increased pigmentation. It may be the presenting feature of some diseases, e.g., Oliver–McFarlane syndrome, oculocutaneous albinism, HIV infection,

connective tissue disorders, etc. It can be induced by topical drugs (latanoprost) as well as systemic drugs (cyclosporine). Trichomegaly in celiac disease: A 4-year-old Pakistani male child having Celiac disease 3b, biopsy-proven and now on a gluten-free diet, was referred to the eye outpatient department (OPD) of a major tertiary hospital in Peshawar, Pakistan, for ophthalmological examination in February 2024. He appeared weak, lethargic, and irritable, sitting in his father's lap. He had weak, brittle scalp hair known as 'lupus hair' and intensely dry, pigmented skin. The whole body exhibited scaly dermal lesions, especially on the scalp, neck, back, legs, and feet.

Methods: His lab reports showed hypocalcemia, hypophosphatemia, urinary tract infection, and dysentery. He was placed on a gluten-free soft diet with rich calorie intake (nutritional rehabilitation) along with intravenous ceftriaxone, vitamin D (oral and injectable), and multivitamin syrups. With treatment, the patient showed dramatic improvement.

Results: During the eye examination, the patient could not open his eyes due to photophobia. However, on cycloplegic refraction, no significant refractive error was found. There was bilateral anterior blepharitis with sticky eyelid margins. The eye lashes were abnormally long and thin, measuring more than 15 mm in length that is 'trichomegaly'. There was also allergic conjunctivitis with corneal edema. The pupil and iris details were, however, visible with no signs and symptoms of uveitis. The fundus appeared normal.

Conclusions: Hence, this is a case of a celiac disease paediatric patient having trichomegaly. He was started on antiallergic, antibiotic, and lubricant eyedrops and ointment.

Apr 03, 2025 (Thu) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Clinical Performance of Two Daily Disposable Toric Soft Contact Lenses – Verofilcon A Versus Etafilcon A

First Author: Inma PEREZ-GOMEZ
Co-Author(s): Brenda EDWARDS, Bradley HINES, Anjana PARAMESWARAN, Mark PERRY, Lakshman SUBBARAMAN

Purpose: To compare the clinical performance of two daily-disposable toric soft contact lenses (SCLs), verofilcon A and etafilcon A.

Methods: A prospective, randomized, controlled, double-masked, crossover study was conducted at 8 sites in the US (July-September 2021). Participants (≥ 18 years) were randomized 1:1 to bilaterally wear verofilcon A or etafilcon A toric SCLs for 8-11 days. The primary endpoint was distance visual acuity (DVA; logMAR) at week 1 (noninferiority margin=0.05 logMAR). Exploratory endpoints included subjective ratings for overall preference at the end of the study; insertion handling, insertion comfort, and overall comfort at 16 hours (scores: 1=poor to 10=excellent); and lens position (3-point scale: 0=optimal lens centration to 2=unacceptable decentration) and lens movement (5-point scale: -2 [unacceptably tight] to +2 [unacceptably loose]) at week 1.

Results: Of 114 participants (mean \pm SD age: 32.3 \pm 10.1 years; females: 61.4%), 112 participants completed the study. At week 1, verofilcon A was noninferior to etafilcon A for DVA (mean \pm SD logMAR: -0.08 \pm 0.08 vs -0.07 \pm 0.07; 95% UCL of LSM difference: -0.01). 63.3% of subjects preferred verofilcon A ($p=0.0035$ vs hypothesized 50.0%). Verofilcon A rated higher (mean \pm SD) than etafilcon A for insertion handling (9.1 \pm 1.0 vs 7.8 \pm 2.0; $p<0.0001$), insertion comfort (9.0 \pm 1.2 vs 8.1 \pm 1.8; $p<0.0001$), and overall comfort at 16-hours (8.0 \pm 2.0 vs 7.3 \pm 2.1; $p=0.0002$). Both toric SCLs demonstrated optimal lens centration/acceptable decentration (100%) and optimal/acceptable lens movement (primary and peripheral gazes: 100%) at week 1.

Conclusions: Verofilcon A toric lens performed better than etafilcon A for insertion handling, insertion comfort, and overall comfort at 16 hours. Both daily-disposable toric SCLs showed optimal lens centration/acceptable decentration and optimal/acceptable lens movement at week 1.

Apr 03, 2025 (Thu) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Collagen-Based Artificial Cornea: Comprehensive In Vivo and Clinical Case Studies

First Author: Andrey ANDREEV
Co-Author(s): Sergey DOMOGATSKY, Egor OSIDAK

Purpose: To develop an alternative biomaterial for keratoplasty to address the global shortage of donor corneas.

Methods: In this work, we assembled a strong, transparent, biocompatible Viscoll collagen membrane (VCM) by using only highly concentrated collagen I type. We performed in vitro, in vivo, and clinical case studies to check its effectiveness on the regeneration of damaged cornea.

Results: When VCM was implanted in the rabbit corneal pocket, it increased the overall thickness of the cornea and improved corneal strength. In addition, the cornea remained transparent for six months after surgery. In another study, part of the stroma was removed and replaced with a collagen membrane. After six months, active migration of host cells into the collagen was observed, and the corneas of all experimental animals remained transparent. In addition, we discovered the growth of nerve fibers in the collagen membrane, which indicates efficient integration of our material with corneal tissue. In clinical trials, VCM has been used for peripheral lamellar keratoplasty as a donor tissue alternative. Complete epithelialisation of the collagen membrane was observed on the fourth day after surgery. Nine-month follow-up showed good integration of the collagen membrane with the surrounding tissues and preservation of transparency with no signs of material rejection.

Conclusions: Taken together, these data suggest that VCM has real potential to solve a global problem and can be used as an alternative to human donor corneas for lamellar keratoplasty. However, further clinical trials and longer follow-ups are needed to make a more accurate assessment.

Apr 03, 2025 (Thu) 09:45 - 11:15
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Corneal Regeneration With Intrastromal Stem Cell Implantation for Keratoconus With 5-Year Follow-Up Results

First Author: Ceren Ece SEMIZ
Co-Author(s): Fetih Furkan ARSLAN, Njomza HIMA-MUSA, Merjem PURELKU, Faruk SEMIZ, Gamze TANRIVERDI

Purpose: To investigate the presence and potential of telocytes and stem cells in the stroma extracted via SMILE surgery from myopic and keratoconus patients several years post-treatment. NCT04591587

Methods: Sixty eyes with advanced keratoconus necessitating corneal transplantation underwent fresh myopic lenticule (FML) transplantation via SMILE surgery. A total of six lenticule samples taken from an untreated keratoconic eye and five treated keratoconic eyes at 1, 2, 3, 4, and 5 years post-surgery were examined using immunohistochemistry with CD34 antibodies and double immunofluorescence analysis with CD34/PDGFR-β and CD34/c-kit to confirm the presence of telocytes and progenitor cells in each sample.

Results: In the untreated keratoconic lenticule, CD34 staining revealed irregular, thinned collagen fibers and a reduction in cell numbers and degenerative morphological features. An initial rise in stromal cell numbers, including CD34-positive progenitor cells and telocytes, was noted in lenticules from 1, 2, and 3 years post-surgery. However, a decrease in cell numbers was observed in lenticules from 4 and 5 years. Double immunofluorescence staining for CD34/PDGFR-β and CD34/c-kit confirmed the unique immunophenotype and morphology of telocytes.

Conclusions: Fresh myopic intrastromal lenticule transplantation is a safe, cost-effective, and reliable procedure that enhances corneal thickness, improves visual acuity, and facilitates corneal repair. This regenerative process is driven by active progenitor cells and telocytes, which play a crucial role in renewing stromal tissue.

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Fresh Human Myopic Lenticule Intrastromal Implantation for Keratoconus Using Smile Surgery in a Long-Term Follow-Up Study: Ultrastructural Analysis by Transmission Electron Microscopy

First Author: Ceren Ece SEMIZ
Co-Author(s): Njomza HIMA-MUSA, Merjem PURELKU, Faruk SEMIZ, Gamze TANRIVERDI

Purpose: To investigate new intrastromal histological structures that develop after myopic human lenticular implantation in keratoconus with femtosecond laser-assisted small incision lenticule extraction (SMILE) surgery using transmission electron microscopy.

Methods: Sixty eyes with advanced keratoconus indicated for corneal transplantation were included in this study. Fresh myopic lenticular implants were placed in all eyes through SMILE surgery. Lenticular implants were extracted from patients with myopic refractive errors of the cornea, untreated keratoconus, and treated keratoconus following 1, 2, and 3 years of surgery. These five lenticule samples were examined under the electron microscope and compared.

Results: Disorganized and thinned collagen fibers were observed in the stroma, with degenerative stromal cells (telocyte-like cells and keratocytes) in the keratoconic cornea. Apoptotic bodies and cell debris were easily observed near the disorganized fibers. In contrast, the myopic refractive error of the control and treatment groups demonstrated well-organized parallel lamellar structures. Healthy keratocytes and telocyte-like cells were observed in samples obtained 1, 2, and 3 years after lenticular implantation. Thus, telocyte-like cells may be activated by appropriate stimuli, such as stem cells, and be involved in stromal regeneration.

Conclusions: Fresh myopic intrastromal lenticule implantation is a safe, economical, and reliable technique that leads to increased corneal thickness, improved visual acuity, and the regeneration of healthy keratocytes and telocyte-like cells that are involved in stromal regeneration.

Apr 03, 2025 (Thu) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Implications of Conjunctival Dysbiosis in Immunoglobulin G4-Related Ophthalmic Disease

First Author: Kenneth LAI

Co-Author(s): Clement C THAM, Kelvin Kam-lung CHONG, Calvin PANG, Wilson YIP, Alvin Lerrmann YOUNG

Purpose: We aim to investigate the conjunctival microbiome composition and potential clinical implications in Immunoglobulin G4-related ophthalmic disease (IgG4-ROD) patients.

Methods: This study included 38 biopsy-proven IgG4-ROD patients and 38 age- and sex-matched healthy subjects. Patients were managed at the Hospital Authority and 2 private sectors between 2005 and 2022. Conjunctival swabs were performed in all patients along the lower eyelid fornix. Ocular surface microbiome analysis by 16S rRNA amplicon (V3 to V4 region) using polymerase chain reaction and sequenced on the Illumina HiSeq 2500 sequencing platform.

Results: A total of 38 worse affected eyes of 38 IgG4-ROD patients (25 males), aged 67±9 years, and 38 right eyes of 38 matched healthy subjects were compared. Both Bacteroidetes (P<0.0005), Cyanobacteria (P=0.0053) and Firmicutes (P=0.0077) had significantly increased relative abundance when compared to healthy subjects. The relative abundance of Proteobacteria (P<0.0005) was reduced. Bacteroidetes were positively correlated with the number of extra-ophthalmic organ involvement (r=0.36, P=0.031). No correlation was found between the microbiome and age, serum IgG4 level, ocular surface parameters (non-invasive tear film break-up time) the degree of meibomian dropout.

Conclusions: This study is the first to report the ocular microbiota composition in IgG4-ROD patients. The findings provide pilot data to further study the clinical implication of ocular surface microbiome in IgG4-ROD including diagnosis-making, activity monitoring, and the extent of systemic involvement.

Apr 03, 2025 (Thu) 09:45 - 11:15
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Isolation and Culture of Human Corneal Stromal Cells (CSCs) and Co-Culture of Exosomes Derived From Umbilical Cord & Corneal Stromal Cells

First Author: Ashok SHARMA

Co-Author(s): Janardhana B, Rajan SHARMA

Purpose: Isolation and culture of human Corneal Stromal Cells (CSCs) by explant culture method and subsequent isolation of exosomes from the culture media of corneal stromal cells (CSCs), umbilical cord-derived MSCs (UCMSCs), and co-culture of CSCs and UCMSCs.

Methods: Exosomes generated by Mesenchymal Stem Cells (MSCs) have been found to offer a unique treatment approach for a variety of ailments, control inflammation, promote cell proliferation, and speed up wound healing. We isolated corneal stromal cells from the corneal tissue provided. We then performed FACS-based cell-specific marker studies to analyze and confirm the presence of corneal stromal cells in the isolated cell population. We used the precipitation method to extract exosomes from human Umbilical Cord Mesenchymal Stem Cells (hUCMSC), human Corneal Stromal Cells (hCSC), and a co-culture of hUC-MSC and hCSC.

Results: We found that more than 96% of cells were positive for stromal cell markers. Specifically, we looked for the expression of CD90, CD73, and PAX6 markers, as well as the expression of haematopoietic markers like CD34, CD45, and corneal keratocyte marker expressions such as CD33 and CD133. These stromal cells were used to isolate exosomes and analyze their wound-healing properties, in vitro.

Conclusions: We found that those exosomes derived from the co-culture of hCSCs and hUCMSCs were more bioactive and efficient in nature than exosomes isolated from hCMSC and hUC-MSC individually.

Apr 03, 2025 (Thu) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Low-Level Light Therapy and Intense Pulse Light Therapy in Meibomian Gland Dysfunction: A Meta-Analysis

First Author: Kai En CHAN
Co-Author(s): Giuseppe GIANNACCARE, Blanche Xiao Hong LIM, Chris Hong Long LIM, Fiona STAPLETON, Louis TONG

Purpose: Meibomian gland dysfunction (MGD) is a leading cause of dry eye disease, affecting over a third of the global population. This disease is associated with ocular discomfort, reduced visual quality, and quality of life. Novel treatments like Intense Pulse Light (IPL) therapy and Low-Level Light Therapy (LLLT) have been reported to be useful in refractory MGD treatment. However, no systematic review has explored the utility of combining these two therapies.

Methods: Medline, Embase, and CENTRAL databases were searched for articles on LLLT+IPL therapy in MGD. A meta-analysis of single means was conducted to assess clinical endpoints.

Results: Analysis of 12 studies showed that LLLT+IPL therapy in MGD patients led to a significant decrease in Ocular Surface Disease Index score (MD: -22.8, 95%CI: -29.1 to -16.5, I²=97.5%, p<0.001), and a significant increase in both Tear Break-up Time (MD: 2.2s, 95%CI: 0.9s to 3.4s, I²=98.6%, p<0.001) and Schirmer test (MD: 1.5mm, 95%CI: 0.6mm to 2.5mm, I²=0.0%, p=0.001) at ≤3 months post-treatment. These improvements were sustained in a sensitivity analysis at endpoints ≥6 months post-treatment. While the percentage of loss of meibomian gland area (n=4, MD: -3.8%, 95%CI: -7.2% to -0.4%, I²=40.0%, p=0.031) was reported to be significantly reduced, this was not found to be sustained at endpoints ≥6 months post-treatment (n=2, MD: 5.9%, 95%CI: 1.8% to 10.0%, I²=0.0%, p=0.005) in two studies.

Conclusions: This meta-analysis provides quantitative evidence supporting the clinical efficacy of LLLT+IPL therapy in MGD. Future research should evaluate its long-term safety and efficacy and compare it with alternative treatments.

Apr 03, 2025 (Thu) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Ocular Complications and Treatment in Patients With Facial Paralysis: A Multi-Institutional Study in Taiwan

First Author: Po-yi WU
Co-Author(s): Hung-chi CHEN

Purpose: To identify predictors for ocular complications and investigate treatment approaches in patients with facial paralysis (FP) in Taiwan.

Methods: Patients with FP recorded in the Chang Gung Research Database between 2001 and 2022 were enrolled.

Results: Among 36,382 patients with FP, 55.38% were diagnosed with Bell's palsy, 4.95% with stroke, and 4.55% with head and neck injury. Ocular complications developed in 9.22% of patients. Factors associated with increased risk included aging (odds ratio [OR]: 1.02; 95% confidence interval [CI]: 1.02–1.03), comorbidities such as chronic obstructive pulmonary disease (OR: 1.72; 95% CI: 1.50-1.96), peripheral arterial disease (OR: 1.44; 95% CI: 1.11-1.85), heart failure (OR: 1.31; 95% CI: 1.06-1.62), etc., and etiologies of head and neck injury (OR: 2.51; 95% CI: 2.18-2.89), head and neck tumors (OR: 1.35; 95% CI: 1.11-1.64), brain tumors (OR: 2.42; 95% CI: 2.01-2.91), birth trauma (OR: 1.86; 95% CI: 1.51-2.28), and otitis media (OR: 1.44; 95% CI: 1.13-1.83). Protective factors included male gender (OR: 0.71; 95% CI: 0.66-0.76), old stroke (OR: 0.57; 95% CI: 0.48-0.68), and etiology of Bell's palsy (OR: 0.75; 95% CI: 0.69-0.82). Surgeries were required in 10.35% of patients, including 1.34% with dynamic surgeries (muscle transfer or/and neurotization), 0.98% with static eyelid surgeries, and 0.05% with corneal transplantation.

Conclusions: Bell's palsy, the predominant FP etiology, poses a lower risk of ocular complications than other causes. Female gender, aging, and certain comorbidities increase the risk of complications.

Apr 03, 2025 (Thu) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Ocular Morphology and the Ocular Surface in Long-Term Scleral Shell Prosthesis Wearers: A Prospective Study

First Author: Janice YEOMAN
Co-Author(s): Robert JACOBS, Stuti MISRA, Keith PINE, Brian SLOAN

Purpose: Scleral shell prostheses (SSPs) are fitted over blind disfigured eyes to restore appearance, facilitate eyelid function, and offer psychosocial benefits to the wearer. This prospective study characterises ocular morphology and the ocular surface features of long-term SSP wearers for the first time.

Methods: Interpalpebral fissure dimensions, iris size, corneal sensitivity threshold using non-contact corneal aesthesiometry, and ocular surface characteristics were assessed for both affected and companion eyes of SSP wearers. **Results:** Eighteen people were recruited: median age 54.5 years (range 27-83 years), 55.6% male. Duration of SSP wear ranged from 2 to 68 years (median 14 years). Interpalpebral fissure dimensions ranged from 23.8% to 92.3% of the companion side horizontally; and 25% to 87.5% of the companion side vertically. Horizontal iris diameter ranged from 13% to 88.9% of the companion eye. The corneal sensitivity threshold was not significantly different between the two eyes (affected eye: 0.53 ± 0.56 mbar; companion eye: 0.75 ± 0.63 mbar; $p=0.1113$). The SSP-wearing side had significantly greater conjunctival redness, papillae, lid wiper epitheliopathy, and meibomian gland atrophy compared to the companion side (all $p<0.05$).

Conclusions: SSPs can be worn successfully over eyes with varied morphologies. Globe volume (estimated by interpalpebral fissure dimensions), iris size, and non-contact corneal sensitivity alone do not seem to predict wearing success. Long-term SSP wear negatively impacts the ocular surface. Assessment and management of ocular surface complications is important in supporting ongoing SSP wear.

Apr 03, 2025 (Thu) 09:45 - 11:15
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Ocular Surface Characteristics of Congenital Isolated Lacrimal Gland Agenesis

First Author: Lingyi LIANG
Co-Author(s): Ziyang CHEN

Purpose: To investigate ocular surface characteristics in patients with congenital isolated lacrimal gland agenesis (LGA), which serves as a prototypic condition to understand how aqueous tear deficiency affects the entire ocular surface.

Methods: In this retrospective study, five LGA patients showed bilateral aplasia (6/10 eyes), unilateral aplasia (2/10) with hypoplasia (1/10), or normal (1/10) in the other eye. Corneal sensation, in vivo confocal microscopy, meibography, and ocular surface parameters were conducted and evaluated.

Results: Nine LGA eyes initially presented with reduced or absent reflex tearing and gradually developed superficial punctate keratopathy (SPK, 5/9 eyes) and persistent corneal epithelial defect (PED, 4/9), the severity of which was related to age and bilateral vs. unilateral aplasia. Seven of nine eyes developed neurotrophic keratopathy and presented with reduced corneal sensation and sub-basal nerve density. Additionally, it was accompanied by meibomian gland dropout (5/9), loss of Vogt's palisades (5/9), pterygium (3/9), and tarsal conjunctival scarring (5/9). Punctal occlusion (PO) with or without autologous serum reduced SPK without improvement of the neurotrophic state. PO with recombinant human nerve growth factor reduced PED with the improvement of corneal nerve density but not the reduction of dendritic cell infiltration. PO with repeat self-retained amniotic membrane improved nerve density and resolution of dendritic cell infiltration that lasted for 6 months.

Conclusions: Progressive corneal surface breakdown with LGA is associated with the development of neurotrophic keratopathy accompanied by meibomian gland dropout and loss of Vogt's palisades. Comprehensive measures directed to correct the neurotrophic state should be included to restore ocular surface health in LGA patients.

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FREE PAPERS

Apr 03, 2025 (Thu) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Same Day Consecutive Bilateral Corneal Cross-Linking - Preventing Progression While Waiting for Second Eye Procedure

First Author: Akilesh GOKUL
Co-Author(s): Lize ANGELO, Tiwini HEMI, Charles MCGHEE, Mohammed ZIAEI

Purpose: To investigate if adopting bilateral sequential corneal crosslinking (CXL) can prevent keratoconus progression while waiting for the second eye.

Methods: Retrospective cohort study of subjects with keratoconus who underwent sequential bilateral CXL 2013-2023. All subjects with bilateral progressive keratoconus received CXL in the eye with more advanced disease first, and qualifying fellow eyes were performed at a later date. Progression of the second eye was measured over the waiting period for to determine if avoidable progression could have been prevented with bilateral simultaneous CXL. Data collected included demographic, clinical, and tomographic data of each eye taken at the time of waitlisting, waiting times for the procedure, and progression while waiting for the procedure.

Results: A total of 153 subjects received bilateral CXL between 2013-2023. Māori and Pasifika were significantly more likely to receive CXL for both eyes compared to Europeans and Asians ($p < 0.01$). Among them, 116 (75.82%) had the fellow eye waitlisted at the time of the first eye procedure, and 49 (42.20%) of those experienced significant progression with a mean change Kmax and TCT of $1.91 \pm 2.08D$ and -8.8 ± 7.8 microns over a mean waiting period of 159.12 ± 92.28 days, respectively. Risk factors for progression of the fellow eye while awaiting CXL were found to be long waiting periods ($p < 0.01$) and younger age ($p < 0.05$).

Conclusions: Performing bilateral sequential CXL may prevent progression in fellow eyes and provide better visual outcomes for subjects with bilaterally progressive keratoconus.

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Venue: Suryamukhee Hall 401

Twelve-Month Outcomes of Pulsed Corneal Cross-Linking for Keratoconus: A Real-World Study Using the Save Sight Keratoconus Registry

First Author: Stephanie WATSON
Co-Author(s): Francisco ARNALICH-MONTIEL, Himal KANDEL, Maria QURESHI, Adam WATSON

Purpose: To report the efficacy and safety of pulsed corneal cross-linking (pCXL) and compare the outcomes with that of continuous cross-linking (cCXL) in eyes with keratoconus.

Methods: Data from 18 practices in Australia, New Zealand, and Spain entered in the Save Sight Keratoconus Registry were included. 72 eyes of 50 patients (mean age 22.8 ± 10.4 years; male 74.5%) underwent pCXL, and 465 eyes (386 patients, 24.4 ± 8.8 years; male 68.1%) underwent cCXL. Outcome measures included changes in visual acuity, corneal curvature, and minimum corneal thickness (MCT), and frequency of adverse events. The outcomes were compared using paired t-test and Chi-squared test.

Results: In pCXL cases, compared to baseline the visual outcomes and keratometry (Kmax and K2) outcomes were unchanged (all $p > 0.05$). The difference between changes in visual, keratometry, and pachymetry outcomes in pCXL and cCXL groups were not statistically significant (mean change in habitual visual acuity 1.3 vs 3.0 logMAR letters, pinhole visual acuity 1.7 vs 1.9 logMAR letters, Kmax -0.1 vs $-0.2D$, K2 -0.2 vs $-0.4D$, -8.8 vs $-12.8 \mu m$, respectively; all $p > 0.05$). Clinically significant haze was recorded less commonly in eyes with pCXL (6 eyes, 8.3%) than in eyes which underwent cCXL cases (92 eyes, 19.8%; $p = 0.029$).

Conclusions: pCXL was associated with comparable visual and keratometry outcomes to that of cCXL. Clinically significant haze was less commonly recorded in the pCXL group than in the cCXL group.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Mogra Hall 404 A

A Comparative Study on Effect of Vectored Thermal Pulsation Along With Hot Fomentation Versus Hot Fomentation Alone in Dry Eye Patients

First Author: Pooja KESARWANI
Co-Author(s): Virendra AGRAWAL, Amit MISHRA

Purpose: To compare the effectiveness of thermal vectored pulsation (LipiFlow) along with hot fomentation & massage versus hot fomentation & massage alone in treating dry eye disease.

Methods: The study was a 12-month non-randomized, comparative, and prospective analysis with two groups: Intervention Group: Received vectored thermal pulsation (LipiFlow system) plus standardized warm compresses and massages twice daily. Control Group: Received only standardized warm compresses and massages twice daily. Study parameters- Ocular Surface Disease Index (OSDI) score Schirmer I test (SIT) Meibum quality and expression grading Lipid layer thickness (LLT) Meibography Tear breakup time (TBUT) Tear meniscus height (TMH) SPSS 26.0 version was used for all statistical calculations.

Results: This study involved 88 participants (51 males, 37 females) aged 19-73 years, assessing the efficacy of an intervention over 12 months. While there was no significant difference in the mean OSDI score between groups, the intervention group showed statistically significant improvements in TBUT, meibum quality, and meibum expression up to 6 months, with these differences becoming non-significant at 12 months. LLT improved significantly up to 6 months ($P < 0.005$) but not at 12 months ($P = 0.153$). SIT scores showed significant improvement at 1 and 3 months but were non-significant thereafter. TMH differences were largely non-significant except at 3 months, where the control group showed significant improvement ($P = 0.027$). No change in the area of gland loss was observed over 12 months.

Conclusions: Vectored thermal pulsation (Lipiflow) along with hot fomentation is more effective than hot fomentation alone in dry eye patients.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Mogra Hall 404 A

A Synergistic Therapeutic Nano Eyedrop for Dry Eye Disease Based on Ascorbic Acid-Coupled Exosomes

First Author: Jing FENG
Co-Author(s): Fang MA, Yong TAO

Purpose: In this study, we report on the creation and use of an advanced eyedrop composed of AA-coupled mExo (mExo@AA) for the treatment of DED.

Methods: mExo@AA were prepared based on the deposition of gold nanoparticles (AuNPs) reduced by AA onto the exosomal phospholipid membrane in situ. The therapeutic value of mExo@AA for DED was demonstrated in a mouse DED model.

Results: Characterization of the mExo@AA product showed that AA was successfully loaded onto the mExo with a maximum loading efficacy of about 509 nM/mg. Further experiments indicated that mExo@AA showed good biosafety even at a high concentration of 1 mg/mL. Additionally, the in vitro and in vivo experiments indicated that mExo@AA had a superior capacity to promote corneal cell growth, scavenge ROS, and inhibit inflammation compared to either of its components alone. Thus, we provide convincing evidence that mExo@AA can be used as an effective therapeutic agent for DED. Notably, mExo@AA not only ameliorated DED symptoms but also reversed DED-associated pathological changes at both the cellular and tissue levels.

Conclusions: This study suggests that the mExo@AA is effective and safe as a therapeutic agent for the treatment of DED.

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FREE PAPERS

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Mogra Hall 404 A

Association of Tear Lacritin With Dry Eye Disease (DED) and Its Severity in Patients With Rheumatoid Arthritis (RA) and Systemic Lupus Erythematosus (SLE)

First Author: Diah IBRAHIM
Co-Author(s): Ahmad ASHRAF, Hasnah EKA, Bumi HERMAN, Habibah MUHIDDIN

Purpose: Our study examined lacritin levels in tears of RA and SLE patients and explored its relationship with DED and its severity.

Methods: In total, 64 participants underwent an ophthalmic examination that included an interview for OSDI, slit-lamp for TBUT and fluorescein tests, Schirmer I, and Meibography tests. Furthermore, tear samples were collected to determine lacritin levels using the ELISA method. Bivariate analyses were used to examine the relationship between clinical characteristics, including lacritin, and DED and DED severity. To investigate the relationship between lacritin and continuous variables, Pearson and Spearman correlation tests were performed. In addition, binary logistic regression and plot decision analysis were employed to predict the severity and factors associated with DED.

Results: This cross-sectional study included 16 patients with RA and 48 patients with SLE. Of these, 38 had DED, while 26 did not. The findings indicated that lacritin decreased with increasing DED severity. There was a significant difference in lacritin levels between DED and non-DED ($P=0.021$) and between non-DED with severity subgroups ($P=0.039$). In addition, binary logistic regression revealed that increased DED risk was associated with increasing age ($OR=1.049$; $P=0.44$), decreasing lipid layer thickness ($OR=0.91$; $P=0.001$), and lower lacritin levels ($OR=0.667$; $P=0.013$).

Conclusions: These data suggest that DED in patients with RA or SLE is associated with age, lipid layer thickness, and lacritin. These findings underscore the importance of lacritin in the pathogenesis of DED in patient with RA and SLE.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Mogra Hall 404 A

Correlation Between Corneal Concentration and MIC of Antifungals in Patients Undergoing Therapeutic Keratoplasty for Fungal Keratitis

First Author: Prafulla MAHARANA
Co-Author(s): Nishat HUSSAIN AHMED, Thirumurthy VELPANDIAN

Purpose: To correlate corneal concentration and minimum inhibitory concentration (MIC) of antifungal drugs in patients undergoing therapeutic penetrating keratoplasty (TPK) for fungal keratitis.

Methods: The study included 43 culture/smear-proven fungal keratitis undergoing TPK due to inadequate responses to natamycin (NTM) and/or voriconazole (VCZ). The host corneal tissue was analyzed using Liquid Chromatography Mass Spectrometry (LCMS) to measure the intra-corneal concentrations of NTM and VCZ. Antifungal susceptibility testing was performed using the E-test method.

Results: The mean age of study participants was 48.11 ± 15.22 years. Aspergillus spp were the most commonly identified fungi. The mean intra-corneal concentration of NTM was $80.76 \pm 107.59 \mu\text{g/gm}$ ($n=30/43$), while that of VCZ was $0.0962 \pm 0.25 \mu\text{g/gm}$ ($n=32/43$). Over 85% of cases had VCZ MIC-90 higher than its intra-corneal concentration. In the case of NTM, 61.9% of cases had intra-corneal concentration higher than its MIC-90. More than half of the cases with NTM concentration above the MIC-90 had a poor clinical response. The corneal concentration of the drug was noted to be independent of the infiltrated area, depth, duration from initiation of antifungals to TPK, and the time gap from the last dose of antifungal to TPK.

Conclusions: Poor drug penetration is an important factor in the poor response to antifungal therapy. As per the results of this study, drug penetration of VCZ is poorer than that of NTM. Factors other than drug penetration contribute to the response to therapy in cases of fungal keratitis.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Mogra Hall 404 A

Endothelial Keratoprosthesis in Pseudophakic Corneal Decompensations: Longitudinal Analysis

First Author: Lional Raj DANIEL RAJ PONNIAH

Purpose: To evaluate the safety and effectiveness of implanting novel synthetic corneal endothelial substitutes (endothelial keratoprosthesis) in pseudophakic chronic endothelial dysfunctions.

Methods: Prospective open-label clinical safety & efficacy evaluation. Endothelial dysfunction following PBK not associated with systemic diseases like Herpes or prior corneal surgeries was subjected to central 6.5mm synthetic endothelial substitute after 7.0mm descemetorhexis & attached with C3F8 gas (85% fill in the AC). Pre and post-operative central pachymetry (mic.), vision (ETDRS characters), and pain analog (1-100) were analyzed in addition to re-bubbling rates & toxicities, followed up monthly for 24 months.

Results: Twelve cases were enrolled. The longest follow-up is 24 months, lowest is 12 months. Baseline vision was 10.54+/- 2.2 ETDRS characters, which improved to 41.75+/-8.7 characters by M-1 and retained at 60.72+/-13.1 characters by M-12. The mean central pachymetry reduced from 720 mic, to 552 mic. by M-1 & maintained at 491 mic. by M-12. The presenting pain was 91.9+/-2.3 & was 7.7+/-2.5 at M-12 ($p < 0.0001$). No immunologic or other adverse reactions were noticed. None were explanted. 4 cases needed re-bubbling (D7, D7, D12 & 21, D7, D14 & M3). One subject died after 6 months. Postmortem HPE reports revealed epithelialization and fibrosis along the implant edges favoring long-term device retention.

Conclusions: Endothelial keratoprosthesis improved vision, reduced edema caused by pseudophakic endothelial dysfunctions & was not associated with toxicities until month 12, and is continuously monitored. Synthetic endothelial substitutes could be an alternative to EK with no risks of rejection events or graft failures, and could change the practice pattern of "Transplant to Implant Science".

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Mogra Hall 404 A

Epi-On vs Epi-Off Corneal Cross-Linking for Keratoconus: 12 Months Outcomes From Save Sight Keratoconus Registry

First Author: Himel KANDEL

Co-Author(s): Grace BORCHERT, Jern Yee CHEN, Aanchal GUPTA, Richard MILLS, Stephanie WATSON

Purpose: To evaluate the efficacy and safety of transepithelial corneal cross-linking (epi-on CXL), and compare the outcomes with that of conventional (epi-off) CXL in eyes with keratoconus

Methods: A total of 1256 eyes (1014 patients; mean age \pm SD, 25.7 \pm 9.3 years; male, 71.3%) from 25 international sites with CXL for keratoconus had follow-up data at one year and met the inclusion criteria. 1209 eyes (983 patients) had undergone epi-off CXL and 47 eyes (38 patients) had undergone epi-on CXL. The outcome measures included changes in visual acuity, keratometry, minimum corneal thickness, and incidence and prevalence of adverse events. The outcomes were compared using mixed-effects regression models adjusted for age, sex, visual acuity, keratometry, pachymetry, doctor, practice, and eye laterality.

Results: The adjusted mean changes (95% CI) in outcomes were similar in epi-on and epi-off CXL in visual acuity [4.8 (-0.3, 9.9) vs 4.0 (1.3, 6.8) logMAR letters respectively], Kmax [-1.4 (-2.6, -0.1)D vs -0.5 (-0.9, -0.1)D respectively], K2 [-0.4 (-1.2, 0.4) D vs -0.3 (-0.5, -0.1)D respectively] or minimum corneal thickness [-2.6 (-12.6, 7.5) μ m vs -12.5 (-15.5, -9.4) μ m, respectively] (all $p > 0.05$). At the 1-year follow-up visit, no adverse event was recorded in the epi-on group, whereas 56 (4.6) eyes with the epi-off CXL had adverse events (haze 33, scarring 20, microbial keratitis 1, stromal oedema 1, corneal neovascularisation 1).

Conclusions: The epi-on CXL was associated with similar visual, keratometry, and pachymetry outcomes compared to the epi-off CXL. Unlike the epi-off group, no adverse events were recorded in the epi-on group.

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FREE PAPERS

Apr 06, 2025 (Sun) 09:45 - 11:15
 Venue: Mogra Hall 404 A

Frequency of Topographic Findings Including "Apple Pattern" in Subtypes of Pellucid Marginal Degeneration

First Author: Mohammedreza JAFARINASAB

Purpose: To explain topographic findings in subtypes of pellucid marginal degeneration (PMD), including the "apple pattern" (AP), and to report their frequency supporting the recommendation of introducing a new subtype classification of PMD.

Methods: Forty-one, 26, and 60 eyes were recruited and placed into clinical, sub-clinical, and normal groups, respectively. Groups were defined based on axial corneal topography, type of astigmatism, maximum keratometry value and location, pachymetry thinnest point value, and slit lamp findings. The frequency of topographic patterns discovered among the patients, including the inferior quadrant flatten sign (IQFS), irregular against the rules astigmatism (IATRA), and the superior quadrant flattest sign (SQFS), were all reported in each group. Based on IQFS-related sizes, both clinical and subclinical groups were classified into apple patterns (AP), crab claws patterns (CCP), and butterfly patterns (BFP).

Results: The frequency of the IATRA sign in the clinical and sub-clinical groups was 95% and 81%, respectively. The IQFS was observed in 92% of clinical and 91% of subclinical groups. The SQFS manifested in 83% of clinical and 69% of sub-clinical groups. AP was found in 62% and 67%, CCP in 27% and 25%, and BFP in 11% and 8% of clinical and sub-clinical cases with IQFS, respectively.

Conclusions: The apple pattern could be considered a new pattern for reflecting clinical and sub-clinical IKC. AP, CCP, and BFP, which are related to IQFS, could be useful patterns for the classification of IKC, type-I PMD, and type-II PMD, respectively.

Apr 06, 2025 (Sun) 09:45 - 11:15
 Venue: Mogra Hall 404 A

Global Research Trend Analysis and Prediction in the Field of Keratoconus From a Bibliometric Perspective

First Author: Xi CHEN

Purpose: There has been significant growth in research and publications related to keratoconus. However, effective means are lacking to efficiently analyze and evaluate large amounts of textual big data to systematically elucidate the full picture of keratoconus research and provide insights for future research.

Methods: Literature indexed by the Medical Subject Headings (MeSH) term "keratoconus" in PubMed from 1945 to 2024 was obtained. A BERT deep learning model was applied to identify specific research topics. Louvain's algorithm was applied to identify the relationships between topics. The LSTM deep learning model was applied to perform time-series prediction thereby assessing the future trends of each research topic.

Results: Research on "keratoconus" is increasing rapidly, with an average annual growth rate of 18.61%. Cluster analysis based on the BERT model categorized the keratoconus research field into 36 specific topics and consolidated them into 5 major segments. Most research topics will remain stable in the future. Research related to "Artificial Intelligence" has the greatest incremental potential. In the basic research segment, studies involving "genetic mutations" and "molecular mechanisms" showed negative growth.

Conclusions: This study provides the first comprehensive picture of the dynamics of keratoconus research through bibliometrics and deep learning algorithms. In the past, the topic of disease prevention and treatment has attracted increasing attention. However, the focus on basic research is relatively weak. Future research should more actively explore the interdisciplinary integration at the intersection of basic mechanism research and artificial intelligence, so as to promote better and faster development of keratoconus.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Mogra Hall 404 A

Outcomes and Improvements in Tomographical, Higher-Order Aberration, Contrast Sensitivity, Quality of Vision, and Life Analysis in Corneas That Underwent Asymmetric Intrastromal Corneal Ring Segments for the Management of Keratoconus

First Author: Marta SARTORI
Co-Author(s): Carlos ARCE, Sandra BEER, Delso BONFANTE

Purpose: To evaluate the outcomes of 4 models of asymmetric intracorneal ring segments (AS-ICRS) implanted in keratoconic (KC) eyes analyzed by complete ophthalmological examination and tomographic, contrast sensitivity, anterior segment optical coherence (OCT) tomographic and quality of life and vision questionnaire changes.

Methods: In this prospective observational study, AS-ICRS were implanted in KC and assigned to four groups named "smoking pipe", "moustache", "goatee", and "sideburn" for mnemonic purposes and a better understanding of implant designs. Different KC phenotypes received different AS-ring. Femtosecond assistant surgeries were performed by the same surgeon. Ophthalmological outcomes and analysis of all devices (Galilei G6, Pentacam, Optovue OCT, Steril Optical) were used to evaluate improvements over a one-year follow-up period.

Results: Forty-four eyes were analyzed. Differences were observed between pre and post-operative outcomes in un (UCV) and corrected (CV) vision, axial KM values (57,96 D to 52,13D+/- 4,43D), (p<0,01), anterior toric elevation (KCA) index ((52,32 to 26,31 +/-14,40) p<0,01) and HOA coma (p<0,05). There was a difference between 4 groups (p<0,01) on AS-R types analyzed: less topographic cylinder in the "sideburn" type (p<0.05) , and HOA-coma (p< ,0,05)

Conclusions: AS-ICRS improved vision (UCV AND CV), and tomographic outcomes in all phenotypes KC. Axial KM and Anterior KCA index demonstrate AS -R can improve tomographical images (p<0,01). Anterior KCA index and pre and post -op comparison images can illustrate much better the decrease of KC asymmetry being the most specific to demonstrate AS-ring outcomes.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Mogra Hall 404 A

Sustained Reduction in Ethnic Inequity in Access to Care and Visual Rehabilitation in Auckland Through a Community Approach

First Author: Akilesh GOKUL
Co-Author(s): Lize ANGELO, Misty EDMONDS, Charles MCGHEE, Jason TURUWHENUA, Mohammed ZIAEI

Purpose: To determine if ophthalmic care following CXL, including monitoring treatment efficacy and providing visual correction, can be provided more equitably in a community optometry setting with ophthalmologist oversight and support for patients with keratoconus in Auckland, NZ.

Methods: Standard post-CXL model; first specialist assessment, CXL procedure, 1-month follow-up, 3-month follow-up including referral to separate service for visual correction. In the community clinic, patients who resided <10km from the optometry practice were transferred to the clinic for 3-month follow-up (including assessment of visual needs and correction). Patients who were eligible were automatically transferred to the community clinic post-CXL. Data were compared between services; age, gender, ethnicity, proportion of appointments attended, type of visual correction, habitual VA (HVA) at 3, 12, and 24-month follow-ups.

Results: Demographics were similar standard (n=200) and community (n=60); age, 24.6±6.8years and 23.6±6.1years, ethnicity, Pacific Peoples (48%|51%), Māori (15%|22%), European (19%|7%), Asian (15%|22%), gender, male (59.5%|50%). Attendance was significantly higher for Pacific Peoples (70%|55%) and Māori (68%|75%) in the community vs. standard clinic (p<0.001) and was sustained at 24-months. HVA (LogMAR0.22±0.3(6/9)) was significantly better in the community clinic than in the standard clinic ((LogMAR0.34±0.3(6/15)) group (p<0.001). Significantly more patients with fitted with contact lenses in the community (12%|26%).

Conclusions: Māori and Pacific Peoples are over-represented in both settings; however, appointment attendance was significantly higher in the community clinic. Patients attending had their visual potential and rehabilitation addressed promptly, and all metrics were sustained at 24-month follow-up. Thus, a community optometry-based service has the potential to provide more equitable post-crosslinking care long term.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Mogra Hall 404 A

Ten-Year Review of Clinical Outcomes of Pterygium Surgery

First Author: Sharlene NOGUERA
Co-Author(s): Robert Edward ANG

Purpose: This study described the clinical profile and postoperative outcomes of patients who underwent pterygium surgery at an ambulatory eye center.

Methods: Medical records of 462 patients who underwent pterygium surgery by a single surgeon from February 2013 to August 2023 were reviewed. Descriptive statistics was used for analysis of patient demographics, clinical profile, and post operative outcomes.

Results: Out of 462 patients operated, 57% were male and 43% were female. The mean age was 48 years (range 17-81). Nasal location of the pterygium accounted for the majority at 72%, while 8% of the patients had bipolar pterygium and only 3% had temporal pterygium. Of the total cases, 81% presented as primary pterygium and 15% as recurrent. T2G1 pterygium was the most common type seen. Ninety-four percent of patients underwent excision with conjunctival autograft, 5% underwent Pterygium excision with dehydrated amnion graft, and only 1% underwent Primary excision with Mitomycin-C (MMC). The mean follow-up was 8.5 months (range of 0-62 months). Recurrence rates are 0.7% for conjunctival autograft, 8% for dehydrated amnion graft, and 25% for Primary excision with MMC. Ninety-three percent of the patients had no post-operative complications. The complication rate is at 4.5%, which included conjunctival granuloma, wound dehiscence, residual pterygium on the cornea, steroid-induced ocular hypertension, dellen, and conjunctival cyst, which were all managed accordingly.

Conclusions: Of the patients who underwent pterygium surgery, nasal location and T2G1 grading accounted for the majority. Conjunctival autograft was the most common surgical intervention which has a 0.7% recurrence rate.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Mogra Hall 404 A

The Differential Approach in Retroprosthetic Membrane Removal in Patients With Keratoprosthesis

First Author: Aleksandra PROSHKO
Co-Author(s): Andrey GOLOVIN, Valeriya MANTSOVA

Purpose: To evaluate the results of the differential approach in the treatment of patients with retroprosthetic membrane (RPM) after keratoprosthesis (KPro).

Methods: The study enrolled 35 patients (35 eyes) with RPM after KPro. All patients were divided into three groups depending on the RPM removal technique. Group I included 11 eyes (11 patients) receiving YAG treatment. Group II included 11 eyes (11 patients) that had surgical excision. Group III included 13 eyes (13 patients) that had membranectomy using three-port vitrectomy.

Results: All 35 eyes had no intraoperative complications. During the six months following the operation, there were 2 recurrences in Group I and 4 recurrences in Group II. No recurrence was observed in the group III.

Conclusions: The choice of RPM removal technique is a complex task that requires a comprehensive review of each case individually considering risk factors for complications and recurrences.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Mogra Hall 404 A

The Novel Surgical Technique of Corneal Epithelium Reconstruction: Femtosecond Laser-Assisted (Fs) Glueless Simple Limbal Epithelial Transplantation (G-SLET) in the Treatment of Unilateral Limbal Stem Cell Deficiency (LSCD): Our Experience

First Author: Svetlana KALINNIKOVA
Co-Author(s): Werner BERNAU, Sergey BORZENOK, Boris MALYUGIN, Fabian MULLER

Purpose: To present features of the surgical technique and our long-term clinical and functional results of corneal epithelium reconstruction: FS G-SLET in the treatment of unilateral LSCD.

Methods: A novel customized algorithm and software for low-energy femtosecond laser (FSL) were developed and tested using five pairs of isolated porcine eyes. FSL G-SLET modification was assessed in 18 clinical cases of unilateral LSCD caused by chemical burns. Corneal epithelization efficacy, best corrected visual acuity (BCVA), corneal epithelial mapping, and central corneal thickness were evaluated. All patients were followed up for 12 months postop.

Results: The FSL set for 100% energy and the pattern of eight nonpenetrating vertical cuts with oblique tunnel portions having variable incision depths and diameters of 8,5 mm and higher were selected for further clinical evaluation. Clinically, stable corneal epithelialization was achieved 2-3 weeks after intervention. At the 12-month follow-up, all patients had healthy corneal epithelium with limbal micrografts visible inside the corneal tunnels. BCVA markedly improved in 7 cases, but not in the over 11 with severe corneal stromal scarring. In addition, all patients noted a full-scale reduction in subjective complaints and substantial improvement in their quality of life.

Conclusions: FSL G-SLET is a new technique for limbal stem cell transplantation in patients with unilateral LSCD. It allows standardization of corneal tunnel localization and dimensions, thereby increasing the safety of the surgical procedure.

Glaucoma

Apr 03, 2025 (Thu) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Choriocapillaris and Progressive Ganglion Cell-Inner Plexiform Layer Loss in Non-Glaucomatous Eyes

First Author: Jingwen JIANG

Purpose: To explore the relationship between choriocapillaris (CC) flow deficit percentage (FD%) and ganglion cell-inner plexiform layer (GCIPL) thickness in a population-based sample of non-glaucomatous eyes.

Methods: This is a longitudinal cohort study and a prospective cross-sectional study. Non-glaucoma Chinese subjects aged 18 years or older were

enrolled. All participants underwent a detailed ophthalmic examination, including swept-source optical coherence tomography (SS-OCT) and SS-OCT angiography. Average, inner average, outer average, and nine Early Treatment Diabetic Retinopathy Study sub-regions of GCIPL thickness and CC FD% were measured. The correlation between CC FD% and GCIPL was assessed using a linear regression model, and the relationship between the rate of change of GCIPL thickness and CC FD% was further validated in a 2-year longitudinal study.

Results: In the cross-sectional study including 3514 participants (3514 non-glaucoma eyes), a higher CC FD% was significantly associated with a thinner GCIPL ($\beta=-0.32$; 95% CI -0.43 to -0.21; $p<0.001$). Further, in a longitudinal study (453 eyes of 453 participants), a faster increase in CC FD% was found to be significantly associated with a faster decrease in GCIPL thickness ($\beta=-0.10$; 95% CI -0.17 to -0.03; $p=0.004$) after adjusting for age, sex, axial length, and image quality score.

Conclusions: This is the first time to show that CC FD% and GCIPL thickness were correlated in both cross-sectional and longitudinal studies of non-glaucomatous individuals, which may potentially provide further insights into the role of CC perfusion in glaucoma development and progression.

Apr 03, 2025 (Thu) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Comparative Study on the Performance of Melbourne Rapid Fields Web-Browser Perimeter to the Humphrey Field Analyzer in Chinese Glaucoma Patients

First Author: De-fu CHEN
Co-Author(s): Yuanbo LIANG, Wenzhe ZHOU

Purpose: This study aims to evaluate the efficacy and practicality of the Melbourne Rapid Fields (MRF) web-browser-based perimeter software, compared to the conventional Humphrey Field Analyzer (HFA) 24-2 SITA Standard Protocol in a hospital environment in China.

Methods: The study was conducted in a clinical practice setting. A total of 103 Chinese speaking participants, contributing 164 eyes, were enrolled

in the study. Participants underwent VF testing using both HFA and MRF. MRF was conducted with computer voice guidance in Chinese. Primary outcome measures include mean deviation (MD), pattern standard deviation (PSD), test duration, and reliability indicators.

Results: MRF returned a significant correlation with HFA for MD (Pearson $r = 0.93$, $P < 0.001$) and PSD (Pearson $r = 0.88$, $P < 0.001$). The average test duration was notably shorter for MRF (265 ± 41 seconds) compared to HFA (382 ± 80 seconds, $P < 0.001$). Bland-Altman analysis revealed a mean bias of -1.5 decibels (dB) for MD and 0.4 dB for PSD. Additionally, MRF demonstrated high sensitivity and specificity, achieving an Area Under the Curve (AUC) of 0.922 for both MD and PSD. Furthermore, MRF found fewer false positive rates.

Conclusions: MRF offers a reliable, efficient, and patient-friendly alternative to traditional VF testing for Chinese patients. Its implementation could substantially improve access to glaucoma care, especially in underserved regions and for patients unable to attend regular clinic appointments.

Apr 03, 2025 (Thu) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Comparison of Penetrating Canaloplasty Versus Gonioscopy-Assisted Transluminal Trabeculotomy in Open-Angle Glaucoma

First Author: Huaizhou WANG
Co-Author(s): Jinxin LI, Yuanbo LIANG

Purpose: To compare the efficacy and safety of penetrating canaloplasty (PCP) and gonioscopy-assisted transluminal trabeculotomy (GATT) in the treatment of open-angle glaucoma (OAG).

Methods: A two-center comparative study included patients with OAG who underwent PCP or GATT with a minimum follow-up of 6 months. Collected outcome measures included baseline characteristics, pre and postoperative IOP, number of glaucoma medications, and procedure-related complications. The surgical success rate was defined as $6 \text{ mmHg} \leq$ intraocular pressure (IOP) $\leq 21 \text{ mmHg}$ with or without glaucoma medications (qualified success) and without glaucoma medications (complete success). Generalized estimation equations were used to analyze postoperative IOP and medications.

Results: A total of 547 eyes in 432 OAG patients (284 PCP, 263 GATT) were enrolled. The mean preoperative IOP of the PCP group (30.9 ± 11.3 mmHg) was higher than the GATT group (26.5 ± 10.2 mmHg), and glaucoma medications in the PCP group (2.9 ± 1.1) were less than GATT group (3.5 ± 0.9 ; all $P < 0.001$). Qualified success rates were 93.0% and 89.7% in the PCP group and 93.7% and 92.3% in the GATT group at 12 and 24 months, respectively ($P = 0.467$), with a significantly higher rate of complete success rates in the PCP group (85.9% vs. 79.7%, 75.5% vs. 62.9%; $P = 0.024$). Early transient IOP elevation (52.8% in the PCP group and 64.6% in the GATT group, $P = 0.005$) and hyphema (29.2% in the PCP group and 77.9% in the GATT group, $P < 0.001$) were the most common observed complications.

Conclusions: Both surgeries were safe and effective for OAG patients in the mid-term with a comparative success rate.

Apr 03, 2025 (Thu) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Correlation of Retinal Nerve Fiber Layer (RNFL) Thickness and Various Optic Disc Parameters With Disc Damage Likelihood Scale (DDLS) in Patients With Primary Open-Angle Glaucoma (POAG)

First Author: Tayyaba MALIK
Co-Author(s): Rabail ALAM

Purpose: To evaluate the relationship between retinal nerve fiber layer (RNFL) thickness and various optic disc parameters and Disc Damage Likelihood Scale (DDLS) in patients with primary open-angle glaucoma (POAG).

Methods: This cross-sectional study was conducted at Lahore General Hospital which included 295 eyes of 148 patients diagnosed with or suspected of having POAG. Inclusion criteria encompassed patients over 18 years old; exclusion criteria included significant refractive errors, media opacities, history of trauma, and poor OCT signal strength. Comprehensive ocular examination was performed and optic disc measurements were recorded. RNFL thickness was assessed using optical coherence tomography (OCT). Disease severity was staged DDLS. Statistical analysis involved descriptive statistics, Kolmogorov-Smirnov test for normality, and Spearman correlation coefficients.

Results: Of the 148 patients (90 males, 58 females; mean age 52.41±15 years), mean RNFL thickness was 82.21±14.75 µm. Correlation analysis revealed a moderate negative correlation between RNFL thickness and vertical cup-to-disc (CD) ratio ($r = -0.45$), a strong positive correlation between RNFL thickness and rim-to-disc ratio ($r = 0.70$), and a strong negative correlation with DDLS ($r = -0.65$). DDLS showed a moderate positive correlation with vertical CD ratio ($r = 0.55$) and a very strong negative correlation with rim-to-disc ratio ($r = -0.80$).

Conclusions: DDLS and rim-to-disc ratio are more reliable methods for assessing glaucomatous damage than the vertical or average CD ratios. Therefore, DDLS and rim-to-disc ratios should be integral parts of glaucoma assessment.

Apr 03, 2025 (Thu) 11:30 - 13:00

Venue: Suryamukhee Hall 401

Differential DNA Methylation and Transcriptomic Signature Patterns of Trabecular Meshwork Cell Damage in Glaucoma

First Author: Aparna RAO

Purpose: To compare the methylome and associated transcriptome in different in-vitro models of exfoliation or primary glaucoma using primary human trabecular meshwork (HTM) cells.

Methods: Primary HTM cells from primary culture were treated both with and without TGF-β1 (10ng/mL) and H2O2 (600 µM) for 48 and 72h. RNA and genomic DNA were extracted and were subjected to RNA sequencing and Whole genome bisulfite sequencing, respectively. The methylation percentage change of 10% between the control untreated and treated samples was set to identify the DMRs. Functional annotation of Gene ontology and KEGG pathways were identified by DAVID Bioinformatics Resource (v6.8). Cluster Profiler 4.0, which is an enrichment tool for the Omics data, has been used for functional enrichment analysis of Gene Ontologies.

Results: A total of 13734 DMRs were significantly differentially methylated between 48hrs TGF β1 and controls, while for 72hrs TGFβ1, 39212 DMRs were identified. Using gene ontology (GO) enrichment

analysis with Clusterprofiler [REF], suggested pathways related to the neuronal system, RAC1 GTPase system, and transmission of chemical synapses to be involved in both groups while ECM organization, Rho-GTPase pathway was involved in exclusively TGFβ1 treated cells and Nitric-oxide Guanylate cyclase signaling pathways in the H2O2 treated cells.

Conclusions: This study shows that H2O2 and TGFβ1 induce distinct molecular changes at the methylome or transcriptome levels, involving diverse signaling pathways unique to primary and exfoliation glaucoma.

Apr 03, 2025 (Thu) 11:30 - 13:00

Venue: Suryamukhee Hall 401

Digital Gonioscopy Based on Three-Dimensional Anterior-Segment OCT: An International Multicenter Study

First Author: Zefeng YANG

Co-Author(s): Fei LI, Xiulan ZHANG

Purpose: To develop and evaluate the performance of a 3-dimensional (3D) deep-learning-based automated digital gonioscopy system (DGS) in detecting 2 major characteristics in eyes with suspected primary angle-closure glaucoma (PACG): (1) narrow iridocorneal angles (static gonioscopy, Task I) and (2) peripheral anterior synechiae (PAS) (dynamic gonioscopy, Task II) on OCT scans.

Methods: The study was designed as a cross-sectional, multicenter study. A total of 1.112 million images of 8694 volume scans from 3 centers were included in this study. For Task I, a narrow angle was defined as an eye in which the posterior pigmented trabecular meshwork was not visible at more than 180° without indentation in the primary position captured in the dark room from the scans. For Task II, PAS was defined as the adhesion of the iris to the trabecular meshwork. The diagnostic performance of the 3D DGS was evaluated in both tasks with gonioscopic records as a reference.

Results: In Task I, 29.4% of patients had a narrow angle. The AUC, sensitivity, and specificity of 3D DGS on the external testing datasets were 0.943, 0.867, and 0.878, respectively. For Task II, 13.8% of patients

had PAS. The AUC, sensitivity, and specificity of 3D DGS were 0.902, 0.900, and 0.890, respectively, on the external testing set at quadrant level following normal clinical practice; and 0.885, 0.912, and 0.700, respectively, on the external testing set at clock-hour level

Conclusions: The 3D DGS effectively detects eyes with suspected PACG and has the potential to be used in primary eye care for PACG screening.

Apr 03, 2025 (Thu) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Efficacy and Safety of Phacoemulsification Combined With Goniosynechialysis Under Gonioscopy and Goniotomy in the Treatment of Advanced Primary Angle Closure Glaucoma

First Author: Chukai HUANG

Purpose: To evaluate the efficacy and safety of phacoemulsification combined with goniosynechialysis under gonioscopy and goniotomy in the treatment of advanced PACG.

Methods: Retrospective study. Patients diagnosed with PACG were included. Phacoemulsification combined with GSL and 120 degrees goniotomy were performed. Information was recorded at one week, one month, three months, six months, and the last follow-up after surgery. The main outcome measures included intraocular pressure, the number of glaucoma-lowering drugs used, surgical complications, and the surgical success rate was calculated. The success rate of surgery includes complete success rate and conditional success rate. Conditional success is defined as postoperative intraocular pressure ≤ 18 mmHg combined with medication, and complete success is defined as postoperative intraocular pressure ≤ 18 mmHg without drugs.

Results: Totally, 92 people and 94 eyes were enrolled. The average age is 67.96 ± 7.99 years old. Preoperative IOP was 25.73 ± 11.12 mmHg, followed by 12.09 ± 4.22 mmHg at 1 week, 13.68 ± 4.40 mmHg at 1 month, 12.39 ± 3.89 mmHg at 3 months, 12.06 ± 3.17 mmHg at 6 months postoperatively, and 12.95 ± 3.76 mmHg at the last follow-up. Preoperative medication was 2.83 ± 1.11 , and 0.1 ± 0.55 at the last

follow-up. The conditional success rate was 93.61%, with an absolute success rate of 89.36%. The main complication is anterior chamber hemorrhage, which can be self-absorbed, and no other serious complications were observed.

Conclusions: Phacoemulsification combined with GSL under gonioscopy and 120 degrees GT is a safe and effective surgical approach for the treatment of advanced PACG.

Apr 03, 2025 (Thu) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Intraocular Pressure-Lowering Effect of Intraocular Lens Refixation in Patients With Elevated Intraocular Pressure Due to Intraocular Lens Subluxation

First Author: Masaru INATANI

Co-Author(s): Shogo ARIMURA, Kentaro IWASAKI, Ryohei KOMORI, Yoshihiro TAKAMURA

Purpose: To evaluate the surgical outcomes of intraocular lens (IOL) refixation with vitrectomy in patients with elevated IOP due to IOL subluxation.

Methods: Patients with elevated IOP due to IOL subluxation who had undergone IOL refixation with vitrectomy between June 1, 2013 and December 31, 2023 were retrospectively evaluated. The primary outcome measure was surgical success or failure. Surgical failure was defined as a reduction of $<20\%$ in the preoperative IOP or IOP >21 mmHg (criterion A) or IOP >18 mmHg (criterion B). Reoperation, loss of light perception, and hypotony were also considered surgical failures. The IOP, number of glaucoma medications used, postoperative complications, and visual acuity were evaluated as the secondary outcomes. The surgical outcomes were compared between the glaucoma and ocular hypertension (OH) groups.

Results: At 12 months postoperatively, the probability of success was 72.5% and 54.1% using criteria A and B, respectively, and the mean IOP and mean number of glaucoma medications used had decreased significantly ($P < 0.01$ and $P = 0.03$, respectively). Furthermore, the cumulative success rate was significantly higher in the OH group than in the glaucoma group (100% vs. 47.4%; $P < 0.01$) when using criterion A. Additional glaucoma surgery was required only in the glaucoma group.

Conclusions: IOL refixation surgery significantly decreases the IOP and number of glaucoma medications required in patients with elevated IOP due to IOL subluxation. Thus, IOL refixation surgery alone without glaucoma surgery might be effective as the primary procedure in such patients.

Apr 03, 2025 (Thu) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Investigation of Primary Congenital Glaucoma Mechanism by Functional Characterization of CYP1B1 Mutations

First Author: Muneeb Ahmad FAIQ
Co-Author(s): Kevin CHAN, Rima DADA, Tanuj DADA, Daman SALUJA

Purpose: Mutations in the CYP1B1 gene are widely recognized as the prevalent cause of primary congenital glaucoma (PCG). The mechanisms through which these mutations lead to PCG remain poorly understood. Elucidating these mechanisms is crucial for advancing our understanding of this disease, and identifying therapeutic interventions.

Methods: CYP1B1 Reactome was generated to identify CYP1B1-mediated processes involved in ocular development using Cytoscape, PANTHER 19.0, and KEGG pathways. Wild-type CYP1B1, devoid of any N-terminal modifications, was cloned into the pCWori(+) vector. Pathogenic mutations of interest L24R, F190L, H279D, and G329D were introduced via site-directed mutagenesis. Proteins were expressed in heterologous systems, purified, and functionally characterized based on stability using SNAP2, iMutantV3, and Bradford methods, as well as enzymatic activity across the four major pathways identified in the Reactome analysis. Structural modeling of wild-type and mutant variants was conducted using CLUSTALX, MODELLER v.4.0, PROCHECK, VERIFY-3D, and RAMPAGE.

Results: The Reactome analysis identified 166 processes belonging to four primary pathways: estradiol, retinoic acid, arachidonic acid, and melatonin metabolism. Stability assays showed that the mutant proteins were significantly more labile, leading to early and rapid denaturation. Enzymatic assays demonstrated functional deficits associated with these mutations in metabolizing estradiol,

retinoids, arachidonate, and melatonin metabolites. Structural modeling suggested that these mutations induced conformational changes, which may account for the observed loss of CYP1B1 function.

Conclusions: Mutations in the CYP1B1 gene may lead to structural changes causing impaired enzymatic activity in estradiol, retinoic acid, arachidonic acid, and melatonin metabolism involved in ocular development. These factors may shed light on the pathogenesis of PCG.

Apr 03, 2025 (Thu) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Longitudinal Choriocapillaris Vascular Density Changes in Different Types of Primary Open-Angle Glaucoma

First Author: Xiaoyi LIU
Co-Author(s): Fengbin LIN, Yunhe SONG

Purpose: To evaluate longitudinal changes in choriocapillaris perfusion in patients with glaucoma with four phenotypes of optic disc damage and to explore associated factors with decreased choriocapillaris vessel density (CVD).

Methods: This prospective longitudinal study included 96 eyes of 96 patients with primary open-angle glaucoma (POAG). Patients with POAG were differentiated into the optic disc phenotypes of focal ischemic type (FI), myopic type (MY), senile sclerotic type (SS), and generalized enlargement type (GE). Patients were followed up every three months. Simple linear regression was used to investigate the factors associated with a reduction in CVD.

Results: The median follow-up time was 2.5 years (range, 2.0–3.0 years). Choriocapillaris perfusion tended to decrease over time, with CVD decreasing significantly faster in the FI type than in the other three types ($P < 0.001$). The percentage decrease in the FI type was 7.85%, 10.89%, and 8.88% faster than MY, SS, and GE, respectively, after correcting for age, gender, axial length, intraocular pressure, mean deviation, retinal nerve fiber layer (RNFL), and image quality score. In multivariate regression, decreased CVD was independently associated with the rate of RNFL thinning.

Conclusions: FI type had the fastest rate of CVD decline in the four phenotypes of optic disc damage, and decreased CVD was positively correlated with the rate of RNFL thinning.

Apr 03, 2025 (Thu) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Pars Plana Filtration in the Treatment of Nanophthalmos Secondary Angle Closure Glaucoma

First Author: Yuanbo LIANG
Co-Author(s): Xiaojie WANG

Purpose: Nanophthalmos (NO) is a rare condition that increases the risk of developing secondary angle-closure glaucoma (ACG). Surgical treatment for NO-ACG patients has shown limited success and carries a high risk of complications. Research on this patient population is scarce, and effective treatment options are currently unavailable. This study presents the outcomes of using pars plana filtration (PPF) surgery as a new treatment for NO-ACG.

Methods: This prospective non-randomized study enrolled consecutive patients with NO-ACG for PPF. The study recorded intraocular pressure (IOP), best-corrected visual acuity (BCVA), the number of antiglaucoma medications, and surgery-related complications.

Results: This study included 10 eyes from 7 patients, with an average age of 45.5 ± 9.5 years (30 to 59 years), and 6 of them were female. The mean axial length was 17.55 ± 1.54 mm (15.60-20.39mm). The average follow-up duration was 14.5 ± 6.3 months (6-24 months). At the final follow-up visit, there was a significant reduction in average IOP from 43.9 ± 10.5 mmHg to 18.5 ± 4.1 mmHg ($p < 0.001$), accompanied by a notable decrease in a median number of antiglaucoma medications from 4 to 0 ($p < 0.001$). BCVA improved in 4 eyes. 8 eyes efficiently control IOP. 1 eye experienced choroidal detachment, 1 eye encountered vitreous hemorrhage (1/10), and 1 eye underwent additional anti-glaucoma surgery. Seven eyes required bleb needling combined with 5-fluorouracil for management due to elevated IOP.

Conclusions: The outcome of PPF in these patients supports the use of this technique in cases of NO-ACG in young patients when medical treatment fails to adequately control IOP.

Apr 03, 2025 (Thu) 11:30 - 13:00
Venue: Suryamukhee Hall 401

The Effect of Lifestyle Habits and Risk of Glaucoma: Cigarette Smoking and Physical Activities

First Author: Rahimie HANAFI
Co-Author(s): Liza Sharmini AHMAD TAJUDIN, Azhany YAAKUB

Purpose: To determine the association between lifestyle habits and the risk of primary glaucoma.

Methods: A post-hoc analysis was conducted on the database of the Malay Glaucoma Eye Study (MaGES). A total of 862 primary glaucoma patients and 500 control subjects were included in this analysis. Cigarette smoking and physical activity habits were assessed using the International Physical Activity Questionnaire (IPAQ) and a questionnaire on cigarette smoking habits using the Singapore Malay Eye Study (SiMES). Based on IPAQ, they were divided into inactive, mild, moderate, and heavy activities. While cigarette smoking habits were divided into non-smokers, smokers, ex-smokers, and passive smokers. They were recategorized into active and inactive for physical activity, smoking, and non-smoking for smoking habits. They were categorized into non-smokers and physically active, smokers and physically active, non-smokers and physically inactive, and non-smokers and physically active. Multiple logistic regression was conducted.

Results: There were 491 smokers (329 primary glaucoma, 162 controls). There was a significantly higher frequency of smokers among primary glaucoma ($p = 0.033$). There was also statistically significantly less physical activity in primary glaucoma compared to the control ($p < 0.001$). Based on the stepwise method of multiple logistic regression, those who are non-smokers and physically inactive have a 4.1 times (95 % CI 1.53, 10.89) risk of developing glaucoma ($p = 0.005$).

Conclusions: Being physically inactive but not smoking has a higher risk of developing primary glaucoma. Thus, it is important to encourage those who are at high risk of developing glaucoma to remain physically active.

Apr 03, 2025 (Thu) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Two-Year Outcomes of Phaco-Microincisional Trabeculectomy in Primary Glaucoma

First Author: Aparna RAO

Purpose: To compare the 2-year clinical success of phacoemulsification with ab-interno microincisional trabeculectomy (PMIT) or conventional trabeculectomy (PT) in adult primary glaucoma.

Methods: Consecutive patients with primary open-angle glaucoma or angle closure glaucoma who underwent PMIT or PT between November 2018 and November 2022 at a tertiary eye center in India were included in this prospective study. Those with a follow-up of < 6 months or with incomplete data were excluded. The intraocular pressure (IOP) reduction at 1, 6 months, and 2 years, and the reduction in the number of medications after surgery were analyzed. Surgical success (IOP>6 and <22 mm Hg), complications, and the need for additional surgeries were analyzed.

Results: The baseline clinical characteristics were similar in both groups (n=75 with a mean IOP of 28±6.9 mm Hg in PMIT and n=62 and 26±8.9mm Hg in PT group, respectively, p=0.06)). All eyes achieved in both groups achieved >30% IOP with complete success at 2 years was seen in 86% and 85% in both groups respectively. Two eyes in Group 2 and one eye in the PMIT group required additional surgeries. The PT groups had more numbers of eyes with transient hypotony or visual impairment at day 1 and required >2 medications in greater number of eyes at 2 years, though this was not statistically different between the groups.

Conclusions: PMIT is an effective option for combined cataract and glaucoma surgery with minimal postoperative complications and comparable surgical outcomes compared to Phacotrabeulectomy.

Apr 03, 2025 (Thu) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Visualising Aqueous Humour Outflow Using Imaging-Based Techniques in Angle-Based MIGS: A Systematic Review

First Author: Eric JIN

Co-Author(s): Bryan ANG, Selvie YEO

Purpose: This systematic review explores the application of imaging-based techniques to visualise aqueous humour outflow (AHO) in angle-based minimally invasive glaucoma surgery (MIGS).

Methods: A literature search was performed on PubMed, EMBASE, and Cochrane Library from inception to 26 November 2023. Cohort, cross-sectional and observational studies reporting the use of imaging-based techniques to visualise AHO in angle-based MIGS were included.

Results: An initial 393 studies were identified, with 27 studies included in the final analysis. Imaging techniques described included observation of the episcleral veins, hemoglobin venous imaging (HVI), fluorescein and indocyanine green (ICG) aqueous angiography, anterior segment optical coherence tomography angiography (AS-OCTA) and ex-vivo observation of the rate and morphology of outflow facility. Visualisation of the AHO pre-operatively, intra-operatively and post-operatively may predict post-operative surgical outcomes, thus aiding in patient selection and post-operative prognostication. Pre-operative imaging may suggest targeted placement of MIGS in areas of initial angiographically low or high areas of AHO. Visualization of AHO intra-operatively and post-operatively may facilitate a more objective assessment of post-operative success and comparison of efficacy between various angle-based MIGS.

Conclusions: Imaging-based techniques to visualize AHO may be useful in the context of angle-based MIGS. However, larger in-vivo studies are required to better evaluate the feasibility and clinical utility of these imaging techniques in MIGS.

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FREE PAPERS

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Moulshree Hall 402

360 Versus 180 Suture-Aided Gonioscopic-Assisted Transluminal Trabeculotomy for Primary Congenital Glaucoma

First Author: Shikha GUPTA
Co-Author(s): Viney GUPTA, Davinder GROVER, Arnav PANIGRAHI

Purpose: To compare the efficacy of circumferential gonioscopy-assisted transluminal trabeculotomy (GATT) versus hemi-GATT in primary congenital glaucoma (PCG).

Methods: In this prospective randomized case-control study, children with PCG having corneal diameters <14mm and relatively clear cornea were included. Based on randomization, the eyes included underwent either circumferential GATT (360-GATT) or hemi-GATT (180-GATT). The intraocular pressure (IOP) reduction, requirement for glaucoma medications after surgery, need for repeat surgery, and the incidence and type of complications in each group were analyzed. Surgical success was defined as absolute when IOP <18 (criterion A) and <15mmHg (criterion B) was achieved without medications and qualified when the same was achieved with pressure-lowering medications. Eyes with an IOP >18mmHg on maximum medications and those with an IOP <6mmHg or need for further intervention for IOP control were considered failures.

Results: Fifty-two eyes of children with PCG were randomized into either the 360-GATT group (22 eyes) or the 180-GATT group (30 eyes) and followed up for at least 1 year. The median follow-up duration was 22.5 months (range: 12-30 months). IOP fell by 49% and 20.5% with 360-GATT and 180-GATT respectively, final IOP being significantly lower in the former group ($p=0.0003$). For absolute success, the cumulative survival was superior with 360-GATT for both criteria A and B at 1 year ($p=0.009$). Average cup disc ratio, corneal diameter, and axial length reversal were significant in the 360-GATT group but not in the hemi-GATT group.

Conclusions: This study reinforces the superior efficacy of circumferential GATT for IOP control in eyes with congenital glaucoma.

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Moulshree Hall 402

A Study on the Dynamic Therapeutic Efficacy and Long-Term Safety of Ultrasound Cycloplasty in the Treatment of Glaucoma in Northwestern Chinese Population

First Author: Ping GE
Co-Author(s): Yuan HE, Jinwei XI

Purpose: To evaluate the dynamic efficacy and long-term safety of ultrasound cycloplasty (UCP) in Asian glaucoma patients.

Methods: This study included 12 patients with various types of glaucoma, comprising 15 eyes. All participants underwent routine ophthalmic examinations. After undergoing UCP treatment, patients had follow-up examinations at various intervals: day 1, week 1, month 1, month 3, month 6, year 1, and year 2 postoperatively. These follow-ups aimed to assess the reduction in IOP, changes in visual acuity, postoperative pain levels, usage of antihypertensive medications, and occurrence of complications in the treated eyes. Additionally, 24-hour IOP monitoring was performed preoperatively and at each follow-up time point to investigate the dynamic effects of UCP on lowering IOP.

Results: Postoperatively, IOP dropped significantly by 62.9% from baseline, and UCP demonstrated a marked reduction in nocturnal IOP, with the most pronounced effect being observed beyond 24 hours post-surgery. Pain scores declined significantly at each follow-up, with 92.86% of patients scoring 0 and 7.14% scoring 1. Antihypertensive medications gradually tapered off from day 1 to 3 months. No major complications arose; conjunctival congestion (60%) resolved within a week with anti-inflammatory drops.

Conclusions: UCP demonstrates a significant reduction in IOP among the glaucoma population in Northwestern China, and it also exhibits significant lowering effects for cases with isolated nocturnal IOP elevation. Furthermore, UCP effectively lowers pain scores, thereby improving the quality of life for glaucoma patients. As a safe, non-invasive, and low-complication treatment modality, UCP holds promising prospects in the management of glaucoma within the Northwestern Chinese population.

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CRISPR-Cas9-Mediated Deletion of Carbonic Anhydrase 2 in the Ciliary Body to Treat Glaucoma

First Author: Jiaxuan JIANG
Co-Author(s): Kangjie KONG, Fei LI, Patrick YU-WAI-MAN, Xiulan ZHANG

Purpose: This study investigated the efficacy of CRISPR-Cas9-mediated deletion of the carbonic anhydrase 2 (Car2) gene in the ciliary body as an effective gene therapy for glaucoma by significantly lowering intraocular pressure (IOP).

Methods: This study developed a dual-target CRISPR-Cas9 system via the ShH10 adeno-associated virus to efficiently disrupt the Car2 gene in the ciliary body. The IOP-lowering effects and safety profile were assessed in both normal mice and glaucoma models through a single intravitreal injection using IOP measurements, histological examinations, qPCR, immunohistochemistry, optical coherence tomography, and electroretinography.

Results: The dual-target CRISPR system achieved over 90% gene editing efficiency with minimal off-target effects in vitro. Through a single intravitreal injection, the knockout of the Car2 gene in the ciliary body can reduce IOP by 3 mmHg for up to 2 months, without causing significant inflammation, immune responses, retinal damage, or visual function impairment. In a spontaneous glaucoma mouse model (DBA/2J), Car2 knockout substantially lowered the elevated IOP and halted progressive retinal ganglion cell loss. Additionally, in a chronic ocular hypertension model, Car2 knockout showed superior efficacy in lowering IOP compared to the carbonic anhydrase inhibitor brinzolamide.

Conclusions: This study demonstrates that CRISPR-Cas9-mediated deletion of the Car2 gene in the ciliary body can efficiently and safely reduce IOP and delay glaucoma progression in mouse models, showing promise as a potential "one-shot gene therapy" for glaucoma that may surpass current drug treatments.

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Moulshree Hall 402

Diagnostic Performance of Wide-Field Optical Coherence Tomography Angiography in Detecting Open-Angle Glaucoma in High Myopia

First Author: Yinhang ZHANG
Co-Author(s): Fei LI, Deming WANG, Xiulan ZHANG

Purpose: To compare the diagnostic performance of the capillary density (CD) of the central 1–6 mm and peripheral 6–12 mm annular regions in detecting open-angle glaucoma in high myopia (HM) using 15×12 mm wide-field swept-source optical coherence tomography angiography (WF SS-OCTA).

Methods: The study enrolled 206 and 103 eyes with HM and highly myopic open-angle glaucoma (HM-OAG), respectively. WF SS-OCTA images centered on the fovea were obtained to analyze the changes in the CD in the 1–3 mm, 3–6 mm, 6–9 mm, and 9–12 mm annular regions. CD of the superficial capillary plexus (SCP) was measured with the built-in software. The area under the receiver operating characteristic curve (AUROC) of each region was compared.

Results: The diagnostic performance of the SCP CD in the central 1–6 mm annular region (AUROC=0.849) was better than that in the peripheral 6–12 mm annular region (AUROC=0.756, P=0.001). The annular AUROCs of SCP CD peaked in the 3–6 mm annular region (AUROC=0.858) and gradually decreased with increasing diameter, and were lower than the corresponding AUROCs of the ganglion cell-inner plexiform layer thickness (P< 0.05 for all comparisons). SCP CD of the inferior quadrant in the 3–6 mm annular region had the best diagnostic performance (AUROC=0.859).

Conclusions: The SCP CD in the central 1–6 mm annular region exhibited better diagnostic performance for the detection of HM-OAG in HM. The assessment of more peripheral regions has no added value in detecting glaucoma in HM.

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Moulshree Hall 402

Effect of Subconjunctival Bevacizumab Injection on the Outcome of Ahmed Glaucoma Valve Implantation: A Randomized Control Trial

First Author: Maryam YADGARI
Co-Author(s): Sara KAVOUSNEZHAD, Nader NASSIRI, Kourosh SHEIBANI

Purpose: To evaluate the efficacy and safety of subconjunctival Bevacizumab injection adjunctive to AGV implantation.

Methods: In 25 eyes, conventional AGV surgery (group 1), and in 25 eyes, AGV surgery with subconjunctival Bevacizumab (group 2) was performed by block randomization. Surgical success was defined at two levels: postoperative IOP \leq 21 mmHg with at least 20% reduction in IOP (criterion A), either with no medication (complete success) or with no more than two medications (qualified success), and criterion B with the same definition but the IOP \leq 18 mmHg. Outcome measures were compared at postoperative months 3, 6, and 12.

Results: The mean age of patients was 58.76 \pm 12.11 and 51.36 \pm 15.44 years in groups 1 and 2, respectively (P = 0.06). Mean intraocular pressure (IOP) at baseline was 24.88 \pm 7.62 mmHg in group 1 and 27.52 \pm 8.57 mmHg in group 2, which decreased to 15.4 \pm 4.4 mmHg in group 1 and 13.42 \pm 2.9 mmHg in group 2 (P < 0.00) at last follow up. The cumulative success according to criteria A and B was 77.8%, 72.2% in group 1, and 89.5% in group 2, respectively, at the end of the follow-up.

Conclusions: Subconjunctival injection of Bevacizumab adjunctive to AGV implantation leads to a higher success rate compared with AGV alone in one-year follow-up.

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Venue: Moulshree Hall 402

Evaluation of the Strength and Pattern of Relationship Between Visual Field (VF) Sensitivity and Retinal Nerve Fiber Layer (RNFL) Thickness As Measured by OCT in Patients Having Primary Open Angle Glaucoma

First Author: Amrita DEY

Purpose: The purpose of the study was to evaluate the strength and pattern of the relationship between visual field (VF) sensitivity and retinal nerve fiber layer (RNFL) thickness as measured by optical coherence tomography (OCT) in patients having primary open angle glaucoma.

Methods: In this hospital-based cross-sectional study, a total of 50 patients visiting the outpatient department of a tertiary care eye center, satisfying the inclusion criteria, were randomly selected. The patients into groups underwent complete ocular examination. The total study was for 18 months (January 1, 2019 – June 30, 2020). Subjects underwent detailed ophthalmic examination.

Results: Regression analysis was used to correlate the VF parameters on standard automated perimetry (SAP) with the average and sectoral RNFL thickness in OCT. The mean MD (\pm SD) and PSD (\pm SD) of the population were -10.28 \pm 5.88 and 8.12 \pm 3.77, respectively. Mean (\pm SD) superior and inferior hemifield sensitivities were 18.45 \pm 7.71 and 20.43 \pm 6.54, respectively. Mean (\pm SD) values of superior, inferior, temporal, and nasal RNFL thickness were 87.29 (\pm 29.41), 79.08 (\pm 31.96), 61.2 (\pm 15.19), and 64.62 (\pm 17.41), respectively. The mean TSNIT average (\pm SD) was 72.96 (\pm 17.72). Plotting TSNIT avg. RNFL thickness against age, the slope showed a 0.393 μ m yearly decline in average RNFL thickness.

Conclusions: A direct correlation between the VF loss in automated perimetry and the RNFL loss in OCT is concluded from this study. Therefore, OCT can be considered for monitoring the progression of glaucoma.

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Moulshree Hall 402

Female-Specific Association Between the APOE E4 Allele and Age at Onset of Glaucoma in UK Biobank

First Author: Yan SHI
Co-Author(s): Zhigang FAN

Purpose: To explore the impact of the apolipoprotein E (APOE) E4 allele in the gender-specific aging process in glaucoma by illustrating the interaction between risk factors, including the APOE E4 allele, gender, and intraocular pressure (IOP), for age at onset (AAO) of glaucoma.

Methods: This cross-sectional study included 2,236 glaucoma patients and 103,232 controls from UK Biobank. We evaluated multivariable-adjusted associations of AAO of glaucoma, APOE E4 allele (0: absence; 1: presence), and IOP using linear mixed model (LMM) analyses across groups stratified by AAO of mean age of menopause (50 years) and gender.

Results: Stratifying the glaucoma patients by AAO of 50 and gender, lower IOP (Model 1, $P=0.019$) and positive APOE E4 allele (Model 2, $P=0.026$) were associated with an older AAO in females with an AAO < 50 years under univariate LMM. In multivariate LMM adjusted by age (Model 3), both factors showed increased significance in the association with an older AAO ($P=0.012$) (Model 1 vs Model 3: $P=0.011$). In females with an AAO ≥ 50 years, only positive APOE E4 allele ($P=0.007$) was associated with a younger AAO. In males, only higher IOP was associated with an older AAO in those with an AAO ≥ 50 years ($P=0.006$).

Conclusions: APOE E4 allele initially delays and later accelerates the development of glaucoma in females around the transition period of 50 years, which is the mean age of menopause, and this is independent of IOP. The intricacy of this interplay provides valuable insights into the possible underlying mechanisms in the development of age-related disease.

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Moulshree Hall 402

Long-Term Outcomes and Predictive Factors of Needle Revision on Long-Failed Trabeculectomy Blebs

First Author: Xiaobin XIE
Co-Author(s): Xuefei LI, Yipeng SHI, Wenyong SUN, Feng ZHANG

Purpose: To evaluate the long-term effectiveness of bleb needling for late failed trabeculectomy blebs in Chinese glaucoma patients and identify risk factors for needling revision failure.

Methods: This prospective, single-armed longitudinal interventional study included primary glaucoma patients with failed bleb over 12 months, who underwent needle revision with continuous anterior chamber infusion and followed up for 12 months. The main outcomes were preoperative and postoperative intraocular pressure (IOP), the need for antiglaucoma medication (AGM), bleb survival, and correlation factors of bleb morphology. Success was defined as a postoperative IOP decrease of $\geq 20\%$ from baseline and ≤ 21 mmHg without AGM, while failure was defined as a postoperative IOP of ≥ 21 mmHg with > 2 types of AGM.

Results: 28 eyes from 28 patients were included, with 10 eyes from 10 individuals with primary open-angle glaucoma and 18 eyes from those with primary angle-closure glaucoma. The average age of all the patients was 65.0 ± 9.5 (42-82) years. The average time between initial filtering surgery to revision was 42 ± 29.3 (6-192) months. After 12 months post-revision, the complete success rate was 33.3%, while the failure rate was 37.5%. According to the Moorfields Bleb Grading system (MBGS) by bleb photograph, a higher score of non-bleb conjunctiva vascularity was identified as a potential risk factor for failure ($P=0.01$). Cox proportional hazards regression analysis indicated that younger age was a potential risk factor for failure ($P=0.03$).

Conclusions: The likelihood of failure after needle revision for late failed trabeculectomy blebs was higher in cases with a higher non-bleb vascularity score and younger patients.

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FREE PAPERS

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Moulshree Hall 402

Netarsudil/ Latanoprost Fixed-Dose Combination Therapy for Primary Open-Angle Glaucoma (POAG): A Systematic Review and Pooled Analysis of 2484 Patients

First Author: Mohamed GBREEL
Co-Author(s): Alaa Ahmed ELSHANBARY, Ahmed Bostamy ELSNHORY, Abdulrahman Ibrahim HAGRASS, Ahmed Essam HELMY, Khaled Mohamed RAGAB

Purpose: Glaucoma, caused by fluid buildup leading to increased intraocular pressure (IOP), can damage the optic nerve and result in blindness if untreated. This study aims to compare the efficacy and safety of a fixed-dose combination of Latanoprost and Netarsudil in reducing IOP in patients with open-angle glaucoma (OAG).

Methods: We searched PubMed, Scopus, Web of Science, and Cochrane until October 2023 and updated the search till July 2022 for randomized clinical trials (RCTs) that follow the inclusion criteria. The data were pooled as mean difference (MD) or risk ratio (RR) with a 95% confidence interval (CI) using Review Manager Software (Version 5.4).

Results: The pooled analysis revealed that using a fixed-dose combination of Latanoprost and Netarsudil has significantly decreased the IOP compared to using Latanoprost as monotherapy (MD=-2.29; 95% CI: [-2.67, -1.90], P<0.00001) after two weeks follow-up. The changes in IOP favoured using a fixed-dose combination following six weeks, and three months time intervals (MD = -2.37; 95% CI: [-2.72, -2.01]; P<0.0001) (MD = -2.57; 95% CI: [-2.91, -2.22], P < 0.0001) respectively. Regarding the mean diurnal intraocular pressure, the analysis has also favored the fixed-dose combination. Notably, despite some adverse effects, noted more with using the fixed-dose combination than using Latanoprost as monotherapy, they are usually well-tolerated and rarely lead to drug discontinuation.

Conclusions: The overall efficacy of the combination therapy is highly accountable. Its safety profile is high and tolerable by the patients. Using fixed-dose combination as first-line therapy should be considered for ocular hypertensive patients.

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Moulshree Hall 402

Novel Diagnostic Indicators for Acute Angle Closure Secondary to Lens Subluxation Based on Anterior Segment and Lens Parameters

First Author: Yan SHI
Co-Author(s): Zhigang FAN, Yizhen TANG

Purpose: To explore stable and sensitive indicators for clinical diagnosis of acute angle closure (AAC) secondary to lens subluxation (LS) through quantitative analysis of CASIA 2 imaging.

Methods: This prospective cross-sectional study included 23 patients with unilateral AAC secondary to LS, and 23 cataract patients without LS were recruited. The contralateral eyes without LS served as the fellow control group. Automated circumferential anterior segment and lens morphological parameters under CASIA 2 were analyzed via three-dimensional analysis.

Results: Significant differences were found in the front and back radius of the lens, the front and back radius of steep curvature of the lens, lens thickness, lens decentration, lens diameter, iris-trabecular contact (ITC) index, ITC area, anterior chamber depth (ACD), lens vault (LV), and iris volume between LS and controls. Among these parameters, LV, the anterior radius of steep curvature of the lens, and ACD demonstrated the highest prediction power (AUC=0.87, 0.89, and 0.86, respectively). The prediction power of tilt/axis was much higher in the Gaussian Naive Bayes model (AUCs = 0.90) than in the logistic model (AUCs = 0.74). A combination of LV_mean, LV_std, tilt, and tilt axis in the Gaussian Naive Bayes model presented as the most stable and excellent diagnostic markers for AAC secondary to LS (AUCs = 0.98).

Conclusions: The combination of markers, including lens tilt and lens vault in the mathematic model, facilitates clinical work as it not only provides novel diagnostic indications and possible prompt treatment for AAC secondary to LS, but also enhances our understanding of the pathogenic role of zonulopathy in ACG.

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Moulshree Hall 402

Outcomes of Kahook Dual Blade Glide Surgery on Intraocular Pressure Control and Medication Utilization

First Author: Mahar KHAN
Co-Author(s): Mahmood ALI, Mir Azam KHAN

Purpose: To evaluate the safety and efficacy of Kahook Dual Blade Glide (KDB Glide) surgery in reducing intraocular pressure (IOP) and decreasing the dependency on IOP-lowering medications in patients with Primary open-angle glaucoma (POAG).

Methods: The study encompassed 68 eyes from 43 patients. KDB Glide surgery was executed as a standalone procedure in 61 eyes or concomitantly with Phacoemulsification in 7 eyes with POAG inadequately controlled on IOP-lowering medications. IOP and the quantity of hypotensive medications were recorded at baseline, day 1, week 1, 6 weeks, 3 months, and 6 months postoperatively. Patients were stratified based on baseline IOP: Group A (IOP >21 mm Hg) and Group B (IOP ≤21 mm Hg). Success criteria were set as an IOP <18 mm of Hg without or with medication use labelled as complete or qualified success, respectively.

Results: The mean preoperative IOP for all eyes was 24.5±9.2 mm Hg, with an average of 2.1±0.9 hypotensive medications. Qualified success was attained by 69% of patients. In Group A (43 eyes), the mean IOP decreased significantly from 25.2 to 17.1 mm Hg (P < .0001), and in Group B (25 eyes), IOP control was sustained (16.3 to 14.7 mm Hg, P = 0.07). Medication utilization was significantly reduced in both groups, from 2.2±0.9 to 1.2±1.1 in Group A (P = 0.031) and from 1.8±0.8 to 0.5±0.9 in Group B (P = 0.005).

Conclusions: KDB Glide surgery, whether performed as a standalone procedure or in combination with phacoemulsification, demonstrates robust safety and efficacy in cases of POAG.

Apr 05, 2025 (Sat) 13:15 - 14:45
Venue: Moulshree Hall 402

State of Mental Health Among Glaucoma Patients — an Issue That Needs to Be Addressed Beyond Routine Glaucoma Care

First Author: Preeti KUMARI
Co-Author(s): Tirupati NATH, Vishal SINHA

Purpose: To determine the relationship between glaucoma and co-existing depression–anxiety.

Methods: All patients attending the OPD diagnosed with a case of glaucoma and meeting the inclusion and exclusion criteria were included in the study after informed consent in Hindi was taken. The socio-demographic data and clinical information were collected by interviewing the patient, and an ocular examination was done. All the patients were assessed for diagnosis and severity of depression and anxiety by using Hamilton Depression Rating Scale (HAM-D) and Hamilton Anxiety Rating Scale (HAM-A), respectively, by psychiatrists.

Results: The study included 180 glaucoma patients, with a higher prevalence of the condition among males (60%) compared to females (40%). The age distribution showed that the majority (53.3%) of patients were between 40-59 years old. Mild depression was present in 13.3% (24 patients) and mild anxiety in 3.3% (6 patients). Moderate symptoms were observed in 3.3% (6 patients) for both conditions, with no severe cases reported. The likelihood of depression increased with the severity of glaucoma, with a significant association between the two (p = 0.0018). Anxiety prevalence also increased with the severity of glaucoma, particularly in the end stage (p = 0.0028). 40% of patients with depression were compliant with treatment. 67.86% of patients with anxiety were compliant. Despite the observed difference in mean duration, the high p-value (0.696) suggests that this difference is not statistically significant.

Conclusions: The severity of vision loss and poor compliance to treatment are associated with symptoms of depression and anxiety in glaucoma patients, irrespective of the duration of the disease.

Apr 05, 2025 (Sat) 13:15 - 14:45

Venue: Moulshree Hall 402

The Effect of Irido-Zonulo-Hyaloido-Vitreotomy (IZHV) Combined With Vitreous Basal PPV on the Angle Structure of the Anterior Chamber in PACG Patients With Crowded Ciliary Body Adjacent Area

First Author: Gangwei CHENG

Co-Author(s): Zixi SUN, Yang ZHANG

Purpose: Using UBM examination to evaluate the morphological changes of the ciliary body area in PACG patients with crowded ciliary body adjacent area, before and after IZHV combined with inferior vitreous basal PPV treatment.

Methods: A prospective, non-controlled study. Eighteen cases (18 eyes) of PACG patients with axial length less than 23mm, anterior-rotated and thickened pars plicata, and disappearance or fissure of posterior chamber angle were enrolled. All patients successfully underwent PHACO+IOL+Goniosynechialysis, combined with IZHV and inferior vitreous basal PPV. UBMs were examined before and 3 months after treatment. Angles were measured at three o'clock, six o'clock, nine o'clock, and twelve o'clock; IZHV and inferior vitreous basal removal sites were measured three months after surgery. Main outcome measures include AOD500, ACA, and trabecular ciliary process distance (TCD). Preoperative and postoperative intraocular pressure corrected visual acuity, and medications were also recorded.

Results: The average IOP postoperatively was 15.8mmHg, compared to 31.5mmHg preoperatively, and glaucoma medications decreased from 3.7 before surgery to 1.4 at three months after surgery. Meanwhile, AOD500, ACA, and TCD in all quadrants significantly increased, showing a significant deepening of the anterior chamber, the opening of the angle, and the ciliary process posteriorly rotated away from the trabecular meshwork. The average width of TCD and AOD500 at IZHV and the vitreous base removal site (1.26mm; 0.44mm) was significantly greater than the average width at other areas (1.02mm; 0.31mm).

Conclusions: The combination of IZHV and vitreous basal PPV may further increase the space reserve of the anterior chamber angle while deepening the angle.

Apr 06, 2025 (Sun) 11:30 - 13:00

Venue: Mogra Hall 404 B

Age-Related Effects of Optineurin Deficiency in the Mouse Eye

First Author: Chien-chia SU

Co-Author(s): Vishnu ADI, Kevin CHAN, Crystal LIU, Henry TSENG

Purpose: Optineurin (OPTN) is a gene associated with familial normal tension glaucoma (NTG). While NTG involves intraocular pressure (IOP)-independent neurodegeneration of the visual pathway that progresses with age, how OPTN dysfunction leads to NTG remains unclear.

Methods: Here, we generated an OPTN knockout mouse (Optn^{-/-}) model to test the hypothesis that a loss-of-function mechanism induces structural and functional eye deterioration with aging. Eye anatomy, visual function, IOP, retinal histology, and retinal ganglion cell survival were compared to littermate wild-type (WT) control mice.

Results: Consistent with OPTN's role in NTG, loss of OPTN did not increase IOP or alter gross eye anatomy in young (2-3 months) or aged (12 months) mice. When retinal layers were quantitated, young Optn^{-/-} mice had thinner retinas in the peripheral regions than young WT mice, primarily due to thinner ganglion cell-inner plexiform layers. Despite this, visual function in Optn^{-/-} mice was not severely impaired, even with aging. We also assessed the relative abundance of retinal cell subtypes, including amacrine cells, bipolar cells, cone photoreceptors, microglia, and astrocytes. While many of these cellular subtypes were unaffected by Optn deletion, more dopaminergic amacrine cells were observed in aged Optn^{-/-} mice.

Conclusions: Taken together, our findings showed that complete loss of optineurin resulted in mild retinal changes and less visual function impairment, supporting the possibility that optineurin-associated glaucoma does not result from a loss-of-function disease mechanism. Further research using these optineurin mice will elucidate detailed molecular pathways involved in NTG and identify clinical or environmental risk factors that can be targeted for glaucoma treatment.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Mogra Hall 404 B

Cholesterol Ester Concentrations in the Aqueous Humor of Patients With Exfoliation Syndrome

First Author: Mineo OZAKI

Co-Author(s): Tin AUNG, Ying Swan HO, Chiea Chuen KHOR, Esther PEH, Zhenxun WANG

Purpose: Rare loss-of-function mutations in CYP39A1 are associated with an increased risk of glaucoma in exfoliation syndrome (XFS) (Bell, Ozaki, et al.: Ophthalmology 2022). Dysfunction of CYP39A1 may increase 24-hydroxycholesterol levels in XFS eyes, causing abnormalities in cellular cholesterol metabolism and functional impairment of the blood-aqueous barrier, potentially leading to the formation of exfoliation material. We investigated whether cholesterol ester (CE) levels are elevated in the aqueous humor of XFS patients.

Methods: Using high-resolution liquid chromatography-mass spectrometry (LC-MS), we conducted an experimental study on cholesterol-related metabolites in the aqueous humor (12 XFS cases, 26 normal controls) collected during cataract surgery at Ozaki Eye Hospital. We developed a quantitative assay to measure the absolute concentrations of multiple CE species using a high-sensitivity LC-MS system and analyzed the aqueous humor of 67 XFS cases and 66 normal controls.

Results: In XFS patients, overall CE levels were significantly observed to be elevated compared to the normal control group. The quantitative assay revealed that the concentrations of six CE species were 30-130% higher in the aqueous humor of XFS patients compared to the normal control group.

Conclusions: Elevated CE concentrations were observed in the aqueous humor of XFS patients.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Mogra Hall 404 B

Explainable Machine Learning Predicts Intraocular Pressure From Demographics and Physiometabolics in Glaucoma Patients

First Author: Robert JAMES

Co-Author(s): Kevin CHAN, David FENYO, Wenke LIU, Joel SCHUMAN, Gadi WOLLSTEIN

Purpose: Glaucoma is a chronic neurodegenerative disease of the visual system and treatment is targeted toward lowering intraocular pressure, but not all patients who receive treatment achieve a normal intraocular pressure. Explainable machine learning provides a mechanism for both individual prognostication and the identification of factors associated with treatment outcomes.

Methods: In this study, we accessed the UK Biobank to obtain information on 290 eyes from 161 participants who, at a baseline assessment, reported a diagnosis of glaucoma and were receiving treatment. Features were divided into three distinct datasets containing demographic data only, physiometabolic parameters and medication prescription data, and all data combined. We applied 5 machine learning techniques with a nested 3x3-fold cross-validation to each of these feature sets and compared their ability to predict intraocular pressure at a follow-up visit 2-3 years later in a classification task. We then calculated SHAP values for the best-performing model to determine feature importance and variability in feature importance.

Results: We found that XG Boost had the best performance with an area under receiver-operating-characteristic curve (AUC) of 0.708. Low-density lipoprotein (LDL) and insulin-like growth factor 1 (IGF-1) ranked highly for feature importance, while further analysis demonstrated that these features had relatively low variations in their importance, suggesting that our model learned stable statistical relationships between these features and intraocular pressure.

Conclusions: Our studies indicated the importance of blood LDL and IGF-1 in contributing to the outcomes of intraocular pressure lowering treatment and demonstrated the ability of XG Boost to predict these outcomes.

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FREE PAPERS

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Mogra Hall 404 B

Glaucoma in Urals: Regional Prevalence Variations

First Author: Leisan GILEMZIANOVA
Co-Author(s): Mukharram BIKBOV, Jost JONAS, Songhomitra PANDA-JONAS

Purpose: To assess the prevalence and associated factors of glaucoma in a Russian population.

Methods: The population-based Ural Eye and Medical Study included 5899 (mean age 59.0 ± 10.7 years; range 40-94 years).

Results: Among 5545 participants with assessable optic disc photographs, 246 individuals [4.4%; 95% confidence interval (CI) 3.9, 5.0] had glaucoma, with open-angle glaucoma (OAG) in 177 individuals (3.2%; 95% CI 2.7, 3.7) and angle-closure glaucoma (ACG) in 69 individuals (1.2; 95% CI 1.0, 1.5), with IOP > 21 mmHg in 79 (32.1%) patients, and with 80 (32.5%) patients on glaucoma therapy. Glaucoma prevalence increased from 3/485 (0.6%; 95% CI 0.0, 1.3) in the age group of 40-45 years to 33/165 (20.0%; 95% CI 13.8, 26.2) in the group aged 80 + years. Higher ACG prevalence correlated with older age (OR 1.07; 95% CI 1.03, 1.11; P < 0.001), narrower anterior chamber angle (OR 0.81; 95% CI 0.77, 0.86; P < 0.001), and higher IOP (OR 1.30; 95% CI 1.23, 1.38; P < 0.001). Glaucoma caused MSVI in 9 (4.9%; 95% CI 1.8, 8.1) out of 184 individuals with MSVI (OAG, n = 7; ACG, n = 2), and blindness in one (9.1%) of 11 blind individuals.

Conclusions: In this population from Russia, two-thirds of glaucoma patients were not on therapy, and in two-thirds of the glaucoma patients, IOP was ≤ 21 mmHg. Otherwise, glaucoma prevalence, OAG-to-ACG ratio, and glaucoma associations did not differ markedly from Caucasian and East Asian populations.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Mogra Hall 404 B

Incidence and Risk Factors for Early Transient Intraocular Pressure Elevation After Penetrating Canaloplasty in Patients With Glaucoma

First Author: Yuanbo LIANG
Co-Author(s): Li XU

Purpose: This study aimed to evaluate the incidence and risk factors for early transient intraocular pressure (IOP) elevation after penetrating canaloplasty (PCP) in patients with primary open-angle glaucoma (POAG), primary angle-closure glaucoma (PACG) and secondary glaucoma (SG).

Methods: This retrospective single-center study included 198 eyes of 198 patients with glaucoma. Participants were classified as normal IOP, early transient high IOP (E-HIOP [Tst]), early persistent IOP elevation, late transient high IOP, and late persistent IOP elevation, based on the period and persistence of postoperative IOP elevation.

Results: E-HIOP (Tst) developed in 34.8%, 33.3%, and 40.9% of eyes with POAG, PACG, and SG, respectively. In comparison with normal IOP group, we observed the following variations in E-HIOP (Tst) cohorts: 8-10 years younger in patients with POAG and PACG; higher prevalence of hyphema (45.5% vs. 20.5%) in POAG; higher baseline IOP in PACG and SG (7-8 mmHg); higher preoperative IOP maximum (IOPpre-max) in SG (all p<0.05). Higher IOPpre-max was a risk factor for E-HIOP (Tst) in PACG and SG (p<0.05).

Conclusions: Nearly 30-40% of eyes developed E-HIOP (Tst) after PCP. E-HIOP (Tst) tended to develop in younger participants and those with higher preoperative IOP. A higher IOPpre-max was a risk factor for E-HIOP (Tst) in PACG and SG.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Mogra Hall 404 B

Low Intraocular Pressure Induces Fibrotic Changes in the Trabecular Meshwork and Schlemm's Canal of Sprague-Dawley Rats

First Author: Li XU
Co-Author(s): Yuanbo LIANG

Purpose: Continuous artificial aqueous humor drainage in the eyes of patients with glaucoma undergoing trabeculectomy likely exerts abnormal shear stress. This study was carried out to elucidate how low intraocular pressure (IOP) affects aqueous humor outflow (AHO).

Methods: We induced and maintained low intraocular pressure (L-IOP) in healthy Sprague-Dawley (SD) rats by puncturing their eyes using a tube (200 µm diameter) for two weeks. After euthanizing the rats, their eyes were removed, fixed, embedded, stained, and scanned to analyze the physiological and pathological changes in the trabecular meshwork (TM) and Schlemm's canal (SC). We measured SC parameters using ImageJ software and assessed the expression of various markers related to flow shear stress (KLF4), fibrosis (TGF-β1, TGF-β2, α-SMA, pSmad1/5, pSmad2/3, and fibronectin), cytoskeleton (integrin β1 and F-actin), diastolic function [nitric oxide synthase, endothelial nitric oxide synthase (eNOS)], apoptosis (cleaved caspase-3), and proliferation (Ki-67) using immunofluorescence or immunohistochemistry.

Results: L-IOP eyes showed a larger SC area, higher eNOS expression, and lower KLF4 and F-actin expression in the TM and SC (both $p < 0.05$) than control eyes. The aqueous humor of L-IOP eyes had a higher abundance of fibrotic proteins and apoptotic cells than that of control eyes, with significantly higher TGF-β1, α-SMA, fibronectin, and cleaved caspase-3 expression (all $p < 0.05$).

Conclusions: In conclusion, two-week persistence L-IOP may contribute to fibrosis in the TM and SC, and might be detrimental to conventional AHO in SD rat eyes.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Mogra Hall 404 B

Rationale and Results of a New Resisting and Distributing Glaucoma Drainage Device

First Author: Michael COOTE
Co-Author(s): Andrew BATTY, Craig ROSS, Christopher SMITH

Purpose: To engineer and evaluate the safety and efficacy of a novel glaucoma filtration implant to address limitations of current glaucoma operations, including failure, complications, and burdensome post-operative care.

Methods: A comprehensive engineering development program resulted in the VW-50/VW-51 glaucoma implant: a subconjunctival microfluidic glaucoma implant with calibrated flow resistance, controlled tissue distribution, and features to prevent peritubular leak. Initial safety and efficacy data was assessed in a single-surgeon consecutive case series, including participants from two non-comparative clinical trials. All eyes underwent implantation of VW-50/VW-51 due to failure of medical glaucoma therapy or previous filtration surgery, with intraocular pressure (IOP), medications, and complications recorded at every visit.

Results: Thirty-four eyes were assessed, including a variety of glaucoma types (primary open angle; chronic angle closure; exfoliation; high myopia). Mean IOP was 20.9mmHg (on 2.3 mean medications) pre-operatively, 7.6 on day 1 post-op, 10.6 at month 3, 12.9 (0.2 meds) at month 12, and 13.3 (0.3 meds, n=11) at month 18. 4 of 11 eyes treated without a scleral graft experienced conjunctival erosion with device exposure; all treated with a graft and remaining at target IOP at furthest follow-up. No erosions occurred in the 23 eyes that subsequently received a patch graft at initial device implantation. Four eyes (12%) experienced numeric hypotony (12%), and 1 eye (3%) clinical hypotony. No significant change in central endothelial cell density was observed.

Conclusions: This case series suggests a novel glaucoma drainage device provides effective IOP reduction, with a risk of erosion if placed without a scleral graft.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Mogra Hall 404 B

Severity of Glaucoma and Factors Affecting It at First Presentation in a Tertiary Eye Hospital in Nepal

First Author: Anil PARAJULI
Co-Author(s): Indraman MAHARJAN

Purpose: To determine the severity of glaucoma at diagnosis and identify the factors associated with severe visual field (VF) loss at presentation.

Methods: A hospital-based, prospective, descriptive study was performed among 173 newly diagnosed cases of primary open-angle glaucoma. The severity of VF loss was assessed using mean deviation (MD) and the Hoddap-Parrish-Anderson criteria. Patients were categorized into two groups based on severity: Group 1 (mild to moderate) and Group 2 (severe). A multivariate-model-adjusted binary logistic regression analysis was performed to identify the factors associated with severe VF loss.

Results: More than half (50.28%) of the patients had severe VF loss. The majority of patients (n=100, 57.80%) and 60 (68.96%) of the late presenters were ≥ 60 years old. Multivariate-model-adjusted binary logistic regression analysis revealed that increased age {odds ratio (OR) 1.046, p= 0.002, confidence interval (CI): 1.017-1.076}, higher baseline intraocular pressure (IOP) (OR 1.183, p <0.001, CI: 1.086-1.289), and thinner central corneal thickness (CCT) (OR 0.983, p=0.005, CI: 0.971-0.995) increased the odds of late presentation, while a personal history of hypertension (OR 0.409, p=0.037, CI: 0.177-0.947) decreased the odds of late presentation. Gender, travel time to the closest eye care center, awareness about glaucoma, family history of glaucoma, and personal history of diabetes mellitus did not have a significant influence on the severity of VF loss at presentation.

Conclusions: The majority of our patients were diagnosed with severe VF loss. Late presentation was significantly associated with older age, high IOP, and thin CCT, whereas patients with a history of systemic hypertension tended to present earlier.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Mogra Hall 404 B

Steroid Response in Fellow Eyes of Glaucoma Patients Post Phacoemulsification

First Author: Rucha KACHA

Purpose: To evaluate steroid response in fellow eyes of glaucoma patients undergoing phacoemulsification.

Methods: A longitudinal study of 50 adult glaucoma patients who underwent phacoemulsification to record IOP in fellow eyes -preoperatively, postoperatively on days 1 and 7, and at 1 month and 3 months. Steroid-antibiotic eyedrops were used for 3 weeks in the operated eye. Statistical analysis was done.

Results: Mean preoperative IOP increased from 14.43 mmHg to 17.23 mmHg in 3 months postoperative. Postop, IOP rose by 2.03 mmHg (day 1), 2.49 mmHg (day 7), 2.80 mmHg (1 month), and 3.89 mmHg (3 months). >4 mmHg elevations in IOP were seen in 10% (day 1), 30% (day 7), 20% (1 month), and 44% (3 months) of patients. By 3 months, 10% experienced >8 mmHg elevation in IOP. 75% of 41-50-year age group people and 60% of moderate glaucoma cases (mean deviation -6dB to -12 dB) exhibited >4 mmHg IOP rise.

Conclusions: Glaucoma patients undergoing phacoemulsification should have the IOP of the fellow eye carefully reviewed for a significant steroid response up to 3 months. An IOP rise of even 4mmhg could lead to the progression of glaucoma, especially in 41-50-year-olds and moderate glaucoma cases.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Mogra Hall 404 B

The 36-Month Outcome of Penetrating Canaloplasty in Secondary Glaucoma to Iridocorneal Endothelial Syndrome: A Prospective Study

First Author: Wenqing YE
Co-Author(s): Yuanbo LIANG

Purpose: To report the 36-month efficacy and safety of penetrating canaloplasty (PCP) in the treatment of secondary glaucoma to iridocorneal endothelial syndrome (GS-ICE).

Methods: This is a prospective case series. A total of 112 cases of GS-ICE were enrolled to have penetrating canaloplasty from January 2018 to February 2024. The preoperative and postoperative intraocular pressure (IOP), glaucoma medications, and complications were collected. Success rates were defined as $6 \text{ mmHg} \leq \text{IOP} \leq 21 \text{ mmHg}$ with or without glaucoma medications (qualified success) and without glaucoma medications (complete success).

Results: A total of 90 eyes (80.4%) had successful penetrating canaloplasty finally. The mean baseline IOP of $36.3 \pm 11.62 \text{ mmHg}$ was significantly decreased to $17.8 \pm 6.4 \text{ mmHg}$, $16.0 \pm 3.3 \text{ mmHg}$ and $16.1 \pm 4.0 \text{ mmHg}$ at 12 months, 24 months and 36 months, respectively. The mean baseline glaucoma medications of 3.0 ± 0.9 was significantly decreased to 0.3 ± 0.9 , 0.3 ± 0.8 and 0.5 ± 1.1 at 12 months, 24 months, and 36 months, respectively. Qualified success rates were 81.9%, 80.1%, and 74.9% at 12 months, 24 months, and 36 months, respectively. Complete success was 68.5%, 66.8%, and 57.7% at 12 months, 24 months, and 36 months, respectively. Transient IOP elevation (36.7%) and hyphema (31.1%) were the main complications.

Conclusions: Penetrating canaloplasty in the treatment of GS-ICE has a mid-term efficacy with stable, qualified success and acceptable safety profiles.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Mogra Hall 404 B

The Possibility of Implantation of an Intraocular Lens With Extended Depth of Focus in Patients With Advanced Glaucoma

First Author: Nadezhda GORBUNOVA
Co-Author(s): Nikita MIKHAILOV, Nadezhda POZDEEVA

Purpose: The aim of the investigation is to study the possibility and clinical effectiveness of intraocular lens (IOL) implantation with an extended depth of focus during extraction of complicated cataracts in patients with advanced glaucoma, to compare indices of retinal photosensitivity in this group before and after cataract surgery.

Methods: The study was conducted on 23 eyes of patients with advanced primary angle-closure and open-angle glaucoma and complicated cataract. In 19 eyes, intraocular pressure was surgically compensated, and cataract phacoemulsification with implantation of an IOL with an expanded depth of focus was performed 1-3 months after surgical treatment of glaucoma. In 4 cases, extraction of complicated cataracts with IOL was performed simultaneously with an antiglaucoma surgery. Angle-closure glaucoma was diagnosed in 15 cases, and open-angle glaucoma in 6 eyes.

Results: According to the results of computer perimetry data evaluation, it was revealed that all patients with advanced glaucoma had increased visual acuity and improved retinal photosensitivity after surgery.

Conclusions: The implantation of an IOL with extended depth of focus increases visual acuity and improves the quality of vision of patients with glaucoma without reducing the light sensitivity of the retina according to computer perimetry. When choosing the type of intraocular correction in patients with advanced glaucoma, it is necessary to focus on indices of electrophysiological examination of optic nerve conductivity.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Mogra Hall 404 B

Two-Year Outcome of Phacogoniotomy for Advanced Primary Angle-Closure Glaucoma With Cataracts: A Multicenter Study

First Author: Yunhe SONG
Co-Author(s): Xie LIN

Purpose: To report the two-year surgical outcome of combined phacoemulsification with intraocular lens implantation (PEI), goniosynechialysis (GSL), and 120-degree goniotomy (GT) in eyes with advanced primary angle-closure glaucoma (PACG) and cataracts.

Methods: We enrolled 201 eyes of 196 patients with advanced PACG who received combined PEI+GSL+GT. Each patient was assessed before treatment and 1 day, 7 days, 1 month, 3 months, 6 months, 12 months, and 24 months post-surgery.

Results: All participants completed two years of follow-up. The mean preoperative and postsurgical IOPs were 33.0 ± 10.7 mmHg and 13.6 ± 2.9 mmHg at 24 months, respectively. Before surgery, the participants used an average of 2.4 types of topical hypotensive medications, and declined to 0.4 after surgery. Major postoperative complications included hyphema (n=14, 7.0%), IOP spike (n=9, 4.9%), and transit corneal edema (n=23, 11.4%). Among all participants, 146 out of 201 eyes (72.6%) achieved complete success, and 184 out of 201 eyes (91.5%) achieved qualified success, which was defined as $6 \leq \text{IOP} \leq 18$ mmHg, without or with topical hypotensive medications, respectively. Only one out of 201 eyes required tube shunt surgery reoperation, and no one developed severe vision-threatening complications. The best-corrected visual acuity increased from 0.80 ± 1.08 to 0.54 ± 0.78 LogMAR.

Conclusions: PEI+GSL+GT was shown to be effective and safe in treating advanced PACG with cataract over a 2-year follow-up period. The combined surgery may be considered as an alternative for patients with advanced PACG.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Mogra Hall 404 B

Two-Year Outcomes of Selective Tenonectomy Versus Mitomycin C During Ahmed FP7 Tube Shunt Implantation

First Author: Suria SUDHAKARAN MANNIL
Co-Author(s): Vikram SHANKAR, Robert T CHANG, Michael YANG

Purpose: To compare two-year outcomes of intraoperative MMC, with or without postoperative 5-FU, versus selective tenonectomy prior to conjunctival closure during Ahmed FP7 tube shunt implantation.

Methods: Retrospective comparative case series of 90 patients (90 eyes) undergoing Ahmed FP7 implantation by two surgeons between 2017 – 2024. Two-year outcomes of intraoperative MMC, with or without postoperative 5-FU, versus selective tenonectomy prior to conjunctival closure during Ahmed FP7 tube shunt implantation were compared. Inclusion criteria: 1) ≥ 18 years of age 2) All types of glaucoma 3) Preop IOP ≥ 18 mmHg despite MMT 4) ≥ 3 months of postop follow-up. Definition of failure: 1) IOP < 5 ; IOP > 21 mm Hg or not reduced by 20% from baseline after 3 months 2) Reoperation for glaucoma 3) Loss of LP vision.

Results: Mean IOP, max IOP, visual acuity, failure rates, complications, and medication use were similar between eyes treated with MMC versus selective tenonectomy. Similar safety profiles and failure rates were found in both groups. Baseline IOP trended toward higher in the MMC group, with resulting significant differences in IOP change at month 3 and 1 year. This could be due to slightly more secondary glaucoma (NVG) in the MMC group (80.5% vs 69.4%). MMC did not impact the IOP during the hypertensive phase after tube shunt implantation. MMC trended toward fewer meds at Month 3 (1.7 vs 2.2).

Conclusions: Mitomycin C and selective tenonectomy are equally safe in Ahmed FP7 implantation and have very similar clinical results and complication rates.

Intraocular Inflammation, Uveitis and Scleritis

Apr 04, 2025 (Fri) 13:15 - 14:45

Venue: Javakusum Hall 303

Diagnostic Biomarkers for Uveitis: Combined Serum BAFF and CXCL9 Discriminates Ocular Sarcoidosis, Tuberculosis, and Other Uveitis Entities

First Author: *Ikhwanuliman PUTERA*

Co-Author(s): *Willem DIK, Rina LA DISTIA NORA, Saskia ROMBACH, Josianne TEN BERGE, P.Martin VAN HAGEN*

Purpose: To describe the utility of serum B cell activating factor (BAFF) and CXCL9 as diagnostic biomarkers for ocular sarcoidosis, tuberculosis (TB), and other uveitis entities.

Methods: Eighty uveitis patients with various etiologies were included in this retrospective diagnostic study: 10 with ocular sarcoidosis, 35 with TB-related uveitis (11 confirmed ocular TB and 24 QFT-positive undifferentiated uveitis), and 35 with a combination of other infectious and non-infectious uveitis. Serum BAFF and CXCL9 were measured and their diagnostic performance was evaluated.

Results: Serum BAFF was elevated in ocular sarcoidosis compared to other uveitis entities, including ocular TB, with an area under the curve (AUC) of 0.74 ($p = 0.017$). At an optimal serum BAFF cut-off point of 772.3 pg/ml, the sensitivity was 70.0% and the specificity was 89.1%. Serum CXCL9 levels were comparable between ocular sarcoidosis and confirmed ocular TB, but were higher in these groups compared to other uveitis entities (AUC = 0.71, $p = 0.011$). To differentiate ocular sarcoidosis and TB from other uveitis entities, an optimal cut-off point for CXCL9 of 105.5 pg/ml resulted in a sensitivity of 88.9% and a specificity of 54.3%. Confirmed ocular TB and QFT-positive undifferentiated uveitis patients with high CXCL9 levels demonstrated a higher proportion of uveitis resolution when fully treated with antitubercular treatment (ATT) ($p = 0.017$).

Conclusions: Serum BAFF and CXCL9 serve as potential diagnostic biomarkers for differentiating ocular sarcoidosis, ocular TB, and other uveitis entities. The measurement of serum CXCL9 in QFT-positive undifferentiated uveitis helps identify patients who are most in need of ATT.

Apr 06, 2025 (Sun) 11:30 - 13:00

Venue: Moulshree Hall 402

A National Survey on the Practice of Uveitis Among Ophthalmologists in the Philippines

First Author: *Jose Carlo ARTIAGA*

Co-Author(s): *Teresita CASTILLO, Laurence Lester TAN*

Purpose: To describe the practice and referral patterns of ophthalmologists in the diagnosis and management of uveitis in the Philippines.

Methods: Online survey distributed to members of the Philippine Academy of Ophthalmology.

Results: A total of 87 respondents completed the survey, representing 15 of the 17 geographic regions. Most of the survey respondents were less than 5 years into practice (47.1%) and were subspecialists (52.9%). Most of the sub-specialists were retina specialists (28.8%), cataract and refractive surgeons (17.3%) and cornea specialists (13.5%). Fifty-five percent encounter a uveitis case at least once every two weeks. Anterior uveitis was the most common anatomical classification. The most commonly reported etiology is idiopathic. The most common infectious etiologies were tuberculosis (86.2%), while the most common non-infectious etiology is lens-induced (86.2%). There was fair self-assessed skill in requesting and interpreting systemic (median 3, IQR 2) and initiating topical (median 4, IQR 3) and systemic (median 4, IQR 4) among respondents. Forty-five percent are likely to refer to a uveitis specialist >75% of the time. The majority (95%) of respondents would work up and treat prior to referral to a uveitis specialist.

Conclusions: This survey provided a real-world perspective on the practice of uveitis in the Philippines in terms of case demographics and distribution, diagnostic and treatment skills and preferences, and referral patterns based on the experiences of Filipino ophthalmologists. The results of the study will be helpful in the local training of Filipino general ophthalmologists and uveitis specialists.

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FREE PAPERS

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Moulshree Hall 402

AIP1 Modulates Pyroptosis-Induced Angiogenesis via Atypical NLRP12-ASC-Caspase-8 Inflammasome in Retinal Neovascularization

First Author: Wei CHI

Purpose: Angiogenesis and inflammation are closely integrated in retinal neovascularization (RNV). Our single-cell sequencing data indicates a marked decrease in AIP1 and enrichment in inflammatory and angiogenesis pathways in vascular endothelial cells (VECs) of oxygen-induced retinopathy (OIR). We hypothesize that AIP1, as an anti-angiogenetic factor, suppresses an inflammatory angiogenic process via a noncanonical inflammation assembly of NLRP12, ASC and caspase-8 inflammasome through pyroptosis in VECs.

Methods: We employed an overexpression and knockdown strategy on AIP1, caspase-8, NLRP12, and GSDMD in the HUVEC cell line under hypoxia. We used WB, IF, and co-IP to show the assembly of inflammasome and measure the changes in pyroptosis and VEGF release. Tube formation and scratch assays were performed to reflect the angiogenesis. We also used AIP1, NLRP12, GSDMD knockout mice, and casp8+/- mice to build the OIR model. Retinal flat mounts stained for IB4 were employed to examine RNV.

Results: AIP1 downregulation promoted the formation of the NLRP12-ASC-caspase-8 inflammasome and activated the pyroptosis in VECs. Meanwhile, activation of NLRP12-ASC-caspase-8 inflammasome induced aberrant VEGF release and attenuated endothelial dysfunction through pyroptosis. In vivo experiments also corroborated that deletion of NLRP12, caspase-8, and GSDMD maintained vascular integrity and reduced RNV. However, deleting AIP1 as endogenous protective molecules presented an opposite trend.

Conclusions: AIP1 negatively modulates the NLRP12-ASC-caspase-8 mediated-pyroptosis pathway and exerts a dual inhibitory effect on inflammatory response and release of VEGF. This inflammatory angiogenesis mechanism offers an opportunity to develop an intervention to position AIP1 as a vulnerable candidate to address the complex interplay between inflammation and neovascularization in RNV.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Moulshree Hall 402

Carbonic Anhydrase Inhibitors for Managing Uveitic Macular Edema: A Systematic Review and Meta-Analysis

First Author: Tifanni EXCELINDA

Co-Author(s): Rina LA DISTIA NORA, Ikhwanuliman PUTERA, Saskia ROMBACH, Asri S. RIDWAN, Josianne TEN BERGE

Purpose: Uveitic macular edema (UME) is one of the leading causes of visual impairment in uveitis patients. Currently, there is no definitive therapeutic guideline for UME. Steroids remain the preferred treatment option, but their long-term use might lead to other ocular complications. This study aims to summarize the current evidence on carbonic anhydrase inhibitors (CAIs) as a cost-effective alternative for UME management.

Methods: A literature search was conducted on six databases. Meta-analysis was conducted to evaluate the pooled proportion of the selected outcomes. General outcomes of the studies are summarized into two: (1) visual acuity, and (2) anatomical improvement. This study was registered in PROSPERO (CRD42024528004).

Results: Seven studies with a total of 187 participants (236 eyes) were included in the final analysis. All studies used oral acetazolamide, with dosages ranging from 500-1000 mg/day and varying follow-up times. The pooled proportion of visual acuity improvement was 53% (95% CI: 45-60%), while the proportion of anatomical improvement was 55% (95% CI: 32-79%). Compared to placebo, there was a 14% higher likelihood of experiencing improved visual acuity in the group treated with acetazolamide in the head-to-head analysis. However, this difference was not statistically significant (risk difference: 0.14 [95% CI: -0.04 to 0.31]; p = 0.12).

Conclusions: CAIs, particularly oral acetazolamide, offer a potential alternative for UME management. This can be beneficial for patients who are refractory to steroids or are steroid-responders (e.g., increased intraocular pressure). Further well-designed studies are required to better evaluate the efficacy and safety of CAIs in UME management.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Moulshree Hall 402

Clinical Characteristics, Treatment, and Outcomes of Cytomegalovirus Anterior Uveitis: A Multicenter Study in Taiwan

First Author: Po-yi WU
Co-Author(s): Yih-shiou HWANG, Eugene Yu-chuan KANG

Purpose: To characterize patients with cytomegalovirus (CMV) anterior uveitis (AU) in Taiwan and to compare the efficacy of topical and oral antiviral treatment.

Methods: This retrospective study enrolled patients with CMV uveitis from the Chang Gung Research Database between 2007 and 2019. The diagnosis was confirmed through aqueous polymerase chain reaction testing.

Results: A total of 240 patients diagnosed with CMV AU were included. Patients initially treated with oral valganciclovir only were more likely to spare any anti-CMV medications beyond three months, compared to those treated with topical ganciclovir only (40.0% vs. 15.7%, $p=0.004$). Patients initially treated with combined topical valganciclovir and oral ganciclovir were the least likely to experience a chronic disease course, compared to those receiving topical or oral medication only (5.0% vs. 39.3% vs. 20.0%, $p=0.007$). Patients experiencing recurrent AU episodes demonstrated the highest incidence of ocular hypertension or glaucoma (85.7% vs. 60.3% vs. 76.0%, $p<0.001$) and cataract (53.6% vs. 32.1% vs. 44.0%, $p=0.013$), and were most likely to undergo glaucoma intervention (21.4% vs. 6.4% vs. 18.0%, $p=0.018$) or corneal transplantation (22.3% vs. 3.8% vs. 8.0%, $p=0.001$) compared to those with an acute or a chronic course. Nevertheless, the aforementioned complications or interventions were not associated with the initial antiviral treatment route.

Conclusions: Compared to topical ganciclovir, oral valganciclovir has the potential to avoid a recurrent or chronic CMV AU course. Recurrent courses of AU pose risks of ocular hypertension or glaucoma, cataract, and corneal decompensation.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Moulshree Hall 402

Clinical Value of β -D-Glucan Testing and Next-Generation Metagenomic Sequencing for Diagnosis of Fungal Endophthalmitis

First Author: Yong TAO
Co-Author(s): Yuxin LI, Zhuyun QIAN, Ting YU

Purpose: This study aims to assess the diagnostic accuracy and overall clinical agreement rate of intraocular fluid Beta-D-Glucan (BDG) tests and mNGS for patients with Fungal endophthalmitis (FE).

Methods: This retrospective analysis involved 32 cases (32 eyes) of patients with Fuchs' endothelial dystrophy and 20 cases (20 eyes) of patients with intraocular inflammations from different causes. The clinical diagnosis was determined through general examinations, ocular symptoms, comprehensive laboratory tests, and responsiveness to treatment. All patients had samples of aqueous humor or vitreous fluid extracted for BDG testing and mNGS. The diagnostic accuracy and overall clinical agreement rate (TCCR) of BDG tests and mNGS for fungal endocarditis were assessed and determined using the clinical diagnosis outcomes.

Results: The positive rates of BDG tests and mNGS among clinically diagnosed FE were both considerably higher at 90.63% compared to microbial cultures at 53.13% ($P<0.001$). Pathogen identification using mNGS and culture identification is 100% consistent for culture-positive patients. The Area Under the Curve (AUC) was 0.927 for BDG tests and 0.853 for metagenomic Next-Generation Sequencing (mNGS). The best threshold value for BDG was determined as 82.65 pg/mL from the ROC curve. Combining the two tests considerably increased diagnostic performance to 93.75%, specificity to 100.00%, and TCCR to 96.15% compared to the individual tests.

Conclusions: The positivity rates of BDG tests and mNGS were much greater compared to cultures in FE identification. The amalgamation of these two exams demonstrated enhanced performance in comparison to each test alone.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Moulshree Hall 402

Comparative Effectiveness of Immunomodulatory Agents Plus Corticosteroids for Severe Behçet's Disease Uveitis

First Author: Zhenyu ZHONG
Co-Author(s): Peizeng YANG

Purpose: We aim to compare cyclosporine, interferon alpha2a, and adalimumab, each combined with corticosteroids, in preventing uveitis relapse in severe Behçet's disease.

Methods: We conducted a randomised, open-label, assessor-blinded, head-to-head trial. Severe Behçet's disease uveitis patients on corticosteroids and naive to anti-TNF therapy were randomly assigned in a 1:1:1 ratio to cyclosporine, interferon alpha2a, or adalimumab, each combined with tapering doses of corticosteroids with subsequent dose adjustments. The primary outcome was the annualised relapse rate of uveitis.

Results: A total of 270 patients underwent randomization, with 90 assigned to each group, and 261 patients were included in the full analysis set. For the primary outcome, the least-squares mean was 1.84 (95% CI 1.40 to 2.44) with cyclosporine, 1.44 (95% CI 1.10 to 1.89) with interferon alpha2a, and 0.95 (95% CI 0.64 to 1.40) with adalimumab. The annualised relapse rate was significantly higher in patients with cyclosporine than in those with adalimumab (least-squares mean difference 0.90 [95% CI 0.27 to 1.53]). The least-squares mean difference between interferon alpha2a and adalimumab was 0.50 (95% CI -0.04 to 1.04). The primary outcome did not differ substantially between interferon alpha2a and cyclosporine (least-squares mean difference -0.40 [95% CI -1.05 to 0.25]).

Conclusions: Adalimumab plus corticosteroids led to the lowest uveitis relapse rate among the three groups. These findings suggested that when necessary, the combination regimen of adalimumab plus corticosteroids could be a clinical priority in severe Behçet's disease.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Moulshree Hall 402

IL-6 Inhibition With Vamikibart in Patients With Uveitic Macular Edema: Phase 3 MEERKAT and SANDCAT Trials

First Author: Vishali GUPTA
Co-Author(s): Markus C. ELZE, Zdenka HASKOVA, Lachlan MACGREGOR, David SILVERMAN, Laura STEEPLES

Purpose: Vamikibart is a recombinant monoclonal anti-interleukin-6 (IL-6) antibody, engineered for intravitreal (IVT) delivery. We report the designs of two ongoing phase 3 studies of IVT vamikibart in uveitic macular edema (UME) secondary to non-infectious uveitis (NIU).

Methods: Two identical, global, randomized, double-masked, sham comparator-controlled phase 3 trials, MEERKAT (study GR44277, NCT05642312) and SANDCAT (study GR44278, NCT05642325), are investigating the efficacy, safety, and pharmacokinetics/pharmacodynamics of IVT vamikibart in patients with UME (n=225 per study). Patients with UME and BCVA scores of 73-19 ETDRS letters, with active or inactive, acute or chronic NIU of any etiology or anatomical type, are eligible to enroll. Patients are randomized into 3 arms: vamikibart 0.25 mg, vamikibart 1 mg, and sham. Study treatment is administered 4 times every 4 weeks through Week 12, followed by as-needed dosing during weeks 20 to 48. Predefined rescue criteria allow standard-of-care treatment for patients with worsening BCVA, UME, or inflammation.

Results: The primary outcome measure is the proportion of patients with ≥ 15 letter BCVA improvement from baseline at week 16. Secondary endpoints include changes in BCVA and central subfield thickness, rescue medications requirements, adverse events, and concentrations of IL-6 and vamikibart in aqueous humor and serum.

Conclusions: The ongoing MEERKAT and SANDCAT program will evaluate vamikibart and its potential to address the unmet need for effective non-corticosteroid treatments in UME.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Moulshree Hall 402

In Situ Crystallized Ceria-Exosome Nanohybrid Therapeutic for Effective Treatment of Inflammatory Intraocular Disease

First Author: Jiawei ZHAO
Co-Author(s): Han BAO, Xinyu GUO, Yingjie WANG, Yiquan ZHANG

Purpose: Posterior uveitis is a group of diseases characterized by intraocular inflammation mainly affecting the choroid and retina. It is a significant subset of uveitis and can cause severe visual impairment, leading to significant clinical and quality-of-life impacts. Therefore, an ideal treatment for posterior uveitis should involve dual functionality of suppression of oxidation and inflammation, and restoration of damaged tissues.

Methods: Here we report a method for cerium oxide nanoparticle in situ crystallization on mesenchymal stem cell exosomes for antioxidative and anti-inflammation therapy of primed mycobacterial uveitis (PMU). The membrane of exosomes acts as a template to achieve the ultrasmall size (~ 3nm) of the cerium oxide nanoparticle. The obtained cerium oxide nanoparticles serve as antioxidants as they remove reactive oxygen species (ROS) by cycling between two reversible ionic states, Ce³⁺, Ce⁴⁺, scavenging the excessively produced ROS in the intraocular compartment and tissues with a single injection.

Results: Together, our study provided a facile way to develop a nanohybrid treatment system with multiple functions, including efficient antioxidant, anti-inflammatory, and tissue-repairing for treating oxidative stress- and inflammation-related diseases in comparison to a single-treatment therapy.

Conclusions: The cerium oxide nanoparticles act as a nanozyme to reduce inflammation and scavenge excessive ROS, while the MSC exosomes, with their biocompatibility, modulate inflammatory cell infiltration and facilitate tissue repair. This synergistic system offers a promising new treatment strategy for ocular diseases characterized by oxidative stress and inflammation.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Moulshree Hall 402

Intravitreal Interleukin-6 Inhibition With Vamikibart in Uveitic Macular Edema: Final Results From the Phase 1 DOVETAIL Study

First Author: Jyotirmay BISWAS
Co-Author(s): Zdenka HASKOVA, Marina MESQUIDA, Meike PAULY-EVERS, Laura STEEPLES

Purpose: DOVETAIL was a phase 1, multicenter, nonrandomized, open-label, multiple ascending dose study to investigate the safety, tolerability, efficacy, and pharmacokinetics/pharmacodynamics profile of intravitreal (IVT) vamikibart in diabetic macular edema (DME) and uveitic macular edema (UME). Vamikibart is a recombinant monoclonal antibody that potently inhibits interleukin-6 signaling.

Methods: In the UME cohort, patients ≥ 18 years of age with UME secondary to non-infectious uveitis (n=37) were enrolled into three dose groups: 0.25 mg (n=12), 1 mg (n=12), and 2.5 mg (n=13), and received IVT vamikibart at weeks (W) 0, 4, and 8, followed by observation until W36.

Results: The mean age was 63.5 years, mean (range) baseline (BL) best corrected visual acuity (BCVA) and central subfield thickness (CST) were 64 (43–82) letters and 514 (271–893) μm, respectively. The mean combined (SD) change from BL to W12 in BCVA was +9.9 [8.9] letters, and in CST was –165 [147] μm. BCVA and CST improvements were maintained during the observation period. All three doses were well tolerated. Ocular Adverse events (AE) were reported in the study eye of 19/37 patients, with one serious AE (worsening uveitis; unrelated to treatment). No patients withdrew from the study due to an AE, and no deaths were reported. There were no cases of treatment-related cataract or sustained intraocular pressure increase.

Conclusions: Vamikibart was well tolerated and improved BCVA and CST in UME patients. Clinical studies in DME (Phase 2 ALLUVIUM and BARDENAS studies) and UME (Phase 3 MEERKAT and SANDCAT studies) are ongoing.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Moulshree Hall 402

Quantitative Assessment of Peripheral Choroidal Vasculature on UWF ICGA in Posterior Uveitis Using Advanced Imaging Processing Techniques

First Author: Ashish MARKAN
Co-Author(s): Aniruddha AGARWAL, Rupesh AGRAWAL, Vishali GUPTA, Jainy SACHDEVA

Purpose: To quantitatively evaluate the peripheral choroidal vasculature in patients with posterior uveitis using UWF ICGA.

Methods: Design: Retrospective study design. Cases and controls: Patients aged 18-50 years registered in the uveitis clinic and diagnosed with posterior uveitis were recruited as cases. Fellow eyes of the patients who underwent UWF FFA and ICGA for other ocular pathologies were recruited as controls. Methodology: Early and mid-phase FFA ICGA images were used to analyze (using affine registration and advanced image processing techniques) various choroidal vascular parameters. We undertook a quantitative assessment of peripheral choroidal vasculature on UWF ICGA by leveraging image processing algorithms using Python programming language. Main outcome measures: Choroidal vessel densitometry (CVD), asymmetry of choroidal outflow (ACO), the diameter of the prominent choroidal vessel, and distance between the ampulla and optic nerve were assessed in eyes with posterior uveitis and control group.

Results: A total of 31 cases and 14 controls were included. The choroidal vessel densitometry and diameter of inferior choroidal vessels were significantly altered in posterior uveitis as compared to the control group. Other parameters, like the asymmetry of choroidal outflow and the ampulla distance from the optic nerve, were comparable in both groups.

Conclusions: Quantifying choroidal vascular parameters can help clinicians monitor the disease progression and response to therapy. Our study also showed that CVD was markedly decreased, and the diameter of prominent choroidal vessels in the inferior quadrant was significantly increased in posterior uveitis as compared to the control group.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Moulshree Hall 402

Sex-Specific Neutrophil Subsets Determine the Immunological Outcome in Behçet's Uveitis

First Author: Qingfeng WANG
Co-Author(s): Peizeng YANG

Purpose: Behçet's disease (BD) is a multi-systemic inflammatory vasculitis, with a high incidence and more serious course of intraocular inflammation (Behçet's uveitis, BU) in males. However, the etiology of male-biased Behçet's uveitis is largely unknown.

Methods: This retrospective study on 1,881 BU patients (310 females and 1,571 males) was performed to assess the sex differences in the clinical manifestations and their correlation with neutrophils. Single-cell sequencing was used to identify the sex-specific heterogeneity in neutrophil composition under normal and BU conditions at single-cell resolution. Neutrophil-specific genetic knockouts and transfer experiments were performed to determine the function of aberrant neutrophil subsets in vivo.

Results: The retrospective study on BU revealed a male-biased exacerbated neutrophil responses and a worse long-term prognosis. Male BU was enriched for conventional inflammatory neutrophil subsets compared with female BD, whereas unconventional neutrophil subsets characterized by IFN- α signaling and regulation of T cell activation were decreased. Mechanistically, we found that IFN- α 2a treatment expanded circulating unconventional neutrophils and, in turn, induced the expansion of regulatory T cells. These results substantiate the therapeutic effect of IFN- α 2a on the Behçet's uveitis pathogenesis. Accordingly, we further confirmed unconventional neutrophil subsets were able to directly regulate Th17 and Treg cell balance in EAU.

Conclusions: Our single-cell atlas defined sex-specific and disease-specific neutrophil heterogeneity in Behçet's uveitis pathogenesis and provided a resource characterizing the role of neutrophils in regulating peripheral immune homeostasis and Behçet's uveitis pathogenesis.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Moulshree Hall 402

Tattoo Associated Granulomatous Uveitis in the Era of Modern Cosmetic Brow Tattooing: A Case Study From Malaysia

First Author: Wendy SEE

Co-Author(s): Nor Azita AHMAD, Derrick Jun Quan CHUAH, Reena KAUR

Purpose: Commercially, decorative tattoos are performed by tattoo artists, while cosmetic tattoos are performed by beauticians in the recent era of fast beauty. This case study reports a recent sight-threatening granulomatous uveitis following eyebrow tattooing, emphasizing the need for heightened awareness among ophthalmologists, dermatologists, and patients.

Methods: Case report and literature review.

Results: A 37-year-old Chinese lady complained of a painful and red right eye, with worsening vision for one month after right eyebrow tattooing, which was complicated by bleeding during the procedure. The systemic review was unremarkable except for the inflamed right eyebrow with multiple tiny reddish raised papules along the eyebrow tattoo margin. Right visual acuity was 6/60 with severe anterior granulomatous uveitis with posterior synechiae. Fundus examinations revealed vitritis 2+, multifocal choroiditis, and cystoid macula edema. Infective, sarcoidosis, and connective tissue screening were negative. Her chronic ocular inflammation waxed and waned over six months. It was successfully controlled after adjustment to high-dose oral Prednisolone, injection of sub-tenon triamcinolone in the right eye, a systemic immunosuppressant, and finally achieved remission. Isolated Tattoo-associated Granulomatous Uveitis (TAGU) is a diagnosis of exclusion when systemic sarcoidosis and other uveitis causes have been ruled out through extensive investigations. We discuss the management of TAGU and multifactorial causes affecting the degree of inflammatory response: the size of the tattoo, the number of tattoo sessions, the location, and the color of the tattoo pigments.

Conclusions: This is the second sight-threatening TAGU report following cosmetic tattoos in the literature since 2021, reflecting the possibility of underdiagnosis or underreporting of the disease.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Moulshree Hall 402

Tocilizumab for Cystoid Macular Edema Secondary to Immune Recovery Uveitis in a Patient With Contraindications to Long-Term Systemic Corticosteroid

First Author: Ba Trung NGUYEN

Co-Author(s): Jia-horung HUNG, Quan Dong NGUYEN, Zheng XIAN THNG, Woongsun YOO

Purpose: To report a case of cystoid macular edema (CME) secondary to immune recovery uveitis (IRU) in a patient with previous history of cytomegalovirus (CMV) retinitis and leukemia, which was successfully treated with tocilizumab, an interleukin-6 (IL-6) receptor antagonist.

Methods: The clinical records of the case were reviewed, focusing on demographics, image findings, and clinical course.

Results: A 17-year-old female with a past medical history of T-cell acute lymphoblastic leukemia undergoing chemotherapy for two years presented with active CMV retinitis. She was successfully treated with intravitreal foscarnet injections and systemic ganciclovir. After five months of systemic valganciclovir maintenance and following cessation of chemotherapy, the patient developed bilateral CME and vasculitis and was diagnosed with IRU. CME management was challenging due to a history of bilateral avascular necrosis of the femoral head resulting from prolonged systemic corticosteroid use. Two cycles of monthly tocilizumab infusions were administered at the dosage of 8mg/kg. Subsequently, the CME and retinal vasculitis resolved significantly without any evidence of inflammation in the anterior chamber and vitreous.

Conclusions: The index case report demonstrated the safety and efficacy of the IL-6 receptor antagonist tocilizumab in treating CME associated with IRU in a non-HIV CMV retinitis patient.

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FREE PAPERS

Myopia

Apr 04, 2025 (Fri) 13:15 - 14:45

Venue: Javakusum Hall 303

Implantable Collamer Lens for Short Sight and Not So Long Eyes

First Author: Shirin SONVANE

Co-Author(s): Vardhaman KANKARIYA, Viraj PADWAL

Purpose: To study preoperative parameters of implantable collamer lens ICL (EVO STAAR Surgical) for low-to-moderate diopter myopia and analyse its outcome.

Methods: In a retrospective analytical study in a tertiary private ophthalmology setting, we include 361 low to moderate myopes from 20 to 50 years and spherical equivalent between -1.00 D and -6.00 D undergoing ICL. Data on thorough refractive workup, the reason for choosing ICL, and the vault were collected and analyzed.

Results: Subjects were 91 males and 130 females, out of whom 58 and 82 underwent binocular surgeries, respectively. Mean values were age 29.05 years, spherical equivalent -4.3552D, anterior chamber depth 3.26 mm, white to white 11.49 mm, corneal thickness 499.35 microns, preoperative log MAR uncorrected distance visual acuity (UCDVA) 1.0634, uncorrected near visual acuity (UCNVA) 0.1104, best-corrected distance visual acuity (BCDVA) 0.1039, best corrected near visual acuity (BCNVA) 0.1102, whereas postoperative were log MAR UCDVA 0.0227, UCNVA 0.1099, BCDVA 0.0238, BCNVA 0.1100, vault 562.9114, IOP 17.58 mmHg, safety index and efficacy index 0.1925. Out of 361, 23 had normal corneal thickness and shape (individuals who opted for ICL even laser as a suitable option), 223 had thin and borderline shape, 96 had keratoconus suspect, 10 had keratoconus, while one had thin and normal shape.

Conclusions: ICL, which was earlier opted predominantly in high and pathological myopes, was found to be a suitable option in low to moderate myopia and also preferred by our patients even when laser was possible. We report the largest such study ICL in low diopter myopes with excellent visual outcomes, safety, and efficacy index.

Apr 06, 2025 (Sun) 09:45 - 11:15

Venue: Javakusum Hall 303

Anisometropia and its Correction in Children in Northwest China: A Study Based on Autorefractometry Data

First Author: Junhan WEI

Co-Author(s): Qian YAO, Lu YE, Guoyun ZHANG

Purpose: To investigate the prevalence and correction of anisometropia among primary school children in northwestern China.

Methods: A cross-sectional school-based study was conducted in Shaanxi Province. Visual acuity (VA) and autorefractometry without cycloplegia were assessed in all participants, and some received axial length (AL) measurements. Anisometropia was categorized based on spherical equivalent (SE), cylindrical (CYL), and AL. The prevalence of anisometropia and refractive correction across different ages and sexes, and correlations between ocular parameters, were analyzed.

Results: The study included 29,153 children aged 6–12 (mean age 9.52 ± 1.73 years) for VA and autorefractometry measurements, and 1,176 children for AL measurements. The prevalence of myopia (SE ≤ -0.50D), hyperopia (SE ≥ +0.50D), and anisometropia (interocular SE difference ≥ 1.00D) was 65.26%, 15.09% and 16.50%, respectively. Anisometropia severity, based on SE ($\chi^2 = 443.758$, $P < 0.001$), CYL ($\chi^2 = 41.669$, $P < 0.001$), and AL ($\chi^2 = 95.505$, $P < 0.001$), increased with age, with no significant differences between sexes. Interocular SE difference correlated with interocular spherical power ($r = 0.806$, $P < 0.001$), CYL ($r = 0.21$, $P < 0.001$), and AL ($r = 0.365$, $P < 0.001$). Additionally, interocular CYL difference was positively correlated with interocular AL difference ($r = 0.16$, $P < 0.001$). Despite the high prevalence of anisometropia, less than 30% of affected children received refractive correction.

Conclusions: Anisometropia of SE, CYL, and AL increased progressively with age. Despite the elevated prevalence of anisometropia, the utilization of refractive correction remained strikingly low.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Javakusum Hall 303

Association Between Micronutrients and Myopia in American Adolescents: Evidence From the 2003–2006 National Health and Nutrition Examination Survey

First Author: Li LI
Co-Author(s): Ruiye CHEN, Kunhong XIAO, Zhuoting ZHU

Purpose: To investigate the associations between circulating micronutrients (vitamins A, C, D, E, and carotenoids) and the risk of myopia.

Methods: A total of 1,620 adolescents from the 2003–2006 National Health and Nutrition Examination Survey (NHANES) were included. Logistic regression was used to analyze the associations of micronutrients with myopia and high myopia. Restricted cubic spline analysis was employed to assess the potential nonlinear relationships.

Results: Among the 1,620 adolescents, 549 were diagnosed with myopia. After adjusting for multiple covariates, only cis- β -carotene was significantly associated with the risk of myopia (OR 1.19, 95% CI 1.03–1.39) and high myopia (OR 1.44, 95% CI 1.03–2.03). No significant associations were found between vitamins A, D, E, C, α -carotene, trans- β -carotene, lutein zeaxanthin, and myopia. No nonlinear relationships were observed between any of the micronutrients and myopia.

Conclusions: Cis- β -carotene is significantly associated with an increased risk of myopia and high myopia. Further research is needed to understand the underlying mechanisms and potential impact of cis- β -carotene on ocular health.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Javakusum Hall 303

Association Between Myopia and Diabetic Retinopathy: A Two-Sample Mendelian Randomization Study

First Author: Jinyi XU
Co-Author(s): Runtong MA, Shengsong XU, Xiao YANG

Purpose: The association between myopia and diabetic retinopathy (DR) is unclear, with inconsistent results reported, and whether the association represents causality remains unknown. This study aimed to investigate the causal associations of genetically determined myopia with DR.

Methods: We conducted two-sample mendelian randomization (MR) analyses of any myopia, high myopia, and spherical equivalent refraction (SER) on six DR phenotypes, including any DR, background DR, severe background DR, proliferative DR (PDR), diabetic maculopathy, and unspecific DR. Single nucleotide polymorphisms (SNPs), used as genetic instruments, were derived from the UK Biobank and the FinnGen. The inverse-variance-weighted (IVW) method was mainly used to assess the causality and was complemented with comprehensive sensitivity analyses and causality direction analyses.

Results: Using SNPs that have excluded possible confounders, we discovered positive causal associations of any myopia with any DR (IVW method: odds ratio [OR] = 1.133, 95% confidence interval [95%CI]: 1.070–1.201, $P = 1.91 \times 10^{-5}$) and PDR (IVW method: OR = 1.175, 95%CI: 1.078–1.280, $P = 2.36 \times 10^{-4}$). Similar associations were found of high myopia with any DR and PDR (IVW method: OR = 1.107, 95%CI: 1.051–1.166, $P = 1.39 \times 10^{-4}$; OR = 1.163, 95%CI: 1.088–1.244, $P = 8.76 \times 10^{-6}$, respectively). These associations were robust in sensitivity analyses and causality direction analyses. On the contrary, no causal link was identified between SER and DR.

Conclusions: We found significant and positive causal associations of any myopia and high myopia with the risk of DR and PDR, indicating the significance of myopia control for preventing DR development and progression.

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FREE PAPERS

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Javakusum Hall 303

Association Between Omega-3 Polyunsaturated Fatty Acids and Myopia: Results From the Mendelian Randomization Study and KNHANES

First Author: Yang LU
Co-Author(s): Liang HU

Purpose: This study aims to investigate associations between omega-3 PUFAs and myopia using Mendelian randomization (MR) and a cross-sectional study based on the KNHANES.

Methods: A two-sample MR was conducted to estimate the associations between plasma levels of omega-3 PUFAs and three traits of myopia, including myopia, high myopia, and refractive spherical equivalent (RSE). Summary data-based Mendelian randomization (SMR) and colocalization analysis were conducted to examine the associations between the FADS1 and FADS2 genes and three traits of myopia in European populations. The cross-sectional study based on KNHANES was performed to explore the relationship between omega-3 PUFAs and high myopia in East Asian adolescents.

Results: In the MR study, plasma levels of total omega-3 PUFAs, DHA, and EPA were found to be significantly and inversely associated with myopia in European populations, and similar results were observed for high myopia and RSE. SMR and colocalization analysis identified an association between the FADS1 gene, crucial in PUFA biosynthesis, and high myopia. In the cross-sectional study based on KNHANES, daily intake of DHA and EPA was found to be significantly associated with high myopia and RSE in East Asian adolescents.

Conclusions: This MR study supports the link between elevated levels of total omega-3 PUFAs, DHA, EPA, and reduced risk of myopia. SMR and colocalization analysis suggest the involvement of the PUFA biosynthesis pathway in high myopia among European populations. Moreover, the cross-sectional study provides evidence about the connections between DHA, EPA, and high myopia as well as RSE in East Asian adolescents.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Javakusum Hall 303

Causal Relationships Between Depression, Anxiety, and Myopia: A Two-Sample Mendelian Randomization Study

First Author: Xiao WANG
Co-Author(s): Runting MA, Shengsong XU, Xiao YANG

Purpose: To investigate the causal relationship between depression, anxiety, and myopia.

Methods: The multivariable Mendelian randomization (MR) design using summary statistics from independent genome-wide association studies was employed. Anxiety and depression were used as exposures, and myopia was used as the outcome. Genetic variants associated with depression were derived using GWAS summary statistics from the FinnGen consortium database. Genetic variants associated with anxiety were derived from the Psychiatric Genomics consortium. The inverse-variance-weighted method was the main applied analytic tool and was complemented with comprehensive sensitivity analyses.

Results: A total of 21, 10 SNPs were selected as instrumental variables for depression and anxiety, respectively. Based on the IVW analysis, both depression (OR = 1.010, 95% CI = 1.002-1.018, p = 0.016) and anxiety (OR = 1.083, 95%CI = 1.022-1.149, p = 0.008) increased the risk of myopia. After adjusting in the multivariable MR, the IVW and Egger methods indicated that depression (OR = 1.004, 95%CI = 1.000-1.008, p = 0.030) or anxiety (OR = 1.004, 95%CI = 1.001-1.008, p = 0.026) was still associated with elevated risks of myopia.

Conclusions: The current study identified a causal link between anxiety, depression, and an increased risk of myopia. These observations suggest that when developing strategies to control myopia, it is also important to focus on the mental health of children. Further detailed research is needed to fully understand this issue.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Javakusum Hall 303

Comparison of Different Concentrations Atropine in Controlling Children and Adolescent Myopia: A Study Based on Systematic Reviews and Meta-Analyses

First Author: Baizhou CHEN

Purpose: To evaluate the myopia control effect of different concentrations of atropine in children and adolescents.

Methods: Meta-analyses and systematic reviews available in the Pubmed, Embase, and Cochrane Library databases from the databases' inception to August 2023 were searched to evaluate the efficacy and tolerability of different concentrations of atropine in controlling myopia progression. Overall effects were performed using a random-effects model. AMSTAR 2 tool was used to assess the quality of included studies. Prespecified outcomes were weight mean difference (WMD) with a 95% credible interval (95% CI) of annual spherical equivalent refraction (SER) changes and annual axial length (AL) changes.

Results: Nineteen systematic reviews/meta-analyses of different atropine concentrations were included in the analysis. 14 studies reported SER changes, and 17 reported AL changes. In terms of the studies' overall methodological quality level (measured using AMSTAR 2), 1 study was rated high, 7 moderate, 7 low, and 4 critically low. The 0.01% atropine was found to have statistical significance (annual SER change WMD 0.27 [95% CI 0.21 - 0.34] D/year; annual AL change WMD -0.09 [95% CI -0.1 to -0.07]) mm/year, 0.05% atropine was preferred considering efficacy and tolerability (annual SER change WMD 0.54 [95% CI 0.49 - 0.58] D/year; annual AL change WMD -0.21 [95% CI -0.12 to -0.02]) mm/year).

Conclusions: Available different concentrations of atropine ameliorate children and adolescent myopia progression. 0.05% atropine would be considered to be more effective in controlling myopia with lower adverse effects.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Javakusum Hall 303

Crystalline Lens and Intraocular Lens Tilt and Decentration in Highly Myopic Eyes

First Author: Ming LIU

Purpose: To compare crystalline lens and intraocular lens (IOL) tilt and decentration between normal axial length (AL) eyes and highly myopic eyes by CASIA2.

Methods: This prospective cohort study included 125 patients (144 eyes) who underwent phacoemulsification with IOL implantation, the normal AL group (AL: 22-24 mm) consisted of 73 eyes, while the long AL group (AL \geq 26 mm) comprised 71 eyes. With CASIA2, we assessed and compared the crystalline lens as well as IOL tilt and decentration among groups.

Results: In the normal AL group, the tilt of crystalline lenses and IOLs were 4.65° (4.10-5.60°) and 4.70° (4.05-5.95°) respectively. In the long AL group, the tilt of crystalline lenses and IOLs were 3.45° (2.60-5.00°) and 4.05° (2.70-5.20°) respectively. Significant differences were observed between groups in terms of both crystalline lens tilt and IOL tilt (P=0.000 and P=0.001, respectively). A significant difference between crystalline lenses and IOL tilt was observed in the long AL group (P=0.04). In the normal AL group, the decentration of the crystalline lenses and IOLs were 0.15 mm (0.09-0.22 mm) and 0.18 mm (0.11-0.33 mm), respectively. In the long AL group, the decentration of crystalline lenses and IOLs were 0.14 mm (0.10-0.22 mm) and 0.24 mm (0.15-0.38 mm), respectively. A statistically significant difference was noted in terms of IOL decentration between these two groups (P=0.042). There was a statistically significant difference in the decentration of crystalline lenses versus IOLs in the two groups (P=0.002 and P=0.000, respectively).

Conclusions: IOL decentration was greater, and the magnitude of change in pre- and post-operative tilt and decentration was more pronounced in the highly myopic eyes.

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Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Javakusum Hall 303

Differences in Macular Thickness and Microvasculature Between High Myopia and Non-High Myopia

First Author: Chaoxu QIAN
Co-Author(s): Keyao SONG, Hua ZHONG

Purpose: To investigate the retinal and choroidal morphological and microvasculature changes in myopia eyes using optical coherence tomography angiography (OCTA).

Methods: This study included 142 eyes from 84 myopic patients, divided into two groups based on spherical equivalent (SE): the high myopia group (HM, 72 eyes) and the non-high myopia group (NHM, 70 eyes). Retinal and choroidal images were obtained using OCTA. Parameters measured, including foveal retinal and choroidal thickness, superficial and deep retinal vessel density (RVD), choriocapillaris density (CCD), and the area and perimeter of the foveal avascular zone (FAZ), were compared.

Results: The mean SE was -10.16 ± 3.55 D in the HM group and -3.86 ± 1.60 D in the NHM group. Foveal retinal thickness was significantly greater in the HM group (276.4 ± 36.1 μ m) compared to the NHM group (250.1 ± 23.3 μ m, $P < 0.05$). Choroidal thickness was significantly reduced in the HM group (169.2 ± 74.0 μ m) compared to the NHM group (222.4 ± 70.7 μ m, $P < 0.001$). CCD was significantly lower in the HM group ($55.7 \pm 3.1\%$) compared to the NHM group ($58.0 \pm 2.6\%$, $P < 0.001$). Additionally, the area and perimeter of the FAZ were larger in the HM group (0.4 ± 0.4 mm² and 2.5 ± 1.1 mm, respectively) compared to the NHM group (0.3 ± 0.1 mm² and 2.1 ± 0.4 mm, respectively, $P < 0.001$).

Conclusions: High myopia is associated with increased retinal thickness, decreased choroidal thickness and CCD, and larger FAZ compared to non-high myopia.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Javakusum Hall 303

Efficacy of Atropine 0.01% in Preventing Myopia Progression and Factors Affecting Treatment Response Among High Myopic Children

First Author: Vinay GUPTA
Co-Author(s): Rebika DHIMAN, Swati PHULJHELE, Rohit SAXENA

Purpose: This study aims to assess the effectiveness of atropine 0.01% in preventing myopia progression and factors affecting treatment response among highly myopic children.

Methods: This prospective interventional single-arm clinical trial included children aged between 6 and 12 years, with spherical equivalent refractive error (SER) between -6 to -10 D and having documented myopia progression of ≥ 0.5 D in the preceding year. All participants were administered atropine 0.01% in both eyes once at bedtime for one year. The primary outcome measure was a change in the rate of myopia progression (D/year) and change in AL at 1 year, and documentation of any adverse effects related to therapy.

Results: Fifty-seven children were enrolled with a mean age of 9.1 ± 2.1 years. The study reported a 54% reduction in the rate of myopia progression after 1 year of atropine 0.01% treatment [-0.61 ± 0.21 D/year (baseline) to -0.27 ± 0.11 D/year (1-year follow-up) ($p < 0.001$)]. The mean AL increased from 26.73 ± 2.23 mm (baseline) to 26.88 ± 2.43 mm (1 year). There was a significant correlation noted between changes in AL and SER ($r: 0.79$; $P: 0.043$). No adverse effects were reported. There is no correlation observed between the rate of myopia progression on treatment and age at baseline ($r: 0.43$; $p: 0.065$), baseline refractive error ($r: 0.32$; $p: 0.072$), baseline rate of progression ($r: 0.44$; $p: 0.07$), gender ($P: 0.11$), and family history of myopia ($P: 0.16$).

Conclusions: Atropine 0.01% is an effective treatment for preventing myopia progression among high-myopic children without any significant side effects. The study observed that the response to treatment was independent of the age at baseline, baseline refractive error, baseline rate of progression, gender, and family history of myopia.

Apr 06, 2025 (Sun) 11:30 - 13:00
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Eleven Years of Orthokeratology Contact Lens Wear for Slowing Myopia Progression in Children

First Author: Jacinto SANTODOMINGO-RUBIDO
Co-Author(s): Ramón GUTIÉRREZ-ORTEGA, Steve NEWMAN, Sachiko NISHIMURA, Keiji SUGIMOTO, César VILLA-COLLAR

Purpose: To compare axial length growth between a group of orthokeratology contact lens wearers (OK) and a control group of distance single-vision lens wearers (CT) over an 11-year period.

Methods: White European subjects of 6-12 years old with myopia -0.75 to -4.00DS and astigmatism ≤ 1.00 DC were prospectively allocated OK or CT for two years. Axial length measurements (Zeiss, IOLMaster) were taken at 6-month intervals during the initial 2 years of the study. Subjects were contacted approximately 5 and 9 years later (i.e., 7 and 11 years after the beginning of the study, respectively), and axial length measurements were repeated. Changes in axial length (relative to baseline) over an 11-year period were compared between groups using a 'modified or per-protocol' intent-to-treat approach.

Results: Thirty-one OK and 30 CT subjects were initially recruited; 29 OK and 24 CT completed the initial 2-year study; 10 OK and 15 CT subjects attended the 11-year visit, but only 10 OK and 10 CT subjects attended all study visits. Statistically significant changes in axial length were found over time between groups and for the time*group interaction (all $p \leq 0.001$). In comparison to the CT group, OK lens wear reduced axial elongation by -0.043mm ($p=0.148$), -0.101mm ($p=0.005$), -0.143mm ($p=0.016$), -0.221mm ($p=0.003$), -0.448mm ($p=0.062$) and -0.693mm ($p=0.069$) following 0.5, 1, 1.5, 2, 7 and 11 years of lens wear, respectively.

Conclusions: OK lens wear provided a substantial slowing in the axial elongation of the eye, with a treatment effect of up to -0.693mm (-38%) following 11 years of lens wear.

Apr 06, 2025 (Sun) 11:30 - 13:00
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Exploring Corneal Biomechanics Characteristics and Genetic Associations in Myopia

First Author: Xuefei LI
Co-Author(s): Fan LU, Meixiao SHEN, Junjie WANG, Shenglong LUO

Purpose: This study investigates the causal relationship between myopia and corneal biomechanics using the UK Biobank (UKB) database to enhance understanding of myopia and guide treatment strategies.

Methods: Data from 12,205 eyes in the UKB, including refraction results and Ocular Response Analyzer (ORA) measurements, were analyzed. Outliers in ORA parameters—corneal hysteresis (CH), corneal resistance factor (CRF), corneal-compensated intraocular pressure (IOPcc), and Goldmann-correlated IOP (IOPg)—were excluded. Eyes were categorized by spherical equivalent (SE) into emmetropia ($-0.5 < SE \leq 0.5$), mild myopia ($-3.0 < SE \leq -0.5$), moderate myopia ($-6.0 < SE \leq -3.0$), and high myopia ($SE \leq -6.0$). One-way ANOVA and Ordinal Logistic Regression were used to assess corneal biomechanics and myopia severity. Mendelian Randomization (MR) analysis was employed to explore causal relationships.

Results: The study included 4,524 emmetropic, 3,857 mild myopic, 1,912 moderate myopic, and 1,912 high myopic eyes. Significant differences in corneal biomechanical parameters and IOP were observed across myopia levels. High myopia was associated with lower CH and CRF, and increased IOP. CH reduction was linked to severe myopia, while increased CRF was associated with higher severity in mild to moderate myopia. MR analysis indicated low CH and CRF were risk factors for myopia, while non-myopia was a protective factor associated with high CH.

Conclusions: This study reveals significant differences in corneal biomechanics across myopia severities and supports a causal relationship via MR. CH from the ORA could serve as a biomarker for assessing high myopia risk. These findings offer new insights into high myopia's pathological mechanisms and targeted prevention.

Apr 06, 2025 (Sun) 11:30 - 13:00
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Factors Influencing Gaze-Induced Optic Nerve Head Deformations in High Myopia

First Author: Xiaofei WANG

Purpose: To investigate the impact of optic nerve traction on optic nerve head (ONH) deformations during horizontal eye movements in high myopia (HM) and non-HM subjects using finite element (FE) modeling and in vivo optical coherence tomography (OCT).

Methods: FE models of normal and HM eyes were constructed, incorporating variations in scleral stiffness and center of eye movement. Eye movements were simulated, and gaze-induced lamina cribrosa (LC) strains were calculated. In vivo OCT imaging was performed on 28 HM and 28 non-HM eyes during different gaze positions to measure LC strains.

Results: FE modeling demonstrated larger gaze-induced LC strains in the HM model compared to the normal model. Softer sclera and posterior eye movement center reduced these strains in the HM model. In vivo measurements confirmed significantly higher LC strains in HM subjects during both adduction and abduction compared to non-HM subjects. Axial length positively correlated with LC strain, especially during adduction.

Conclusions: Our findings indicate that ONH deformations are greater during adduction than abduction in both HM and non-HM eyes. High axial length is associated with increased gaze-induced LC strains, suggesting a potential risk factor for glaucoma in HM patients.

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Global Ocular Deformation in Pathologic Myopia

First Author: Shida CHEN

Purpose: To explore the equatorial and posterior ocular deformation in pathologic myopia.

Methods: This hospital-based, cross-sectional study included 180 pathologic-myopic eyes with atrophic

maculopathy grading C2 (diffuse chorioretinal atrophy or more) from 180 participants who underwent comprehensive ophthalmic examination, including high-resolution 3-dimensional magnetic resonance imaging.

Results: The mean (SD) age of 180 participants with pathologic myopia was 55.14 (10.74) years; 127 were female (70.6%), and the mean (SD) axial length of studied eyes was 30.22 (2.25) mm. The predominant equatorial shape was pyriform (66 eyes [36.7%]), followed by round (45 eyes [25.0%]). The predominant posterior shape was bulb-shaped (97 eyes [52.2%]), followed by multi-distorted (46 eyes [24.7%]). Equatorial circularity and equatorial shapes were correlated ($r = -0.469$; 95%CI, -0.584 to -0.346 ; $P < .001$) and ocular sphericity was correlated with posterior shapes ($r = -0.533$; 95%CI, -0.627 to -0.427 ; $P < .001$). In eyes with a vertical-elliptical equator, equatorial circularity and ocular sphericity were positively linearly correlated ($R^2 = 0.246$; 95%CI, $0.050-0.496$; $P = .002$) and the prevalence of inferior staphyloma was higher (27.8%; $P = .04$). Eyes with a horizontalelliptical equator have the most horizontally oriented axis of corneal flat keratometry. (median, 43.55 [interquartile range, 43.84] degrees; $P = .01$) and tended to present with a multi-distorted posterior shape (21.7%; $P = .04$).

Conclusions: These findings suggest ocular deformation is common in pathologic myopia and can affect the entire eye, including the equatorial and posterior regions.

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Myopia Management Guidelines for Practitioners in the Middle East and North Africa

First Author: Yazan GAMMOH

Purpose: By 2050, 50% of the global population is expected to be myopic. It has been shown that myopia increases sevenfold in older children (above the age of 15 years) compared to younger children. Eye care practitioners need to assess patients for myopia as early as possible, as this chronic progressive disease would lead to eye elongation and have many associated complications.

Methods: The following myopia management guidelines have been prepared based on the latest peer-reviewed scientific reports and are aligned with guidelines by international organizations such as the International Myopia Institute. The guidelines are designed to support eye care practitioners in their journey through myopia management, but do not attempt to replace local guidelines or practitioners' judgment or legal authority.

Results: The guidelines comprise 3 parts: 1. Mitigation Introducing lifestyle changes to prevent the onset of myopia, identifying risk factors for developing myopia, and ensuring early and regular eye exams. 2. Measurement Comprehensive and regular eye health and vision examinations, including cycloplegic refraction and axial length measurement, whenever possible. 3. Management Correction of myopia and provision of an evidence-based intervention to reduce the progression of myopia. Monitoring myopia progression and cessation of management decision-making.

Conclusions: These myopia guidelines can be used in several clinical and economic settings based on the scope of practice and availability of interventions. This is an attempt to support clinicians through myopia management.

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Myopic Prevention of Defocus Incorporated Soft Contact (DISC) Lens Combined With 0.01% Atropine in Young Children

First Author: Xianli DU
Co-Author(s): Ying ZHANG, Ziwen SUN

Purpose: To investigate if the DISC lens combined with 0.01% atropine slows young children's myopic prevention and to observe the visual quality changes.

Methods: Prospective study. 60 children participated in the 1-year visit, aged 6.27 ± 0.59 years, with myopia $-2.54 \pm 1.18D$ and astigmatism $\leq -1.00D$. At 0~6 months, all subjects wore DISC lenses (phase1), and at 6~12 months, subjects were divided into the DISC group (axial elongation (AL) $< 0.2mm/6$ months) and DISCA group (AL $\geq 0.2mm/6$ months) (phase2). The DISCAs used 0.01% atropine combined with DISC in phase 2. The axis and the wavefront difference were measured. T-test was used for statistical analysis.

Results: Baseline biometrics was similar. 52 children completed the study (DISC n=28, DISCA n=24). The mean AL was 0.12 ± 0.07 , $0.19 \pm 0.08mm$ for DISCs and 0.27 ± 0.11 , $0.13 \pm 0.08mm$ for DISCAs in phase 1 and phase 2. In phase2, DISCAs combined with atropine significantly slowed the AL (0.13 ± 0.08 vs $0.27 \pm 0.11mm$, $P < 0.05$) (phase2 vs phase1), (0.13 ± 0.08 vs $0.19 \pm 0.08mm$, $P < 0.05$) (DISCA vs DISC). Meanwhile, the visual performance decreased after treatment. The total high-order aberration (HOTotal) was (0.25 ± 0.15 vs 0.57 ± 0.40 , $P < 0.05$) in DISCs and (0.24 ± 0.08 vs 0.40 ± 0.19 , $P < 0.05$) in DISCAs, and changed more significantly for DISCs in phase1 (0.32 ± 0.16 vs 0.16 ± 0.14 , $P = 0.04$).

Conclusions: In young children, DISC can prevent myopia and increase the high-order aberrations significantly. Combined use of 0.01% atropine can significantly improve the effect.

Apr 06, 2025 (Sun) 09:45 - 11:15
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Optical Coherence Tomography Angiography in Paediatric Myopes

First Author: Pavitra R
Co-Author(s): Dharshini BASKARAN, Atul GUPTA, Anand PARTHASARATHY, Lipika ROY

Purpose: The aim is to study the retinal microvasculature in paediatric myopic eyes using optical coherence tomography angiography (OCTA).

Methods: It was a prospective comparative study done in the period of October 2023-June 2024. 160 paediatric myopes of age 6-18 years were included. Astigmatism $> \pm 1.5D$, other causes of myopia (secondary/index), children with corneal ectasia, anterior segment genesis, cataract, retinal pathologies, and metabolic disorders were excluded. Each patient underwent a complete ophthalmological examination. They were divided into low (≤ -0.5 to $> -6.00 D$) and high ($\leq -6.00 D$) myopia. Axial length was measured using IOL Master 500. OCTA was done using REVO FC (optopol technology), 6×6 mm scans were taken. Superficial vessel density (SVD), deep vessel density (DVD), Foveal avascular zone (FAZ) area, perimeter, and circularity were analyzed.

Results: Among the 160 children, 75 were girls & 85 were boys. The mean age was $11.3 + 3.07$. 154 were

in the low myopia group and 6 in the high myope. Comparing the OCTA parameters (SVD, DVD, FAZ) between low & high myopia groups, FULL SVD & DVD were found to be significantly less ($p < 0.007$, < 0.008) in high myopia. No statistical significance was noted in other parameters. With increasing diopter change in spherical equivalent, a significant correlation ($p < 0.001$) is seen in the OCTA parameters.

Conclusions: Our results suggest there is a significant decrease in the full SVD & DVD in the high myopia group compared to low myopia, which warrants further monitoring to rule out early pathological changes in high myopia.

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Orthokeratology in Patients With High Myopia

First Author: Irina RAKHMATOVA
Co-Author(s): Jost JONAS, Gyulli KAZAKBAEVA, Songhomitra PANDA-JONAS

Purpose: This study had two aims: 1) to compare outcomes among different cornea profiles, and; 2) to assess the axial length changes over 5 years of ortho-k lens overnight wear.

Methods: Collectively, data from 102 children undergoing orthokeratology were analyzed in this study. The control group included 50 patients with myopia of various degrees who wore single-vision spectacle lenses. A ranged between 6 and 14 years, and refractive error from -6.00 D to -10.0 D. The follow-up was 5 years. Three groups of orthokeratology patients were studied: K flat from 39,00 to 42,00 D, from 42,25 to 44,00 D, and from 44,25 to 46,00 D.

Results: Statistically significant differences in the change in axial length from baseline were found over time, between groups and for the time group interaction (all $p < 0.001$), indicating that the rate of increase in axial length over time was significantly lower in the orthokeratology versus the control group. Axial elongation was not significantly associated with myopic refractive error at baseline ($p < 0.001$). After orthokeratology, axial length change had a negative correlation with the initial age ($p = 0.001$, $r = -0.51$). Visual acuity was higher in the groups with medium and steep corneal profiles. In the group with a flat cornea profile, up to 19% of patients required additional spectacles correction.

Conclusions: Orthokeratology lens wear slows the axial elongation in myopic children and is effective for slowing myopia progression. In patients with flat cornea profiles, orthokeratology can be combined with eyeglass correction.

Apr 06, 2025 (Sun) 09:45 - 11:15
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Pathologic Myopia in Russia: The Ural Eye and Medical Study

First Author: Gyulli KAZAKBAEVA
Co-Author(s): Mukharram BIKBOV, Jost JONAS, Songhomitra PANDA-JONAS

Purpose: This is to assess the prevalence of pathologic myopia and its associations with ocular and systemic parameters in a population in Russia.

Methods: Current knowledge is summarized on the epidemiology of myopic maculopathy, as well as interventions to suppress myopia progression. The Ural Eye and Medical Study, a population-based case-control study, was conducted in rural and urban areas in Bashkortostan, Russia. It included 5899 out of 7328 eligible individuals (80.5%) aged 40 years or older.

Results: The mean (SD) axial length was 23.3 (1.1) mm (range, 19.78-32.87 mm). Prevalence of any myopic maculopathy was 1.3% (95% CI, 1.0%-1.6%); myopic maculopathy stage 2, 0.8% (95% CI, 0.6%-10.0%); stage 3, 0.2% (95% CI, 0.1%-0.4%); and stage 4, 0.2% (95% CI, 0.1%-0.4%). The prevalence of moderate to severe vision impairment and blindness was 29.8% (14 of 47 participants; 95% CI, 16.2%-43.3%) in stage 2 myopic maculopathy, 57.1% (8 of 14 participants; 95% CI, 27.5%-86.8%) in stage 3, and 100% (13 of 13 participants; 95% CI, 100%-100%) in stage 4. In multivariable analysis, a higher myopic maculopathy prevalence was associated with longer axial length (odds ratio [OR], 4.54; 95% CI, 3.48-5.92; $P < .001$), older age (OR, 1.04; 95% CI, 1.01-1.07; $P = .03$), and thinner peripapillary retinal nerve fiber layer thickness (OR, 0.96; 95% CI, 0.95-0.98; $P < .001$).

Conclusions: In this ethnically mixed population from Russia, myopic maculopathy prevalence was mainly associated with elongated axial length and thinner peripapillary retinal nerve fiber layer. A higher myopic maculopathy stage was associated with vision impairment and blindness.

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Apr 06, 2025 (Sun) 09:45 - 11:15
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Progression Patterns and Risk Factors of Axial Elongation in Young Adults With Non-Pathologic High Myopia: Three-Year Large Longitudinal Cohort Follow-Up

*First Author: Kangjie KONG
Co-Author(s): Shida CHEN, Jingwen JIANG, Xiulan ZHANG*

Purpose: To investigate the progression patterns and risk factors of axial elongation in young adults with non-pathologic high myopia.

Methods: A total of 1,043 eyes of 563 participants (3,515 medical records) aged 18 to 50 years with non-pathologic high myopia (axial length [AL] \geq 26 mm; myopic maculopathy < diffuse chorioretinal atrophy; without posterior staphyloma) were included from 1546 participants (6318 medical records). Annual axial elongation was calculated via linear mixed-effect models. The associated risk factors of axial elongation were determined by ordinal logistic regression analysis, with GEE for eliminating an interocular correlation bias.

Results: The annual axial elongation of participants (mean [SD] age 31.39 [9.22] years) was 0.03 mm/year ($P < 0.001$) during a 30.23 (6.06) months' follow-up. Severe (> 0.1 mm/year), moderate (0.05-0.09 mm/year), mild (0-0.049 mm/year), and nil (≤ 0 mm/year) elongation was observed in 122 (11.7%), 211 (20.2%), 417 (40.0%), and 293 (28.1%) eyes. The following risk factors were significantly associated with axial elongation: baseline AL ≥ 28 mm (odds ratio [OR], 4.2; $P < 0.001$); age < 40 years (OR, 1.64; $P = 0.003$); axial asymmetry (OR, 2.04; $P = 0.003$), and women (OR, 1.52; $P = 0.006$). Using anti-glaucoma medications was a protective factor (OR, 0.46; $P = 0.005$), which slowed 75% of axial elongation from 0.04 (0.06) to 0.01 (0.06) mm/y ($P < 0.001$).

Conclusions: Axial elongation continued in young adults with non-pathologic myopia. Risk factors included longer baseline AL and axial asymmetry, younger age, and women. Using anti-glaucoma medications may be useful to reduce ongoing axial elongation.

Apr 06, 2025 (Sun) 11:30 - 13:00
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Retinal Microvasculature in High Myopia Without Pathologic Changes in Optical Coherence Tomography Angiography

*First Author: Xiangxiang YANG
Co-Author(s): Yuan HE*

Purpose: To investigate the characteristics of retinal microvascular and optic nerve thickness in patients with high myopia without pathologic changes using optical coherence tomography angiography (OCTA) for quantitative analysis and to explore the effects of intraocular pressure (IOP), axial length (AL), and spherical equivalent (SE) on these retinal parameters.

Methods: The parafoveal and peripapillary microvascular in superficial retinal layers were imaged with OCTA. The vessel densities (VD) and perfusion density (PD) over the four quadrants were quantified using customized software. The retinal nerve fiber layer (RNFL) and ganglion cell-inner plexiform layer (GCIPL) were analyzed by Cirrus high-definition optical coherence tomography (OCT).

Results: Compared to the control group, non-pathological high myopia eyes showed that the thickness of temporal RNFL increased ($p < 0.05$) while the inferior quadrant was reduced ($p < 0.05$). VD and PD increased inside the disc and temporal quadrant ($p < 0.05$) but decreased in the nasal quadrant ($p < 0.05$). Correlation analysis about high myopia showed that IOP was negatively correlated with temporal RNFL, as well as inferonasal, inferior and minimum GCIPL ($p < 0.05$). AL showed a positive correlation with nasal, temporal, and average RNFL ($p < 0.05$) and also with nasal, superior, and whole VD and PD of the parafoveal microvascular ($p < 0.05$). SE was only positively correlated with VD and PD inside the disc ($p < 0.05$).

Conclusions: The characteristics of retinal microvascular and neural structure parameters in high myopia without pathologic changes were more strongly affected by IOP, although IOP, AL, and SE were meaningful indicators.

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Study Design and Rationale of the POYANG Study: A Phase III Randomized Clinical Trial of Faricimab for Choroidal Neovascularization Secondary to Pathologic Myopia

First Author: Shih Jen CHEN
Co-Author(s): Gumeng CHENG, Gemmy CHEUNG, Aachal KOTTECHA, Timothy LAI, Shriji PATEL

Purpose: To describe the study design of POYANG (NCT06176352) study assessing the efficacy and safety of faricimab, a dual inhibitor of angiopoietin-2 (Ang-2) and vascular endothelial growth factor A (VEGF-A), in patients with choroidal neovascularization secondary to pathologic myopia (otherwise referred to as myopic choroidal neovascularization [mCNV]).

Methods: POYANG is a global, randomized, double-masked, multicenter, active comparator-controlled phase III study in adult patients with treatment-naïve mCNV. Patients are randomized 1:1 to receive either faricimab 6.0 mg or ranibizumab 0.5 mg. Following an initial active intravitreal treatment administration at randomization (Day 1), subsequent treatment is administered on a pro-re-nata (PRN) dosing regimen. Patients are seen monthly over a 48-week study period. The active study drug is administered when protocol-defined retreatment criteria are met. These criteria are based on changes in best-corrected visual acuity (BCVA), central subfield thickness (CST), or examination findings consistent with mCNV activity. A sham procedure is administered to patients at study visits when there is no active mCNV disease activity to maintain masking.

Results: The primary endpoint is the noninferiority of faricimab to ranibizumab in mean BCVA change from baseline averaged over Weeks 4, 8, and 12. The secondary endpoints (weeks 0–48) are changes in CST over time, the number of treatments required, and the incidence and severity of ocular and nonocular adverse events.

Conclusions: The POYANG study is an actively recruiting Phase 3 registrational trial to investigate the efficacy and safety of faricimab versus ranibizumab in patients with mCNV, the commonest cause of CNV in young patients.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Javakusum Hall 303

The Effect of 0.01% Low-Dose Atropine and Orthokeratology As Monotherapy for Incipient Myopia Control: A One-Year Retrospective Clinical Study

First Author: Ji-feng YU

Purpose: To investigate the effectiveness of 0.01% low-dose atropine (LA) and orthokeratology (OK) lenses as monotherapies for myopia control in a real clinical setting.

Methods: This study included treatment with single vision spectacles (SV), LA, or OK for at least one year. Data from 140 children's eyes were analyzed. Statistical analyses, including ANOVA, ANCOVA, and Multiple Linear Regression, were conducted to identify factors with axial length (AL) elongation and spherical equivalent refraction (SER) progression over the study period.

Results: The adjusted one-year AL growth in the LA group (0.204 ± 0.060 mm, $p < 0.001$) and the OK group (0.340 ± 0.054 mm, $p = 0.036$) was slower than that of the SV group (0.545 ± 0.059 mm), with no statistically significant difference in AL growth between the LA and OK groups ($p = 0.287$). The adjusted one-year SER progression varied significantly among the treatment groups ($p < 0.000$). Specifically, the LA group exhibited the slowest SER progression (-0.094 ± 0.060 D) compared to the SV group (-0.619 ± 0.058 D), with the OK group also at -0.619 ± 0.058 D. Baseline AL ($\beta = -0.299$, $p = 0.000$) and baseline SER ($\beta = -0.255$, $p = 0.004$) showed a negative correlation with AL elongation and SER changes, respectively. Age and sex did not significantly influence AL or SER changes during the study period.

Conclusions: In the early stages of myopia, both LA and OK showed comparable efficacy in slowing AL elongation. Regarding SER progression, LA demonstrated the most effective control, followed by OK.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Javakusum Hall 303

Twice-Daily Administration Improves the Effectiveness of 0.01% Atropine for Controlling Myopia: A Prospective Cohort Study

First Author: *Runting MA*

Co-Author(s): *Shengsong XU, Xiao YANG*

Purpose: To compare the effectiveness between twice-daily 0.01% atropine administration and traditional once-nightly administration for controlling myopia.

Methods: The study was conducted at Zhongshan Ophthalmic Centre from September 2022 to September 2023. The control group and once-daily 0.01% atropine group (Atropine-1) were derived from previous RCTs, and the twice-daily 0.01% atropine group (Atropine-2) was enrolled prospectively. 163 participants were included in the intention-to-treat set (51 in control; 70 in Atropine-1; 42 in Atropine-2). The primary outcome was the change in axial length. The secondary outcome was the change of cycloplegic spherical equivalent refraction.

Results: Compared with the control (0.45 ± 0.25 mm), both Atropine-1 (0.28 ± 0.20 mm) and Atropine-2 (0.16 ± 0.19 mm) significantly reduced the AL elongation ($P < .001$). Atropine-2 improved the effectiveness (0.16 ± 0.19 mm) than Atropine-1 (0.28 ± 0.20 mm) ($P = .009$). Atropine-2 improved the effectiveness for controlling myopia (-0.16 ± 0.40 D) than Atropine-1 (-0.43 ± 0.53 D) ($P = .025$). Adjusted AL and SER changes supported these findings. According to the multivariable model, age was the key covariate to perform subgroup analyses. In the younger subgroup aged 8-10, the AL elongation was significantly reduced in the Atropine-2 (0.16 ± 0.17 mm) than in the Atropine-1 (0.36 ± 0.22 mm; $P = .002$). In the older subgroup aged 10-12 ($n = 89$), there was no significant difference. Consonant results were observed in the sensitivity analyses based on the per-protocol set.

Conclusions: Twice-daily administration of 0.01% atropine improved the effectiveness of controlling myopia in children aged 8 to 12 with minimal adverse effects. Further investigation with extended follow-up across multiple centers is warranted to substantiate this finding.

Neuro-Ophthalmology

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

Clinical Experience in Managing Diplopia Due to Sixth Nerve Palsy Using Fresnel Prisms

First Author: *Mahar KHAN*

Co-Author(s): *Mahmood ALI, Mir Azam KHAN*

Purpose: This study investigates the effectiveness of Fresnel prisms in managing patients with sixth cranial nerve palsy.

Methods: Of 67 patients treated with Fresnel prisms, 47 with sixth cranial nerve palsy were selected for this analysis. The patient data was collected from an orthoptist clinic at a tertiary care hospital during 2022-2024. Detailed assessments of ocular misalignment were conducted to determine the appropriate power, axis, and placement of the Fresnel prism on the spectacle lens, factoring in ocular dominance and the side of paresis. The patients' responses to the treatment were systematically recorded.

Results: Horizontally oriented Fresnel prisms were used in all 47 patients (100%). In 42 cases (89%), the prisms were applied to the spectacle lens of the non-dominant eye, either covering the entire lens or just the upper or lower segment. The follow-up period averaged 6 months. Successful outcomes, defined as relief from diplopia, were achieved in 38 patients (81%). Eleven patients (23%) eventually had the prismatic correction integrated into the lens once the power stabilized, typically after 3 to 4 months. Side effects such as blurred vision, persistent diplopia, or optical aberrations resulted in six patients (13%) discontinuing the use of the prisms.

Conclusions: The use of a Fresnel prism to produce a fused, albeit slightly blurred, image is generally more favorable than experiencing double, clear images in cases of 6th nerve palsy.

2

FREE PAPERS

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

Clinical Presentation of Carotid-Cavernous Fistula and Outcomes of Endovascular Balloon Embolization

First Author: Tayyaba MALIK

Purpose: To describe the clinical presentation of carotid-cavernous fistula (CCF) and outcomes of endovascular balloon embolization in a tertiary care center in a developing country.

Methods: This retrospective interventional case series included 18 patients who underwent endovascular balloon embolization from 2019 to 2022. The analyzed data consisted of age, gender, cause and type of CCF, clinical presentation, diagnostic technique used, intervention, and the results of a two-month follow-up. Patients with incomplete records and coil embolization were excluded. Digital subtraction angiography was done in all cases, followed by endo-arterial balloon embolization. Procedures were carried out under general anesthesia via the femoral artery approach. A single balloon was sufficient to close the fistula in all cases.

Results: Out of 18 patients, 16 had direct CCF, and the mean age of the patients was 27.2±12.6 years. The commonest cause of CCF was trauma, and the mean time of presentation after trauma was 7.89±7.19 months. The male-to-female ratio was 8:1. Preoperative visual acuity was worse than 6/60 in 8 patients, between 6/60 and 6/18 in 7 patients, and better than 6/18 in 3 patients. The mean intraocular pressure was 16.06±3.37 mmHg and 14.83±3.49 mmHg pre- and post-operatively, respectively (p=0.005). Endovascular embolization was successful in 15 patients (83.3%). One patient developed epidural hematoma as a complication of the procedure, which was drained later. There was no mortality related to the procedure.

Conclusions: Baloon embolization via the femoral artery is an efficient technique in direct as well as indirect CCF. It is safe procedure with good results if performed early after presentation.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

Correlation Between Retinal Nerve Fiber Layer (RNFL) Thickness and Severity of Cognitive Impairment in Parkinson's Disease Patients

First Author: Fadhilah WULANDARI

Purpose: Ocular Coherence Tomography may have potential applicability as a biomarker in PD due to its capacity to reflect the dopaminergic state of retinal visual processing and cortical projections of the visual pathway.

Methods: The research used a case-control design. The sampling method uses consecutive sampling. Measurement of RNFL thickness using ocular coherence tomography, the severity of Parkinson's sufferers using Hughes criteria, and assessing the degree of cognitive function impairment using MMSE screening. Statistical analysis using the T-test and Pearson correlation test p ≤0.05 is significant.

Results: The average thickness of the retinal nerve fiber layer in this study was global sector 107.0 ± 53.50 µm, temporal nasal sector 139.7 ± 70.00 µm, superior nasal sector 115.1 ± 63.00 µm, nasal sector 80.78 ± 38.00 µm, inferior nasal sector 118.3 ± 45.00 µm, temporal sector inferior 151.1±77.00 µm, and temporal sector 79.68±37.00 µm. The inferior temporal quadrant has a p-value of less than 0.05, which means there is a significant relationship between the degree of cognitive function and the OCT results. In other quadrants, it was found that there were no statistically significant differences between the three groups (normal, mild cognitive impairment, and moderate to severe cognitive impairment) with each P value >0.05, which means it was not statistically significant.

Conclusions: There is a significant difference in RNFL thickness between Parkinson's patients with normal cognition in the RNFL temporal-inferior quadrant compared to Parkinson's patients with cognitive impairment.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

Efficacy and Safety of Gene Therapy for Leber Hereditary Optic Neuropathy (LHON) – a Systematic Review and Meta-Analysis

First Author: Michael HARTONO
Co-Author(s): Syntia NUSANTI, Florentina PRISCILIA

Purpose: Leber hereditary optic neuropathy (LHON) is a mitochondrial inherited disease caused by a point mutation in the mitochondrial deoxyribonucleic acid (mtDNA). This disease presents as a severe bilateral vision loss due to selective degeneration of retinal ganglion cells (RGC) and currently lacks sufficient treatment options. Gene therapy for LHON is in its early stages and is challenging to implement in many countries.

Methods: A thorough systematic search in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines was conducted via Cochrane, PubMed, Scopus, and ScienceDirect databases within the last ten years. Randomized controlled trial (RCT) or Cohort studies were included with a clear description of the efficacy or safety outcome.

Results: A total of three RCTs and three prospective cohort studies were included. All studies conducted a gene therapy using rAAV2-ND4 for m.11778G>A LHON. Pooled analysis showed that gene therapy significantly improved mean BCVA (Mean difference -0.05; 95% confidence interval [95% CI] -0.09 – -0.02; p = 0.0006; I² = 0%) but does not significantly improve visual field mean defect (MD 0.58; 95% CI -1.31 – 0.15; p = 0.12; I² = 0%). Qualitative analysis showed that gene therapy does not improve Retinal Nerve Fiber Layer (RNFL) thickness and Ganglion Cell Layer (GCL) macular volume. Only mild systemic and ocular adverse events were reported.

Conclusions: Gene therapies that specifically target mtDNA mutation for LHON have shown promise with notable improvements in the mean best-corrected visual acuity (BCVA) and favorable safety profile.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

Etiology, Management and Visual Prognosis in Patients With Orbital Apex Syndrome – a Prospective Study

First Author: Shrutakirty PARIDA

Purpose: To study the etiology, management and visual prognosis in patients with orbital apex syndrome (OAS) and to find out the predictors of final visual outcomes.

Methods: This was a prospective study, wherein 15 patients diagnosed with orbital apex syndrome (OAS) were included. Detailed ocular and systemic evaluation were done and patients were managed as per the underlying etiology. All the patients were followed up for at least 3 months.

Results: The mean age was 34.67±0.38 years. The M:F ratio was 1.5:1. Eight patients had an infective, 3 had traumatic, and 4 had neoplastic etiology. Two had bilateral involvement, while the rest had unilateral involvement. The most common presenting symptoms were blurred vision followed by outward bulging of the eyeball, and the most common signs were proptosis, ptosis, chemosis, and external ophthalmoplegia. 8 patients developed acquired strabismus, of which exotropia (XT) was more common. A multidisciplinary approach of management involving neurologists, neurosurgeons, neuroradiologists, and ENT specialists was done.

Conclusions: A careful clinical work-up, relevant laboratory investigations, special diagnostic modalities (incision or excision biopsy of the orbit with histopathological and microbiological examination) and neuro-imaging are the crux to establish the correct diagnosis and start adequate treatment. Delayed diagnosis and treatment, neoplastic etiology, presence of osteomyelitis, presence of systemic co-morbidities and severe visual impairment at presentation were the predictors of poor visual prognosis.

2

FREE PAPERS

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

Identification and Characterization of Differentially Expressed Circular RNAs in Extraocular Muscle of Oculomotor Nerve Palsy

First Author: Mingsu SHI
Co-Author(s): Lianqun WU, Chen ZHAO

Purpose: Oculomotor nerve palsy (ONP) is a neuroparalytic disorder resulting in dysfunction of innervating extraocular muscles (EOMs), of which the pathological characteristics remain underexplored. Circular RNAs (circRNAs) are RNA molecules with a single strand and a covalently closed structure, whose regulatory role has been revealed in several eye diseases. Herein, we aimed to explore the circRNA expression profile in the EOMs of ONP.

Methods: In this study, medial rectus muscle tissue samples from four ONP patients and four constant exotropia (CXT) patients were collected for RNA sequencing. Differentially expressed circular RNAs (circRNAs) were identified and included in functional enrichment analysis, followed by interaction analysis with microRNAs and mRNAs as well as RNA binding proteins. Furthermore, RT-qPCR was used to validate the expression level of the differentially expressed circRNAs.

Results: A total of 84 differentially expressed circRNAs were identified from 10,504 predicted circRNAs. Functional enrichment analysis indicated that the differentially expressed circRNAs significantly correlated with skeletal muscle contraction. In addition, interaction analyses showed that up-regulated circRNA_03628 was significantly interacted with RNA binding protein AGO2 and EIF4A3 as well as microRNA hsa-miR-188-5p and hsa-miR-4529-5p. The up-regulation of circRNA_03628 was validated by RT-qPCR, followed by further elaboration of the expression, location and clinical significance of circRNA_03628 in EOMs of ONP.

Conclusions: Our study may shed light on the role of differentially expressed circRNAs, especially circRNA_03628, in the pathological changes of EOMs in ONP.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

Methanol-Induced Optic Neuropathy: Treatment and Outcomes of Case Series From the Singapore National Eye Centre

First Author: Eric JIN
Co-Author(s): Reuben FOO, Jing Liang LOO, Shweta SINGHAL, Sharon TOW, Christine YAU

Purpose: To evaluate the presentation and treatment outcomes of patients diagnosed with methanol-induced optic neuropathy (Me-ION) at a tertiary ophthalmic centre.

Methods: We performed a retrospective, cross-sectional review of 6 patients diagnosed with bilateral Me-ION at the Singapore National Eye Centre from 2006 to 2024. The parameters analyzed included baseline demographics, clinical presentation, visual function, ophthalmologic investigation results, treatment regimes, and final visual outcomes.

Results: Six male patients with a mean (SD) age of 38.0 (17.6) years were reviewed. 2/6 patients had visual acuity (VA) of counting fingers (CF) or worse in the better eye, with a mean (SD) vision of 1.49(0.75) logMAR units (range:6/9 to hand motion (HM)). The mean (SD) symptom-to-treatment duration was 8.0 (9.0) days. All patients received high-dose intravenous methylprednisolone for a mean (SD) of 4.2 (1.0) days, followed by tapering doses of oral prednisolone for a mean (SD) of 31.0 (30.9) days. After treatment, 4/6 patients experienced vision improvement, while 2 deteriorated (Case 2: 6/21 to HM; Case 6:HM to PL). Mean (SD) improvement in vision was 0.16 (1.02) logMAR units - ranging from most improved (case 4: CF to 6/7.5) to least improved (case 5: 6/9 to 6/7.5). The average (SD) optical coherence tomography (OCT) retinal nerve fiber layer (RNFL) thickness decreased from 106.8 (29.7) µm at onset to 71.4 (19.2) µm after treatment. The average (SD) macular ganglion cell layer-inner plexiform layer (mGCL-IPL) thickness decreased from 69.8 µm (10.2 µm) at onset to 56.3 µm (8.0µm) after treatment.

Conclusions: Clinicians should maintain a high index of suspicion for Me-ION, even in developed countries. Early treatment with high-dose corticosteroids appears to aid in visual recovery, though further studies are needed to confirm efficacy.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

Neuro-Ophthalmic Finding of Visual Snow Syndrome in East Asia

First Author: Hyun Jin SHIN
Co-Author(s): Andrew LEE, Ha Eun PARK

Purpose: The aim of this study was to determine the neuro-ophthalmology and treatment responses in visual snow syndrome (VSS).

Methods: We retrospectively reviewed the data of patients diagnosed with VSS at a tertiary referral hospital from March 2021 to February 2024. Data on visual and nonvisual symptoms, self-reported events that caused VSS, and medical and psychiatric comorbidities were extracted from medical charts. Neuroimaging findings from MRI and 18F-FDG PET were evaluated, along with treatment responses to pharmacological interventions and filter glasses.

Results: The sample comprised 27 males and 36 females, with a mean age of 27±11 years (mean±SD) and an onset age of 22.4±11 years. Common symptoms included floaters, palinopsia, anxiety, and depression. Fourteen participants attributed VSS onset to specific ophthalmic events (e.g. bright lights during dilated ophthalmic examinations or refractive surgeries). 18F-FDG PET scans showed hypermetabolism in the visual cortices, with no significant MRI abnormalities. Lamotrigine (18.9%), alprazolam (20%), and filter glasses (32.1%) showed modest efficacy in reducing the intensity of VSS.

Conclusions: Bright-light ophthalmic examinations and refractive surgery might trigger VSS in susceptible subjects. Functional brain scanning methods such as 18F-FDG PET may be an objective diagnosing tool for VSS. The pharmacological treatment responses for VSS were variable and modest. A multidisciplinary treatment strategy that combines medication and filter glasses and also addresses psychological aspects may improve the quality of life in patients with VSS. East Asian patients with VSS demonstrated similar symptoms, PET scan findings, and response to treatment to reports from Europe and North America.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

Neuro-Ophthalmic Manifestations in Traumatic Brain Injury: A Hospital-Based Study

First Author: Jamuna GURUNG
Co-Author(s): Mitesh KARN, Sarita TULADHAR

Purpose: Neuro-ophthalmic manifestations occur frequently in patients with a traumatic head injury which are often ignored, leading to late presentation with permanent visual disability and visual field defects. This study aimed to find the various neuro-ophthalmic manifestations of traumatic brain injury and correlate them with the neurological status and neuro-imaging abnormality.

Methods: A hospital-based cross-sectional study was conducted among patients admitted to our center with a diagnosis of traumatic brain injury for six months. Glasgow Coma Score was used to grade the severity of the head injury. Detailed ophthalmological examinations were documented in predesigned proforma. Descriptive statistics were used to describe the outcomes.

Results: A total of 377 head injury patients underwent neuro-ophthalmic examination- 271 (71.9%) were males, and 106 (28.1%) were females. The mean age in our study population was 38.6 years, ranging from 3 to 85 years. Time from injury to ophthalmologic examination ranged from 30 minutes to 12 days post-injury, the mean duration being 24.2 ± 34 hours. Road traffic accidents were the most common cause of head injury, with 203 cases (53.8%). 38 (10.1%) patients had neuro-ophthalmic manifestations- 16 (42.0%) had afferent pathway deficits and 22 (57.9%) had efferent pathway deficits. Optic neuropathy 14 (36.8%) was the most frequently encountered neuro-ophthalmic abnormality. The presence of brain contusion was associated with traumatic optic neuropathy, while skull fractures were associated with trochlear nerve palsy, these associations being statistically significant (p<0.05).

Conclusions: Neuro-imaging abnormalities, particularly brain contusions and skull fractures, were significantly associated with neuro-ophthalmic deficits.

2

FREE PAPERS

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

Neuroprotective Effects of Lycium barbarum Glycopeptide in Neuromyelitis Optica Spectrum Disorders Associated Optic Neuritis

First Author: Shaoying TAN
Co-Author(s): Henry Ho-lung CHAN, Shiqi YAO, Xiayin YANG

Purpose: To explore the neuroprotective effects of Lycium barbarum glycopeptide (LBGP) in a mouse model of Neuromyelitis Optica Spectrum Disorders Associated Optic Neuritis (NMOSD-ON).

Methods: The C57BL/6 mice, aged 8 to 12 weeks, received intracranial injections of Anti-aquaporin-4 IgG (AQP4-IgG) coupled with human complement to induce NMOSD-ON. A week before this induction, the mice received Phosphate-buffered saline (PBS) as a control. The control group had intracranial injections of normal IgG with human complement, without additional treatment. In the LBGP group, all mice were administered LBGP (50 mg/kg) daily, commencing one week before AQP4-IgG and human complement induction. This treatment persisted for one month post-induction. Evaluation metrics included Optical Coherence Tomography (OCT), Visual Evoked Potential (VEP), and Electroretinography (ERG), all measured at baseline and weeks 1, 2, and 4. Furthermore, we collected optic nerves and eyes for histological analysis of aquaporin-4 (AQP4) protein, astrocytes, myelin sheath, and retinal ganglion cells (RGCs) at weeks 1 and 4.

Results: LBGP enhances the inflammatory microenvironment by decreasing tumor necrosis factor alpha (TNF α), interleukin-1beta (IL-1 β), and IL-6 levels. Moreover, LBGP mitigates microglial activation, protects astrocytes, and promotes recovery of the myelin sheath and RGCs. OCT, ERG, and VEP evaluations revealed both functional and structural improvements after LBGP treatment.

Conclusions: LBGP treatment effectively halted progressive neuronal degeneration post-initiation. It preserved RGC density and sustained visual pathway function in an NMOSD-ON mouse model, yielding results like those observed prior to model induction.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

Retinal Neurodegeneration and Risk of Diabetic Retinopathy: A 4-Year Prospective Cohort Study

First Author: Huangdong LI
Co-Author(s): Wenyong HUANG, Wei WANG, Shaopeng YANG, Ziyu ZHU

Purpose: To investigate whether the rapid rate of peripapillary retinal nerve fiber layer (pRNFL) thinning in the short term is associated with the future risk of developing diabetic retinopathy (DR).

Methods: This prospective cohort study utilized four-year follow-up data from the Guangzhou Diabetic Eye Study. pRNFL thickness was measured by swept-source optical coherence tomography. DR was graded by seven-field fundus photography after dilation of the pupil. Correlations between pRNFL thinning rate and DR were analyzed using logistic regression. The additive predictive value of the prediction model was assessed using the C-index, net reclassification index (NRI), and integrated discriminant improvement index (IDI).

Results: A total of 1012 diabetic patients (1,012 eyes) without DR at both baseline and 1-year follow-up were included. Over the four-year follow-up, 132 eyes (13.04%) developed DR. After adjusting for confounding factors, a faster rate of initial pRNFL thinning was significantly associated with the risk of DR (odds ratio per SD decrease, 1.15; 95% CI: 1.08, 1.23; P < 0.001). Incorporating either the baseline pRNFL thickness or its thinning rate into conventional prediction models significantly improved discriminatory power. Adding the rate of pRNFL thinning further enhanced the discriminative power compared to models with only baseline pRNFL thickness (C-index increased from 0.685 to 0.731; P=0.040). The IDI and NRI were 0.114 and 0.463 (P < 0.001).

Conclusions: The rate of initial pRNFL thinning was associated with DR occurrence and improved the discriminatory power of traditional predictive models. This provides new insights into the management and screening of DR.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

The Effect of Intravenous Atropine Bolus on Pupil Diameter in Patients Undergoing Cardioneuroablation

First Author: Magdalena FUTYMA - ZIAJA
Co-Author(s): Piotr FUTYMA, Łukasz ZARĘBSKI

Purpose: The purpose of this study is to investigate the impact of intravenously administered atropine on pupil diameter along with two electrocardiographic parameters: deceleration capacity (DC) and heart rate (HR) in patients undergoing cardioneuroablation (CNA).

Methods: Consecutive patients undergoing (CNA) were included in the study. A 2mg intravenous atropine test was performed in the setting electrophysiology laboratory. Pupil measurements of both eyes were conducted using a slit lamp directly before, immediately after, and at 3 and 16 hours post-atropine administration.

Results: Nine patients underwent CNA (age 46±17, 5 females). The primary indications for the atropine test were evaluation due to: atrioventricular block (4), cardioinhibitory vasovagal syncope (1), mixed-type vasovagal syncope (1), symptomatic sinus bradycardia (1), vagally mediated atrial fibrillation (1), and long QT syndrome (1). Compared to baseline values, atropine administration caused statistically significant dilation of pupils immediately post-bolus (4.2±0.4mm vs 4.6±0.4mm; p=0.005); at 3 hours post-administration (4.2±0.4mm vs 4.9±0.4mm; p= 0.000068); and at 16 hours post-administration (4.2±0.4mm vs 4.8±0.4mm; p=0.000098). Atropine administration significantly reduced deceleration capacity (DC) (9.35±5.02mm vs 0.68±0.62ms; p<0.001) and simultaneously increased heart rate (HR) (73±24bpm vs 116±30bpm, p=0.01) in the study group. There were no statistically significant differences in DC (9.35±5.02ms vs 6.92±3.2ms; p=0.33) or HR (73±24 vs 72±23bpm; p=0.92) when baseline values were compared with measurements performed 16 hours post-administration.

Conclusions: Intravenous administration of atropine significantly affects pupil width in patients undergoing CNA, and this effect persists in a 16-hour observation. At 16 hours post-atropine administration, its influence on HR and DC is minimal.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

The Temporal Dynamics of Pathological Profile and Functional Impairment in Neuromyelitis Optica Spectrum Disorder-Associated Optic Neuritis

First Author: Shaoying TAN
Co-Author(s): Henry Ho-lung CHAN, Shiqi YAO, Xiayin YANG

Purpose: To delineate the progression of neuromyelitis optica spectrum disorder-associated optic neuritis (NMOSD-ON) using a refined animal model through histological and functional assessment.

Methods: The aquaporin-4-immunoglobulin G (AQP4-IgG) and human complement were injected into the posterior optic nerve at 24-hour intervals, administered twice in the NMOSD-ON group. The control group received normal immunoglobulin G (normal IgG) alongside human complement. The histological evaluations on optic nerves and retina were conducted at Baseline, Day 2, Week 1, Week 2, and Week 4. In-vivo visual functionality and retinal structural evaluations were performed weekly to monitor disease advancement.

Results: The injection of AQP4-IgG and human complement initiated a cascade of reactions in NMOSD-ON mice, leading to early astrocyte pathological changes (AQP4 and GFAP loss), elevated levels of tumor necrosis factor-alpha (TNF-α), interleukin-6 (IL-6), interleukin-1β (IL-1β), CXCL10, brain-derived neurotrophic factor (BDNF), and activated microglia by Week 1. This preceded demyelination and resulted in RGC and nerve fiber damage by Week 2. Functionally, visual evoked potential N1 latency delays were observable from Week 2, and declines in N1P1 amplitudes were noted at that point. For the electroretinogram assessments, the positive scotopic threshold response (pSTR) amplitude exhibited a reduction by Week 2, while scotopic a- and b-wave amplitudes stayed constant, correlating with retinal nerve fiber layer thinning observed in in-vivo scans commencing Week 2.

Conclusions: This investigation elucidates the progression timeline of NMOSD-ON, linking histological and molecular alterations with retinal structural degradation and in-vivo functional impairments occurring post-NMOSD-ON onset, utilizing an optimized animal model.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Javakusum Hall 303

Vascular Modification After Trans-Sphenoidal Endoscopic Decompression for Suprasellar Tumor

First Author: Cheng-yung LEE
Co-Author(s): Ching-wen HUANG, Ivan Pochou LAI, Chao-wen LIN, Shih-hung YANG

Purpose: To evaluate changes in visual acuity (VA), visual field (VF), optical coherence tomography (OCT), and OCT angiography (OCTA) after trans-sphenoidal endoscopic decompression surgery for suprasellar tumors and identify predictive factors for postoperative visual outcomes.

Methods: A prospective study involving 67 patients with optic compression due to suprasellar tumors was conducted. Preoperative and three-month postoperative evaluations included best-corrected visual acuity (BCVA), Humphrey visual field (30-2), OCT for retinal nerve fiber layer (RNFL) and ganglion cell layer, OCTA for peripapillary and macular regions, and choroidal thickness and vascular index (CVI).

Results: Forty-five eyes from 45 patients were included in the final analysis. Significant improvements were observed postoperatively in VA and mean deviation of VF. Parafoveal superficial plexus density decreased, while other OCTA parameters showed no significant changes. Preoperative VA/VF, vessel density of peripapillary capillary, and thickness of RNFL and ganglion cell layer were strong predictors of postoperative visual outcomes.

Conclusions: Decompression surgery for suprasellar tumors significantly improves VA and VF. OCT-A reveals vascular modifications, particularly a reduction in parafoveal superficial plexus density. Preoperative VA and VF status, peripapillary capillary vessel density, and RNFL/ganglion cell layer thickness are critical predictors of postoperative visual recovery. This study highlights the importance of comprehensive preoperative assessment and careful postoperative monitoring to optimize visual outcomes.

Ocular Imaging

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Suryamukhee Hall 401

A Study Analyzing Macular Microvasculature Features Before and After Vitrectomy Using Oct Angiography in Patients With Idiopathic Epiretinal Membrane

First Author: Cuc PHAN
Co-Author(s): The DOAN ANH MINH, Khuyen PHAM NHA, Tho PHAN HOANG TRUONG

Purpose: To identify the characteristics of the macular microvasculature in idiopathic epiretinal membrane (iERM) patients with ectopic inner foveal layer (EIFL) and explore its association with visual outcomes using optical coherence tomography angiography (OCTA).

Methods: A prospective study included 40 unilateral iERM patients scheduled for vitrectomy, categorized into two groups based on the EIFL sign on the OCT: group non-EIFL (20 patients) and group EIFL (20 patients). OCTA assessed the superficial capillary plexus (SCP) with 3 mm x 3 mm scans pre-operatively and at 1, 2, and 3 months post-operatively. The parameters examined were foveal vessel density (FVD), parafoveal vessel density (PFVD), foveal avascular zone (FAZ) area, and best corrected visual acuity (BCVA).

Results: Compared to healthy eyes, FVD and PFVD were higher, and FAZ area was lower in iERM eyes ($p < 0.05$). Post-operatively, FAZ area initially decreased at 1 month, followed by increases at 2 and 3 months, while FVD and PFVD decreased progressively. Group EIFL consistently showed a smaller FAZ area and higher FVD and PFVD than group non-EIFL at all survey times ($p < 0.01$). BCVA at 3 months was worse in group EIFL. FVD and PFVD were negatively correlated with BCVA ($r = -0.528$, $p < 0.01$ and $r = -0.529$, $p < 0.01$), while the FAZ area showed a positive correlation ($r = 0.578$, $p < 0.01$).

Conclusions: FVD, PFVD, and FAZ areas contribute to explaining changes in BCVA in iERM. The EIFL group has higher FVD and PFVD, lower FAZ area, and lower postoperative visual acuity compared to the non-EIFL group. It is suggested that iERM without EIFL is an indicator for early surgical intervention.

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Clinical Breakthroughs With Ultrasound Biomicroscopy: Tackling Four Challenging Ocular Cases

First Author: Priyanka GUPTA
Co-Author(s): Ritu ARORA, Charu GUPTA, Shishir NARAIN, Daraius SHROFF

Purpose: This paper presents four challenging cases that were diagnosed using UBM, highlighting its diagnostic capabilities and its impact on clinical decision-making.

Methods: A prospective case series of four patients with unique and complex ocular presentations. Each case involved a thorough clinical examination and imaging with detailed UBM analysis. The UBM findings were analyzed to determine their contribution to the final diagnosis and subsequent treatment plans.

Results: Clinical pictures and imaging in all four cases were analysed. Among 4 cases, two cases presented as subconjunctival cysts in young children. AS-OCT showed a suspicious connection with the anterior chamber. UBM showed the extent, size, and communication of cysts with underlying ocular structures. Both the patients underwent successful surgical excision and histopathological analysis was performed. The third case was a middle-aged female who presented with hypotony after retinal detachment surgery with silicon oil in situ, UBM diagnosed the presence of a cyclitic membrane. This finding directed the surgical removal of the membrane, resulting in symptom resolution. Fourth case middle-aged female presented with pain, vomiting, and diminution of vision with a history of migraine. UBM was performed and showed the presence of ciliary effusion, a diagnosis of drug-induced angle closure was made. Discontinuation of the drug with the course of steroids resulted in an improvement in symptoms.

Conclusions: In all four cases, UBM proved crucial in establishing the correct diagnosis and formulating effective treatment plans. The high-resolution images obtained by UBM provided detailed anatomical information that was not achievable with other imaging modalities.

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Fundus2Video: Fundus Fluorescein Angiography Video Generation as a Retinal Foundation Model

First Author: Weiyi ZHANG
Co-Author(s): Mingguang HE, Danli SHI

Purpose: Fundus fluorescein angiography (FFA) is crucial for detecting and monitoring fundus vascular abnormalities. However, its invasive nature and limited accessibility compared to color fundus (CF) images present significant challenges. This study aims to address these issues by proposing Fundus2Video, a deep-learning model designed to generate FFA videos from single CF images and enhance downstream tasks reliant on CF images.

Methods: Fundus2Video is based on an autoregressive GAN and was trained and tested using a dataset comprising 1,956 CF images and 72,851 FFA images from 1,360 patients. The model's performance was evaluated both quantitatively, with metrics such as FVD (Fréchet Video Distance) and PSNR (Peak Signal-to-Noise Ratio), and qualitatively by clinical experts.

Results: Fundus2Video achieved an FVD of 1497.12 and a PSNR of 11.77, indicating high-quality video generation. The integration of these generated FFA videos with the original CF images significantly improved the accuracy of ophthalmic disease classification, including diabetic retinopathy and glaucoma, across seven public datasets. Furthermore, it enhanced systemic disease classification for conditions such as stroke, dementia, Parkinson's disease, and myocardial infarction using the UK BioBank dataset.

Conclusions: Fundus2Video can effectively serve as a surrogate for FFA exams and as a novel retinal foundation model, providing a valuable tool for both ophthalmic and systemic disease diagnosis. The model's ability to generate high-quality FFA videos from CF images and improve disease classification accuracy highlights its potential clinical impact.

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FREE PAPERS

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Suryamukhee Hall 401

OCT Split-Spectrum Amplitude-Decorrelation Optoretinography in Inherited Retinal Degenerations

First Author: Mark PENNESI
Co-Author(s): Siyu CHEN, Lesley EVERETT, David HUANG, Nida WONGCHAI SUWAT, Paul YANG

Purpose: Split-spectrum amplitude-decorrelation optoretinography (SSADOR) is a novel approach that uses optical coherence tomography (OCT) to characterize photoreceptor light response. SSADOR imaging is non-contact and allows for surveying relatively large retinal areas in a short period of time. It promises to be an objective, quantifiable surrogate marker of photoreceptor visual function. We investigate if it can be used to assess cone impairment in retinal degenerations.

Methods: SSADOR OCT scans consisted of multiple repeated volume scans, where a white stimulus flash was delivered in the middle of the scan to activate the phototransduction cascade. Each scan covered a 3x1-mm² retinal area within 2.5 seconds, and three montaged acquisitions led to a 3x3mm² fovea-centered field of view. The SSADOR algorithm compared pre- and post-flash OCT images of the photoreceptor outer segment to quantify the light response. SSADOR functional measurements were visualized as 2D maps, as well as calculated as mean decorrelation over the imaged area.

Results: To date, we have enrolled and obtained OCT SSADOR scans from over 30 patients diagnosed with inherited retinal degeneration (IRD). IRD eyes showed varying degrees of reduction in mean SSADOR decorrelation, consistent with cone electroretinogram amplitude. Reduced SSADOR decorrelation also correlates in magnitude and spatially with retinal sensitivity measured by fundus-guided perimetry.

Conclusions: SSADOR has high sensitivity in detecting functional impairment in macular cone photoreceptors. This novel technology can evaluate larger retinal areas than previous optoretinography methods and may be clinically useful in detecting and monitoring cone dysfunction in degenerative retinal diseases.

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Outcomes and Improvements in Tomographical Analysis in Corneas That Underwent Asymmetric Intracorneal Ring Segments for the Management of Keratoconus

First Author: Marta SARTORI
Co-Author(s): Carlos ARCE, Sandra BEER, Delso BONFANTE, Walton NOSE

Purpose: To evaluate the outcomes of 4 models of asymmetric intracorneal ring segments (AS - ICRS) in keratoconic (KC) eyes analyzed with Galilei G6 (ZIEMER -Switzerland) device.

Methods: In this prospective observational study, AS-ICRS were implanted in KC assigned to four groups named "smoking pipe", "moustache", "goatee" and "sideburn" for mnemonic purposes and a better understanding of the implant design. Different KC phenotypes received different AS-ring. Femtosecond-assistant surgeries were performed by the same surgeon. Galilei G6 analyses were performed pre-operatively and over a one-year follow-up period.

Results: Forty-four eyes were analyzed. Differences were observed between pre- and post-operative outcomes in axial maximum keratometry (KM) values (57,96 D to 52,13D+/- 4,43D), (p<0,01), anterior toric elevation Kranmer-Arce (KCA) index ((52,32 to 26,31 +/-14,40) p<0,01) and HOA coma (p<0,05). There was a difference between 4 groups (p<0,01) on AS-R types analyzed: "Sideburn" achieved less topographic cylinder post-operatively, " moustache" decreased HOA- coma (p<,0,05) more effectively, "goatee" decreased KM (p<0,05).

Conclusions: AS-ICRS improved tomographic outcomes in all phenotypes. Axial KM and Anterior KCA index demonstrated AS-R can improve tomographical images (p<0,01). Anterior KCA index and pre- and post-op comparison images can illustrate much better the decrease in KC asymmetry being the most specific to demonstrate AS-ring outcomes.

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Retina-Heart Axis: Insight From Retinal OCTA imaging Cohort

First Author: Ziyu ZHU
Co-Author(s): Huangdong LI, Ruilin XIONG, Shaopeng YANG

Purpose: To identify the essential capillary layer having prognosticated value for cardiovascular disease (CVD) and mortality.

Methods: The Guangzhou Diabetic Eye Study (GDES) is a community-based prospective cohort. The optical coherence tomography angiography (OCTA) was adopted for quantifying retinal microvasculature and choriocapillaris (CC) perfusion. The impacts of OCTA metrics on risks of CVD and mortality were evaluated by logistic models.

Results: A total of 2,950 patients (2,950 eyes) were included. In the fully adjusted models, the elevated CC flow deficit (FD) in the entire region was significantly associated with higher odds of developing CVD (odds ratio [OR]=1.11 per 1-SD increase; 95%CI: 1.01-1.20; P=0.022) and risks of CVD-related mortality (OR=1.25 per 1-SD increase; 95%CI: 1.04 -1.52; P=0.021). Sector analyses arrived consistent results, with ORs of 1.17 (95% CI, 1.07-1.27; P<0.001) for CVD events and 1.246 (95%CI: 1.023-1.517; P=0.029) for CVD-mortality in the foveal, 1.130 (95% CI, 1.038-1.230; P=0.005) for CVD events and 1.224 (95%CI: 0.989-1.515, P=0.063) for CVD-mortality in the parafoveal, and 1.168 (95% CI, 1.075-1.269; P<0.001) CVD events and 1.307 (95%CI: 1.070-1.597; P=0.009) for CVD-mortality in the perifoveal region. Subgroup analysis by age group, sex, HbA1c levels, and education attainment obtained similar results.

Conclusions: Impaired CCs occur earlier than alterations in retinal capillary layers, underscoring the potential of CC FD% as an early indicator of CVD risk. Further study is warranted to explore whether early interventions based on CC information could positively impact the prognosis of individuals at high risk for CVD.

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Suryamukhee Hall 401

The Change in Fundus Magnification Induced by Implantable Collamer Lens (ICL) in OCT Image

First Author: Xuewen DING
Co-Author(s): Fan LU, Yilei SHAO

Purpose: To calculate the actual magnification induced by ICL implantation on fundus OCT and to investigate the discrepancy between these results and those expected under ideal conditions.

Methods: Subjects who underwent ICL implantation were included. Preoperatively, ocular parameters are collected. 1 month postoperatively, anterior segment OCT and macular OCT were reassessed. On the en-face layer of the fundus OCT, distinctive vascular branches are labeled manually. Postoperative fundus OCT images are manually aligned with preoperative images in Photoshop, calculating the area ratio pre- and post-alignment. Ocular parameters are incorporated to compute the alteration in ocular magnification using the divergence formula and magnification rate formula. This calculation is then compared with the real scenario.

Results: A total of 5 eyes (from 3 subjects) were included, with a spherical equivalent (SE) ranging from -8 to -11D. The magnification rate changes obtained through fundus OCT image alignment were +13.9%, +7.27%, +5.31%, +4.5%, and +5.52%, while the calculated magnification rate changes were +17.4%, +14.8%, +15.6%, +15.7%, and +16.8%, respectively. It was observed that there is a discrepancy between the results obtained using magnification calculation formulas and the actual changes in fundus OCT magnification, indicating a need for further determination of the impact of ICL implantation on the fundus OCT image magnification rate using regression models and other methods.

Conclusions: The study reveals significant variations between the calculated and actual magnification rate changes following ICL implantation, underscoring the necessity for refined methods such as regression models to accurately assess the impact on fundus OCT magnification.

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Ultra-Widefield Retinal Optical Coherence Tomography (OCT) and Angio-OCT Using an Add-On Lens

First Author: Bartosz SIKORSKI

Purpose: The study aims to evaluate the clinical utility of an ultra-widefield (UWF) single-capture optical coherence tomography (OCT) lens developed to image large areas of the retina.

Methods: The study included OCT and angio-OCT measurements performed with a REVO FC 130 (Optopol Technology, Poland) with an add-on wide-field lens in 307 patients with retinal pathologies. The imaging width provided by the lens was 22 mm, while the scanning window height ranged from 2.8 to 6 mm.

Results: The quality of the peripheral UWF OCT and angio-OCT images obtained with the REVO FC 130 with the attachable lens is very good and sufficient for patient diagnosis, follow-up, and treatment planning. Both the boundaries of non-perfusion zones and the location and extent of vascular proliferations can be accurately traced. Furthermore, the vitreoretinal interface can also be accurately assessed over a large area. The imaging quality of the macula with UWF OCT angiography is also good.

Conclusions: The proposed method of obtaining UWF OCT and angio-OCT images by using an add-on lens with the REVO FCNX 130 gives good-quality scans over their entire length. Considering the image quality, simplicity, and reliability, it can be successfully used for UWF OCT and OCT angiography evaluation of the retina on a daily basis.

Ocular Oncology and Pathology

Apr 04, 2025 (Fri) 13:15 - 14:45
Venue: Javakusum Hall 303

Diminished MYCN Dosage Endows Cavitory Transformation in Retinoblastoma With Favorable Outcome: A Case-Controlled, Retrospective, Multicentric Study Integrating Spatial Proteomics and Preclinical Interventions

First Author: Peiwei CHAI
Co-Author(s): Renbing JIA

Purpose: Cavitory retinoblastoma (CRB) is a distinct subtype of retinoblastoma characterized by translucent cavities observable via ophthalmoscopic examination. However, a comprehensive understanding of the clinical implications and molecular underpinnings of CRB is lacking.

Methods: A case-control, retrospective cohort study. Three tertiary retinoblastoma centers in China. Participants: In a longitudinal study encompassing 1,360 retinoblastoma patients, conducted over a 13-year timeframe from June 2008 to February 2022, cavitory spaces were detected within the tumors of 35 eyes of 34 patients. A control cohort of 164 eyes from 138 age-matched patients with non-cavitory retinoblastoma was selected, maintaining a 1:3 case-control ratio. Exposure: Clinical manifestations of CRB. Main Outcomes: Overall survival (OS) and metastasis-free survival (MFS).

Results: CRB was linked to enhanced MFS (log-rank $p=0.01$) and OS (log-rank $p=0.04$), as well as an increased proportion of well-differentiated status ($p=0.002$) and a reduced incidence of vitreous seeding ($p=0.04$). Spatial proteomic analysis, immunofluorescence, and immunohistopathology revealed a remarkable decrease in MYCN expression in CRB. Silencing MYCN in patient-derived xenografts (PDX) using adeno-associated virus recapitulated these phenotypes of CRB, including the formation of translucent cavities and the emergence of cone-like rosettes.

Conclusions: This study established a novel genetic-phenotypic association, which diminished MYCN expression and induced a re-differentiation of

retinoblastoma cells, marked by the formation of translucent cavities. This phenotype is indicative of a less aggressive, well-differentiated CRB subtype with a more favorable prognosis. Targeting MYCN with gene delivery techniques to induce the cavitory phenotype could offer a novel therapeutic approach for the management of retinoblastoma.

Apr 06, 2025 (Sun) 09:45 - 11:15

Venue: Kaner Hall 403

A Cross-Comparative Analysis of AS-OCT Diagnosis Versus Histopathological Diagnosis for Ocular Surface Tumors in a Tertiary Care Center in Nepal

*First Author: Purnima RAJKARNIKAR STHAPIT
Co-Author(s): Leena BAJRACHARYA, Eric HANSEN, Ashiyana NARIANI, Harshika RAUNIYAR*

Purpose: High-resolution AS-OCT (Anterior segment- Optical coherence tomography) is an imaging modality predominantly used in tertiary ophthalmologic centers to diagnose and characterize various ocular surface tumors. This represents the first landmark study in Nepal for and aimed to investigate the applicability and translatability of this imaging modality for ocular surface lesions context.

Methods: A prospective, cross-comparative one-year study was performed at a tertiary eye care center in Nepal on patients who were suspected of having ocular surface tumors. A high-resolution AS-OCT (Zeiss Cirrus 6000) was acquired for all patients enrolled, which was followed by surgical excision of the tumor, and the specimen was sent for histopathology examination (HPE). The primary clinical diagnosis denoting AS-OCT features was compared with the final histopathology diagnosis.

Results: Among the 77 patients, 41(53.2%) were females, median age was 54 years (range: 18-87 years old). Based on clinical assessment and AS-OCT features, 67 eyes (83.9%) were diagnosed to have (OSSN). On AS-OCT, hyperreflectivity of epithelium, epithelial thickening, and an abrupt transition to normal epithelium were present in 88%, 63%, and 76% of those eyes, respectively. On histopathology, 69 cases were diagnosed as OSSN of various grades, proving that clinical diagnosis using AS-OCT imaging had a sensitivity of 91%.

Conclusions: This study demonstrates the high sensitivity of OSSN diagnosis using AS-OCT; however, there was a notable discrepancy in the uniform presence of classic OCT features. These findings likely result from variations in the device, imaging protocols, and the learning curve for a recently adopted paradigm in Nepal.

Apr 06, 2025 (Sun) 09:45 - 11:15

Venue: Kaner Hall 403

Analysis of Clinical and Pathological Features of 187 Cases of Primary Ocular Adnexal Lymphoma

First Author: Hui LIU

Purpose: To investigate the clinical and pathological features of primary ocular adnexal lymphoma (OAL).

Methods: A total of 187 OAL cases were collected. The clinical and pathological features were analyzed, and the literature was reviewed.

Results: The 187 OAL patients, including 132 cases of EZML, 21 cases of LBCL, 10 cases of FL, 9 cases of MCL, 7 cases of NKTCL, 6 cases of PCN, 1 case of PBL and 1 case of B-LBL, aged 1~89 years, mainly occurring in the orbit, conjunctiva, lacrimal gland, and eyelids. The clinical manifestations of patients are accompanied by symptoms such as eyelid conjunctival swelling, proptosis, ocular motility disorder, or visual field loss, and the imaging manifestations are irregular soft tissue density shadows at the ocular appendage site. Tumors invaded and destroyed surrounding tissues, including 2 cases of nasal sinuses, 2 cases of maxillary sinuses, and 1 case of surrounding bone tissue. The cell morphology ranged from mature small lymphocytes to large cells and even anaplastic tumor cells, and all types of lymphoma had the same tissue structure as lymphoma in other sites, accompanied by corresponding molecular changes. All patients underwent mass resection, and some patients were followed by chemoradiotherapy.

Conclusions: As a rare site of extranodal lymphoma and a group of heterogeneous tumors, indolent low-grade lymphoma is more common, and there is no lack of high-grade aggressive lymphoma, with diverse clinical manifestations and pathological tissue morphology, often requiring immunohistochemistry and molecular testing to assist in diagnosis.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Kaner Hall 403

Brachytherapy With Ru-106 or/and Sr-90 Plaques for Retinoblastoma: Long-Term Outcomes and Analysis

First Author: Andrey YAROVY
Co-Author(s): Denis VOLODIN, Vera YAROVAYA

Purpose: To analyze the results of brachytherapy (BT) of retinoblastoma (RB).

Methods: The records of 163 patients (186 eyes, 333 tumors) treated with Ru-106 or Sr-90 BT for intraocular RB were reviewed. Various BT modes were highlighted - one-field, multifield irradiation, two plaques fixation and others. Some technical innovations of BT procedure will be presented.

Results: Complete tumor control was achieved in 273 tumors (82%), incomplete in 44 (13%). On multivariate statistical analysis (MSA), apex dose $\leq 85\text{Gy}$ (for 106Ru) ($p=0.03$), dark fundus pigmentation ($p=0.005$), and time between intraarterial chemotherapy and BT less than 2 months ($p=0.001$) demonstrated a significant effect on BT insufficiency. Radiation-induced complications occurred in 62 eyes (33%): non-proliferative retinopathy ($n=39$, 21%), optic neuropathy ($n=29$, 16%), and vitreous hemorrhage ($n=29$, 16%). MSA showed central localization ($p=0.005$), tumor thickness $>2.7\text{mm}$ ($p=0.04$), and larger plaque diameter ($p=0.035$) to be the most significant variables for BT-associated complications. Eye retention was achieved in 91% of the treated eyes ($n=169$); 17 eyes (9%) were enucleated because of tumor recurrence or uncontrolled tumor growth ($n=7$), severe anterior chamber involvement ($n=3$) or recurrent active vitreous seeding ($n=1$), the inability of tumor monitoring due to dense vitreous hemorrhage or total retinal detachment ($n=3$), phthisis bulbi ($n=3$).

Conclusions: BT proved to be a highly effective method of RB treatment with excellent local tumor control, eye preservation rate, and acceptable incidence of curable radiation-induced complications. BT with Sr-90 provides comparable effectiveness with a much lower rate of complications.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Kaner Hall 403

Clinical Profile and Outcomes of Ocular Surface Squamous Neoplasia at the Philippine General Hospital: A Retrospective Study

First Author: Mary Ellaine DIAZ
Co-Author(s): Ruben LIM BON SIONG, Gary John MERCADO, Justin Alan YAO

Purpose: This study aimed to evaluate the demographics, clinical characteristics, treatments, and outcomes of patients with ocular surface squamous neoplasia (OSSN) at the Philippine General Hospital.

Methods: This was a single-center, 11-year retrospective, cross-sectional case series on 18 cases of OSSN seen between January 2012 to June 2023. The patient's demographics, presenting symptoms, tumor characteristics, histopathologic diagnosis, treatment, outcomes, and duration of follow-up were reviewed.

Results: Out of 33 identified cases of OSSN, only 18 were eligible for inclusion in the study. Mean age was 60.78 years (range 31 to 80), with male predominance (66.67%). The left eye was most commonly affected (61.11%) with most presenting with fleshy mass (83.33%). Most tumors were located nasally (66.67%) and were predominantly papilliform (44.44%) in morphology with associated hyperpigmentation (38.89%). Squamous cell carcinoma (SCCA) was the most common histopathologic diagnosis (72.22%). The main primary treatment was surgical excision (94%) with or without adjunctive therapy, with only 1 patient undergoing first-line topical chemotherapy. Only 3 recurrences (16.67%) were noted with a median follow-up of 7.5 months. A statistically significant recurrence-free odds leaning towards the utilization of cryotherapy was noted.

Conclusions: OSSN seen at the Philippine General Hospital presented as a limbal papilliform mass, most commonly affecting elderly males. Surgical excision with adjuvant cryotherapy and/or chemotherapy was the preferred mode of treatment.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Kaner Hall 403

Comparison of Outcomes of Gamma-Knife Radiosurgery, Ru-106 Brachytherapy and Enucleation for Uveal Melanoma in Comparable Groups

First Author: Vera YAROVAYA
Co-Author(s): Aiza GALBATSOVA, Andrey GOLANOV, Valeri KOSTUCHENKO, Andrey YAROVVOY

Purpose: To compare the effectiveness and survival of patients with UM treated with Gamma-knife radiosurgery (GKRS), brachytherapy (BT), or enucleation (En) in statistically comparable groups.

Methods: The records of 606 UM patients (606 eyes) were reviewed. Seventy patients underwent GKRS, 190 - En, 346 - BT. The GKRS group was compared with the enucleation group only according to survival. GKRS group was compared with BT by tumor control, complications, eye preservation, and survival. All groups had no statistical differences in clinical data ($p > 0.1$).

Results: The five-year survival rate of patients treated with GKRS (91%) or enucleation (82%) had no statistical difference ($p = 0.095$). The same data were obtained by comparing the GKRS group (92%) with the BT group (85%) ($p = 0.9$). There was no difference in tumor regression degree in patients who underwent GKRS and BT ($p = 0.45$): tumor regression 97% vs 93% and tumor growth 3% vs 7%. The eye retention rate was also equal for BT (94%) and for GKRS (95%) in a 5-year follow-up ($p = 0.49$). The number of complications in both groups had no statistical significance ($p = 0.11$) and included radiation retinopathy (GKRS 37%, BT 15%), neuroretinopathy (GKRS 9%, BT 12%), vitreous hemorrhage (GKRS 3%, BT 4%), secondary glaucoma

Conclusions: The survival rate of patients with UM does not depend on the treatment method - GKRS, BT or enucleation. The number of complications of GKRS does not exceed that of BT. It is possible to save the same number of eyes with UM using GKRS or BT.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Kaner Hall 403

Diagnostic Utility of MYD88 L265P Mutation in Intraocular Lymphoma

First Author: Sheetal CHAUHAN
Co-Author(s): Seema KASHYAP, Seema SEN, Pradeep VENKATESH

Purpose: Screening vitreous biopsies for MYD88 L265P mutation to compare its diagnostic utility with cytological analysis.

Methods: Cytological analysis by cytospin and MYD88 mutation by allele-specific RT-PCR was performed on 11 vitreous biopsies and 5 normal controls.

Results: Of the 11 patients, 8 were clinically suspected to have intraocular lymphoma. (IOL). Four were diagnosed as B-NHL on cytology (one case was on chemotherapy). MYD88 mutation analysis was performed in 9/11 cases. Two cases were excluded as they were chemo-reduced. MYD88 mutation was detected in 3 cases; two were also diagnosed as IOL by cytology. However, one case diagnosed as IOL on cytology was negative for MYD88 mutation. The diagnostic utility of MYD88 mutation analysis revealed a sensitivity, specificity, and positive and negative predictive value of 100%, respectively. The diagnostic accuracy was 100% with the mutation analysis as compared to 91% with conventional cytological analysis.

Conclusions: The diagnostic utility of MYD88 L265P mutation is superior to conventional cytology, making it a reliable confirmatory test in cytologically ambiguous IOL cases.

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FREE PAPERS

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Kaner Hall 403

Epidemiology of Ophthalmic Cancers in Chinese: A 14-Year Population-Based Study

First Author: Allie LEE
Co-Author(s): Alex KAN, Dennis Tze Wah LAW

Purpose: Ophthalmic cancer is a rare yet potentially sight- and life-threatening condition. However, population-based studies investigating the epidemiology of ophthalmic cancers in Chinese remain scarce. This study aims to investigate and update the incidence rates, histological subtypes and time trends of ophthalmic cancers in Chinese.

Methods: Patients diagnosed with primary ophthalmic cancers under the ICD-9 site codes 190.0-190.9 from 2005 to 2018 were retrieved from the database of Hong Kong Cancer Registry, the only facility in the territory collecting and validating cancer data from a 7.3 million population.

Results: A total of 442 primary ophthalmic cancers were included in the study. The overall age-standardized average annual incidence rate was 4.04 per 1,000,000 population. The incidence rate was significantly higher in males than females ($p < 0.001$). A bimodal distribution was detected, with the first peak before the age of 5 and the second peak after 75 years ($p < 0.001$). The most common histological types were lymphoma (58.1%), malignant melanoma (14.5%), and retinoblastoma (12.4%). The most common cancer sites were the orbit (35.6%), conjunctiva (17.8%), and lacrimal system (14.1%). The incidence rates remained static over the years.

Conclusions: In the Chinese population, the incidence of primary eye cancers has been low and remained stable. Lymphoma was the most common histological type, and orbit was the most common site.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Kaner Hall 403

Evolution of Intra-Arterial Chemotherapy and Globe Salvage Outcome in Retinoblastoma

First Author: Nicha JARUPANICH
Co-Author(s): Ekachat CHANTHANAPHAK, Ratima CHOKCHAITANASIN, Suradej HONGENG, Duangnate ROJANAPORN, Supanat THANOMTEERANANT

Purpose: To assess prognostic factors affecting globe survival and visual outcome following intra-arterial chemotherapy (IAC) in intraocular retinoblastoma patients.

Methods: A retrospective review of intraocular retinoblastoma patients treated with IAC at Ramathibodi Hospital from January 2009 to June 2022 was conducted. Patients were divided into two groups (group 1:2009-2017, group 2: 2018-2022) to compare globe salvage rates, as IAC techniques and medications were different between the 2 periods. We analyzed factors associated with globe salvage and visual outcome, including patient demographics, tumor classification, procedural techniques, and additional treatments in both groups.

Results: There were 54 eyes of 51 patients who received IAC in our center, which were 27 eyes in each group. Kaplan-Meier analysis showed higher globe salvage rates in group 2 (log-rank test $p = 0.001$). Multivariate analysis revealed that International Classification of Retinoblastoma (ICRB) group D patients had higher globe salvage rates compared to group E in both periods (adjusted odds ratio [AOR] [95% confidence interval [CI]] = 8.17 [1.55, 43.07], $p = 0.013$). Conversely, single medication (either melphalan or carboplatin) was associated with lower globe preservation rates compared to triple medication (melphalan, carboplatin, and topotecan) (AOR [95% CI] = 0.12 [0.02, 0.66], $p = 0.015$). Improved visual outcomes were linked to extramacular tumor location (AOR [95% CI] = 21.04 [1.72, 258.22], $p = 0.017$) and absence of retinal detachment (AOR [95% CI] = 14.96 [1.46, 153.86], $p = 0.023$).

Conclusions: IAC with triple medication has a better globe salvage rate, especially in ICRB group D eyes. Macular involvement and retinal detachment were associated with poor visual outcomes.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Kaner Hall 403

Lacrimal Sac Tumours: A Case Series

First Author: Syeed MEHBUB UL KADIR
Co-Author(s): Nahid FERDAUSI, Rajendra MAURYA,
Riffat RASHID, Golam HAIDER, Mukti MITRA

Purpose: The aim of the study was to describe the clinical presentation, management strategies, and outcomes in a case series of primary lacrimal sac tumours.

Methods: This retrospective study was conducted in a tertiary eye hospital in Bangladesh and included all patients evaluated, treated, and followed up for at least six months from January 2013 to October 2022. One patient developed a recurrence of the adenocarcinoma of the lacrimal sac after one year of primary treatment. Patients' demographic data were analyzed and reviewed from articles on lacrimal sac tumours. We also analyzed the biopsy technique, treatment modality, and recurrence. An oncologist reviewed all patients to prepare a plan for adjuvant treatment.

Results: Eleven patients with lacrimal sac tumours were included in this study. Swelling in the medial canthal region was the most common presenting feature, followed by epiphora (63.6%) and pain (27%). An incisional biopsy or complete excisional biopsy was performed in all cases. Malignant tumours were found in 8 (72.7%) cases, and non-Hodgkin's lymphoma (NHL) (45%) was the most common malignant lacrimal sac tumour. ENMZL lymphoma was 80%, and diffuse large B-cell lymphoma was 20% among the cases of NHL. Patients with epithelial malignancy were treated with external beam radiation therapy, while NHL patients were treated with chemotherapy (CHOP regimen). Recurrence was noted in 1 case of epithelial malignancy after one year of treatment.

Conclusions: Successful management of lacrimal sac tumours requires a high index of suspicion, as these are fatal tumours, often misdiagnosed as dacryocystitis. Hematolymphoid tumours are the most frequent.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Kaner Hall 403

Long-Term Results of Surgical Excision of Iridociliary Tumors With Subsequent Implantation of Artificial Iris

First Author: Andrey YAROVY
Co-Author(s): Angelina MATYAEVA, Nikolay SOBOLEV

Purpose: We present the long-term results of surgical excision of iridociliary tumors with subsequent implantation of artificial iris.

Methods: Since 1992, 232 patients aged from 14 to 80 years (mean, 42) with tumors of iridociliary location have been treated with resection en bloc using different surgical approaches. Within the last 25 years, 26 patients with resected tumors of the iris (n=1), iris and ciliary body (n=19), iris, ciliary body, and choroid (n=6) underwent subsequent cataract surgery with simultaneous artificial iris lens diaphragm implantation (AILDI) from 1 to 111 months (mean 26 months) after tumor resection.

Results: Uveal melanoma was revealed histologically in 23 patients (86%), adenocarcinoma in 1, adenoma or pigment epithelium in 1, and epithelial cyst in 1. Visual acuity decreased in all patients with different vision impairments. Corneal astigmatism was from -0.75 to -5.25 D. The size of the iris defect was from 16 to 50% of the iris square. After reconstructive surgery, visual acuity increased statistically significantly in 22 patients (85%). Complications included bullous keratopathy (n=4, 15%), macular edema (n=3, 11%), secondary glaucoma (n=2, 8%), endophthalmitis (n=1, 4%), iris lens diaphragm dislocation (n=1, 4%). Tumor recurrence occurred in one eye; the eye was enucleated. All patients were satisfied with the cosmetic outcome of the treatment. No cases of metastases were revealed within the follow up from 13 to 243 months.

Conclusions: Cataract surgery with simultaneous AILDI nowadays is a necessary and safe procedure after block excision of anterior tumors in cases of large colobomas and visual impairments. This surgery provides increasing visual functions and cosmetic outcomes.

2

FREE PAPERS

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Kaner Hall 403

Metastasis-Free Survival of Uveal Melanoma by Tumor Size Category Based on the Cancer Genome Atlas (TCGA) Classification in 1001 Cases

First Author: Rolika BANSAL
Co-Author(s): Arupa GANGULY, Sara E. LALLY, Hidayet SENNER, Carol SHIELDS, Jerry SHIELDS

Purpose: Uveal melanoma (UM) can be classified by tumor size category and by The Cancer Genome Atlas (TCGA) groups (cytogenetic-based, 4-category prognostic classification into Groups A-D). This study was conducted to assess the impact on metastasis-free survival (MFS) in UM by tumor size category based on correlation with TCGA classification.

Methods: Retrospective analysis of 1001 cases categorized as small (0.0-3.0mm), medium (3.1-8.0mm) and large (>8.1mm), grouped by TCGA classification.

Results: Of 1001 cases, TCGA Groups (A/B/C/D) included small (n=270, 75%/11%/13%/1%), medium (n=503, 46%/14%/27%/13%) and large (n=228, 23%/19%/38%/20%) UM. The 5-and 10-year Kaplan-Meier MFS for small UM revealed Group A (98%, 98%), Group B (100%, 100%), Group C (86%, NA) and Group D (100%, NA). For medium UM, the values dropped with Group A (95%, 93%), Group B (90%, 90%), Group C (68%, 38%), and Group D (44%, NA). For large UM, the values dropped further with Group A (94%, 86%), Group B (85%, NA), Group C (40%, 28%), and Group D (23%, NA). Additionally, a comparison (small vs. medium vs. large tumor size category) revealed TCGA low-risk grouping (Groups A or B) in 86% vs. 60% vs 58% cases with UM.

Conclusions: By tumor size category, favorable cytogenetics (Groups A or B) is found in 86% of small tumors, 60% of medium tumors, and 58% of large tumors. The MFS at 10 years for favorable cytogenetics was 98% for small tumors, 92% for medium tumors, and 54% for large tumors. The tumor size category can serve as a surrogate for TCGA.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Kaner Hall 403

Residual Retinoblastoma After Chemotherapy: When to Treat or Not to Treat

First Author: Denis VOLODIN
Co-Author(s): Tatiana USHAKOVA, Vera YAROVAYA

Purpose: To reveal the risk factors of residual RB (R-RB) progression when follow-up without focal therapy (FT) is preferred.

Methods: One hundred eighty pretreated with systemic and/or local chemotherapy (CT) patients (192 eyes) with R-RB were analyzed One hundred patients (108 eyes) underwent FT (TTT, brachy, cryo), 80 patients (84 eyes, 89 tumors) were kept under follow up without FT. Twenty-four % were of Group B, 21% of Group C, 50% of Group D, and 5% of Group E. Type 2 of tumor regression (non-calcified) was seen in 32% of tumors, type 3 (calcified) in 68%. Clinical reasons for the follow-up without FT will be presented.

Results: Fifty-five % of tumors showed further regression, 24% remained stable, 21% of tumors progressed within the first 2 years after CT, 4% needed enucleation, the rest were managed with FT, and complications occurred in 23%. There were no cases of metastases. One patient died because of trilateral RB. Mean follow up was 42 months, range 8-125. Multivariate analysis showed the regression type to be the only significant variable of R-RB progression (p=0.01). No statistical relation to tumor size (p=0.36), type of chemotherapy (SC, LC or both, p=0.6), patients age (p=0.2), tumor group (0.74), tumor location (p=0.85), was revealed.

Conclusions: Follow-up after chemotherapy without FOT is a reasonable management option for R-RB, especially in the cases of the only eye (or the only seeing eye) or centrally located lesions. The type of tumor regression should be considered.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Kaner Hall 403

Results of Intralesional Sclerotherapy for Treatment of Orbital Lymphangiomas

First Author: Tariq ALDOAIS
Co-Author(s): Amal ABDULWAHED, Dunia ALMUTAIRI

Purpose: The purpose of our study was to evaluate the role of intralesional bleomycin injection in the treatment of orbital lymphangiomas.

Methods: A retrospective study was conducted at the Oculoplasty Unit with the medical records of 7 patients who had been diagnosed with orbital lymphangioma between January 2023 and March 2024 at the Rowad Alnour Eye Hospital, Sana'a, Yemen. The diagnosis was based on clinical manifestations, imaging studies, including computed tomography and magnetic resonance imaging (MRI), and histologic findings when possible. Patients threatened with loss of vision or severe disfigurement underwent aspiration of blood with intralesional injection of a sclerosant.

Results: Proptosis and lid swelling were the most frequent presentations. The number of injections ranged from 1 to 2. 6 patients showed complete resolution, and one patient showed more than 50% resolution, as evidenced radiologically and in digital photography.

Conclusions: Intralesional bleomycin injection can be considered as first-line therapy for the treatment of orbital lymphangiomas.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Kaner Hall 403

The Efficacy and Safety of Bleomycin Injection As the Primary Management of Orbital Venolymphatic Malformation (OVLN): A Systematic Review

First Author: Ferdy ISKANDAR
Co-Author(s): Neni ANGGRAINI, Mutmainah MAHYUDDIN

Purpose: Orbital venolymphatic malformation (OVLN) consists of abnormal vascular channels lined by endothelial cells with venous and lymphatic components. OVLN can cause discomfort and

disfigurement and tends to re-grow after treatment, with a recurrence rate of 71.4% after surgery. The use of sclerotherapy injection has emerged as a non-surgical procedure, as extensive surgery may cause iatrogenic damage to vital structures within the orbit. Therefore, we would like to explore the efficacy and safety profile of bleomycin injection for OVLN in achieving proptosis reduction, recurrence rate, visual acuity improvement or stabilization, and the complications of bleomycin.

Methods: A literature search was conducted through online databases (PubMed, Proquest, ScienceDirect) within the last fifteen years. All studies, including observational studies and case series, are included. Outcomes included proptosis reduction, recurrence rate, visual acuity improvement or stabilization, and complications.

Results: This review comprehends ten studies from 2012-2022, with 131 eyes. Bleomycin injection is given at the dose of 0.5 IU/kg body weight. The pooled data regarding proptosis shows a reduction in 87.78% of patients and stays stable in 12.22% of patients with a median of 6-month follow-up. The recurrence rate was 0.76% since there was only 1 patient who had the recurrence due to rebleeding and chocolate cyst formation. Visual acuity (VA) was found to be improved in 63.64% of patients, while in the rest, 36.36% remained stable. Minimal complications were reported, including periorcular hyperpigmentation (14.5%) and inflammation (8.40%).

Conclusions: Bleomycin injection as a sclerotherapy is an effective and safe treatment modality for OVLN.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Kaner Hall 403

To Collate the Efficacy and Safety of Interferon Alpha 2b and Surgical Excision in Management of Ocular Surface Squamous Neoplasia (OSSN)

First Author: Ayusha RAWAT
Co-Author(s): Satya Prakash SINGH, Santosh KUMAR

Purpose: To evaluate the outcomes in terms of success and recurrence rates with OSSN management and associated adverse events.

Methods: This is a prospective, interventional, hospital-based study conducted over a span of one year. Protocol of management included two groups: 10 patients received topical Interferon alpha 2b therapy (1 million IU/ml) 4 times daily, whereas 10 patients with lesions less than 4 clock hours and less than 5mm underwent surgical excision. The patients were followed up at 1 month, 3 months, 6 months and 9 months.

Results: In the medical group, INF-2Alpha therapy resulted in predominantly partial responses initially, with complete responses increasing over time. At 1 month and 3 months, partial responses were observed. By 6 months and 9 months, however, 90.00% of patients achieved complete response. However, recurrence was noted in 10.00% of patients at 9 months. While in the surgical group, margins showing dysplasia were predominantly free initially (100.00% at 1 month). 90.00% maintained free margins at 9 months, yet 10.00% exhibited dysplasia recurrence at least 1 margin.

Conclusions: Both treatment techniques showed comparable efficacy in terms of clinical outcomes and recurrence rate.

Apr 06, 2025 (Sun) 09:45 - 11:15

Venue: Kaner Hall 403

Visual Prognosis in Retinoblastoma Patients With Multimodality Treatments

*First Author: Ratima CHOKCHAITANASIN
Co-Author(s): Nattawat ASAWAWORARIT,
Wimwipa DIEOSUTHICHAT, Suradej HONGENG,
Rossukon KAEWKHAW, Duangnate ROJANAPORN*

Purpose: To evaluate factors associated with globe preservation and long-term visual outcomes according to characteristics and treatment in intraocular retinoblastoma patients.

Methods: A retrospective review of medical records enrolled intraocular retinoblastoma patients between January 2007 and June 2020.

Results: A total of 86 patients (124 eyes) were included. The globe salvage rate was 54.0% (67 eyes). Group D-E from ICRB, Group D-E from IIRC, and cT2a to the more advanced disease from AJCC

are the independent risk factors associated with globe removal (adjust odds ratio [AOR] [95%CI] = 7.40 [1.36-40.09], 8.33[1.55-44.73], 14.73 [1.55-139.79]). IIRC classification provided the highest statistical correlation from univariate analysis. IIRC Group A-C is an independent risk factor associated with good visual acuity (AOR [95%CI] = 4.64 [1.05-20.43] and P=0.042). Macular involvement is a worse visual acuity-associated independent risk factor (AOR [95%CI] = 0.14 [0.02-0.82] and P=0.03). Systemic chemotherapy (CRD) is the only treatment that tends to be associated with good visual results. Subgroup analysis of eye receiving CRD reveals statistically significant prevents the worse visual outcome for tumor staging with ICRB and IIRC groups A-C and AJCC stages cT1a–cT1b (odds ratio [95%CI] of 4.57 [1.28-16.27], 6.61 [1.74-25.11], 7.50 [1.86-30.16] and P=<0.05).

Conclusions: All recent advanced stagings are independent risk factors associated with globe removal. IIRC staging is the best predictor of visual results. IIRC Group A-C was associated with a good visual outcome. Systemic chemotherapy remains a crucial globe-saving treatment and a protective factor against worse vision, especially in ICRB and IIRC Groups A-C and AJCC stage cT1a-cT1b.

Ophthalmic Epidemiology and Prevention of Blindness

Apr 04, 2025 (Fri) 13:15 - 14:45

Venue: Javakusum Hall 303

The Impact of Mobile Cataract Program on the Improvement of Effective Cataract Surgical Coverage: Insights From National Eye Surveys in Malaysia

First Author: Wan Radziah WAN NAWANG
Co-Author(s): Norasyikin MUSTAFA,
Mohamad Aziz SALOWI, Siti Nurhuda SHARUDIN

Purpose: To report on the improvement of effective cataract surgical coverage in Malaysia based on two population-based eye surveys conducted in 2014 and 2023.

Methods: The cross-sectional population-based eye surveys, known as the National Eye Survey, utilized the rapid assessment of avoidable blindness (RAAB) methodology. The 2014 survey was carried out simultaneously across six regions nationwide, whereas the survey in 2023 was limited to two regions, specifically Sarawak and Eastern zones. A multistage cluster sampling technique was used, with each cluster comprising of 50 residents aged 50 years and older. Presenting visual acuity was checked, and subjects with cataract were identified. The corrected visual acuity of those who had undergone cataract surgery was measured. Cataract surgical coverage (CSC) and effective cataract surgical coverage (eCSC) were calculated at all levels of cataract surgical thresholds.

Results: Comparing the results from the surveys in 2014 and 2023, eCSC was noted to be improved within the range of 13.8%-19.2% and 18.6%-23.8% for Eastern and Sarawak zones, respectively, at various levels of cataract surgical threshold. The relative quality gap was reduced in the range of 18.0%-20.0% (Eastern Zone) and 17.9%-19.4% (Sarawak). Values for eCSC were lower than CSC during both surveys, and the difference between genders was insignificant.

Conclusions: The improvement in eCSC could be attributed to the impact of the mobile cataract

service in both regions. A collaborative effort is essential to enhance and broaden the program's reach, allowing the nation to meet the World Health Organization's target of a 30% increase in eCSC.

Apr 06, 2025 (Sun) 11:30 - 13:00

Venue: Kaner Hall 403

Age-Related Macular Degeneration Epidemiological Characteristics in Southern Urals

First Author: Ellina IAKUPOVA
Co-Author(s): Mukharram BIKBOV, Jost JONAS,
Gyulli KAZAKBAEVA, Songhomitra PANDA-JONAS

Purpose: To study the prevalence and determine the main risk factors of age-related macular degeneration among the population of the Southern Urals aged 40 years and older.

Methods: During the period from 2015 to 2020, the study was conducted at the Ufa Eye Research Institute with people aged 40 and older.

Results: The prevalence of age-related macular degeneration in the study population was 520/4932 or 10.5% (95%CI: 9.7, 11.4). The prevalence of the early, intermediate stage and late stage of AMD was 331/4932 (6.7%; 95%CI: 6.0, 7.4), 144/4932 (2.9%; 95%CI: 2.5, 3.4), and 45/4932 (0.9%; 95%CI: 0.7, 1.2), respectively. The risk of developing the disease increases with older age (OR 1.15; 95% CI: 1.13–1.16), rural region of habitation (OR 1.69; 95% CI: 1.32–2.17), shorter axial length (OR 0.89; 95% CI: 0.79–0.99), and lower prevalence of diabetes mellitus (OR 0.56; 95% CI: 0.38–0.82).

Conclusions: Studying the prevalence of AMD can become the basis for determining the needs of patients for medical and social care. Analysis of the risk factors for the disease will allow us to identify the risk group with the highest probability of its presence and further progression in the study area.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Kaner Hall 403

Burden of Visual Impairment Associated With Refractive Errors Among School Age Children in India Using Machine Learning Approach

First Author: Vivek GUPTA
Co-Author(s): Rishi BORAH, Reach RESEARCH GROUP, Rohit SAXENA, Praveen VASHIST

Purpose: We used machine learning (ML) approaches to estimate the prevalence and burden of Refractive errors (RE) among children in Indian states in 2021.

Methods: Published state-wise rural-urban and gender-desegregated estimates of RE based on the ORBIS-REACH project in five states and 2 million school children and sex-state-residence specific population projections for 2021 were extracted. The extracted REACH dataset was split into training and testing datasets in a 75:25 ratio. Three competing ML learners (lasso, elasticnet, ridge) were fit using 10-fold cross-validation (CV), with health performance indicators from National Family Health Survey 5 and epidemiologic transition ratios as predictors. ML learner having the best performance on testing-set was chosen. The median of 1000 bootstrap replications of ML learners was used to derive state-sex-residence specific predicted prevalences percent and numbers.

Results: Ridge ML learner had the least mean-squared error (MSE). Among 359.8 million children aged 5-19 years in India in 2021, 9.38 million (2.61%) had a refractive error of ≤ -0.5 D or $\geq +1.0$ D spherical equivalent (SE) in the eye with lower SE. Urban females had highest prevalence (4.0%, 2.6 mill.) followed by urban males (3.5%, 2.2 mill.), rural females (2.3%, 2.6 mill.) and rural males (1.8%, 2.3 mill.). States with highest prevalence include Punjab (6.6%), Kerala (6.0%), Lakshadweep (5.6%), Tamil Nadu (4.9%) and Chandigarh (4.6%). The highest burden was in Uttar Pradesh (2.1 mill.), Tamil Nadu (0.8 mill.), Maharashtra (0.7 mill.), Madhya Pradesh (0.7 mill.) and Bihar (0.6 mill.)

Conclusions: The large burden of RE in India and variations across states should be addressed using tailored strategies.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Kaner Hall 403

Cataract Conundrum: Barriers to Early Uptake of Surgery

First Author: Shubhratha HEGDE

Purpose: With unceasing improvement in surgical technique and equipment, cataract surgery is regarded as the most widely performed and safe surgery. Yet the uptake of cataract surgery services is suboptimal. This study was done to understand the reasons for reluctance for the uptake of cataract surgery services in bilateral mature cataract patients.

Methods: This observational study was done for a duration of 1 year. A structured questionnaire was administered to all patients with bilateral mature cataract to collect socio-demographic data and to identify the barriers to early uptake of cataract surgery services.

Results: Out of the 54 patients enrolled, the majority were elderly (75.92%), females (53.7%), illiterate (92.59%), unemployed (61.11%), and from rural areas (81.48%). Hypertension (62.90%) and diabetes mellitus (20.96%) were the most common systemic ailments observed. The duration of bilateral blindness due to cataract was more than 3 months in 83.3%. The most common reason cited overall was fear of surgery (55.56%), followed by transportation difficulties (24.07%) and economic issues (14.81%). The reasons cited differed in relation to gender. It was attitudinal for females (fear of surgery) and logistics-related for males. Lack of awareness was cited by rural patients alone (100%). The lack of an accompanying attendant was another reason cited for the delayed uptake of cataract surgery (16.66%).

Conclusions: With increasing population and life expectancy, the suboptimal utilization of cataract surgery services will lead to a wide disparity between those requiring and those receiving these services. The barriers to early cataract surgery are diverse and, hence, require a multifaceted approach. While planning strategies priority should be given to improve access by women, elderly, and people from rural areas.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Kaner Hall 403

Comparison of the Effectiveness of Single- to Multi-Field Fundus Photography in Community Care of Diabetic Retinopathy

First Author: Cong YE

Purpose: Diabetic retinopathy (DR) is a major cause of vision loss. While multi-field retinal imaging is ideal, single-field photography offers greater feasibility for community screening. There is limited evidence on the effectiveness of single-field fundus photography for screening and monitoring DR in community settings compared to multi-field imaging. This study aimed to evaluate the effectiveness of single-field fundus photography for DR screening and monitoring versus six-field imaging.

Methods: Adults aged ≥ 30 years with type 2 diabetes from 15 communities in Northeast China were recruited for this prospective cohort study (n=2006 at baseline and n=1456 at follow-up). Participants underwent single-field (centered on macula) and six-field 45° digital fundus photography at baseline and follow-up visits (mean duration of 21.2 \pm 3.2 months). Photographs were graded for DR severity using international standards. Agreement in DR severity grading, referral recommendations, and detection of DR progression between single-field and six-field fundus photography were compared.

Results: Single-field grading showed substantial agreement with multi-field grading in classifying DR severity (81.9% identical at baseline, 80.6% at follow-up, Gwet's AC1 0.79 and 0.77). For referring eyes with moderate non-proliferative DR or worse, single-field grading had ~70% sensitivity and 100% specificity compared to six-field grading. Single-field grading identified 74.9% or 79.7% of eyes progressing or regressing by six-field grading, respectively.

Conclusions: Single-field fundus photography demonstrated reasonable effectiveness for DR screening and monitoring in a community setting, supporting its use for improving access to DR detection. However, reduced sensitivity compared to multi-field imaging should be acknowledged.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Kaner Hall 403

Decadal Trends in Distance Effective Refractive Error Coverage (EREC) in India

First Author: Vivek GUPTA

Co-Author(s): V RAJSHEKHAR, Praveen VASHIST, Suraj SENJAM

Purpose: Estimate and explore trends in distance effective refractive error coverage (EREC) from population-based studies in India

Methods: Person-level de-identified data from national and regional levels of population-based surveys conducted in India during 2001-2024 were extracted. Alternate EREC (AltEREC) was calculated in surveys where unaided visual acuity was not available and EREC in surveys where it was, for recent (2019-2024) and prior surveys.

Results: AltEREC could be estimated in 146112 participants and EREC in 48980 participants, with 36364 and 7216 having refractive errors (met, undermet, or unmet need), respectively. EREC in India was 10.8% (95% CI: 9.7, 12.1) in prior and 32.7% (95% CI: 31.3, 34.1) in recent surveys, while AltEREC was 52.2% (95% CI: 51.7-52.8) and 60.1% (95% CI: 58.9, 61.2) respectively. EREC was lower in females (Odds Ratio [OR] 0.8, p<0.001), rural participants (OR 0.8, p=0.02) and increased over time (OR 1.1, p < 0.001).

Conclusions: The EREC in India has shown a significant increase over the years indicating success in efforts of the National Program for Control of Blindness and Visual Impairments. Estimation of EREC as a WHO-recommended indicator for the achievement of Universal Eye Health should be included in all population-based surveys.

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FREE PAPERS

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Kaner Hall 403

Overcoming Barriers: Portable Eye Care in a Nursing Home Setting

First Author: Rohan KHEMLANI
Co-Author(s): Shintaro NAKAYAMA, Hiroki NISHIMURA, Eisuke SHIMIZU

Purpose: To highlight the challenges in providing adequate eye care to the elderly in Japanese nursing homes due to geographical and mobility limitations, we present a case report utilizing portable diagnostic equipment - the Smart Eye Camera, a smartphone-based portable slit-lamp microscope, and the iCare tonometer. The aim was to demonstrate the feasibility and effectiveness of this approach in establishing a primary diagnosis for an 87-year-old woman with a foreign body sensation. The portable equipment allowed for proper visualization and intra-ocular pressure measurement, for the patient in a rural area with reduced mobility.

Methods: The Smart Eye Camera and the iCare tonometer were employed during routine eye examinations at a nursing home over a one-year period. These portable devices enabled on-site ocular imaging and intraocular pressure measurement.

Results: Through the Smart Eye Camera, recurrent bilateral trichiasis was diagnosed. The tool also confirmed cataract in the right eye and a pre-existing IOL in the left eye. The complaint of a foreign body sensation primarily affecting the right eye was also confirmed through the Smart Eye Camera and its blue light filter mode. Blepharochalasis was also observed during a follow-up visit. The iCare tonometer showed us that the intraocular pressure remained within normal limits throughout the study period.

Conclusions: Regular eye examinations using portable diagnostic tools facilitated early detection and management of trichiasis and foreign body issues through eyelash removal and lubricant administration. Blepharochalasis and cataract surgeries are under consideration. This case underscores the importance of accessible eye care services, particularly for vulnerable populations.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Kaner Hall 403

Plasma Metabolomics Identifies Key Metabolites and Improves Prediction of Diabetic Retinopathy: Development and Validation Across Multi-National Cohorts

First Author: Shaopeng YANG
Co-Author(s): Huangdong LI, Riqian LIU, Wei WANG, Ziyu ZHU

Purpose: To identify longitudinal metabolomic fingerprints of diabetic retinopathy (DR) and evaluate their utility in predicting DR development and progression.

Methods: This study included 17,675 participants with baseline pre-diabetes/diabetes from the UK Biobank (UKB); and an additional 638 diabetic participants from the Guangzhou Diabetic Eye Study (GDES) for external validation. Longitudinal DR metabolomic fingerprints were identified through nuclear magnetic resonance assay in UKB participants. The predictive value of these fingerprints for predicting DR development was assessed in a fully withheld test set. External validations were conducted in the GDES cohort.

Results: Of 168 metabolites, 118 were identified as candidate metabolomic fingerprints for future DR development. These fingerprints significantly improved the predictability for DR development beyond traditional indicators (C-statistic: 0.802 [0.760–0.843] vs. 0.751 [0.706–0.796]; $P = 5.56 \times 10^{-4}$). Glucose, lactate, and citrate were among the fingerprints validated in the GDES cohort. Using these parsimonious and replicable fingerprints yielded similar improvements for predicting DR development (C-statistic: 0.807 [0.711–0.903] vs. 0.617 [0.494, 0.740]; $P = 1.68 \times 10^{-4}$) and progression (C-statistic: 0.797, [0.712–0.882] vs. 0.665 [0.545–0.784]; $P = 0.003$) in the external cohort. Improvements in NRIs, IDIs, and clinical utility were also evident in both cohorts (all $P < 0.05$). In addition, lactate and citrate were associated with microvascular damage across macular and optic disc regions (all $P < 0.05$).

Conclusions: Metabolomic profiling has proven effective in identifying robust fingerprints for predicting future DR development and progression, providing novel insights into the early and advanced stages of DR pathophysiology.

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FREE PAPERS

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Kaner Hall 403

Plasma Proteomics Improves Prediction of Diabetic Retinopathy: Development and Validation Across Multi-National Cohorts

First Author: Shaopeng YANG
Co-Author(s): Huangdong LI, Riqian LIU, Wei WANG

Purpose: To identify longitudinal proteomics fingerprints of diabetic retinopathy (DR) and evaluate their utility in predicting DR development.

Methods: This study included 17,675 participants with baseline pre-diabetes/diabetes from the UK Biobank (UKB); and an additional 176 diabetic participants from the Guangzhou Diabetic Eye Study (GDES) for external validation. Longitudinal DR proteomics fingerprints were identified through Olink assay in UKB participants. The predictive value of these fingerprints for predicting DR development was assessed in a fully withheld test set. External validations were conducted in the GDES cohort. Summary-based Mendelian randomization (MR) was conducted to infer causal relationships between proteins and incident DR.

Results: Of 369 cardiometabolic proteomics markers, 268 were identified as candidate metabolomic fingerprints for future DR development. These fingerprints significantly improved the predictability for DR development beyond traditional indicators (C-statistic: 0.835 [0.788–0.882] vs. 0.762 [0.712–0.812]; P < 0.001). In the GDES cohort, 68 proteomics biomarkers were validated and yielded similar improvements for predicting DR development (C-statistic: 0.846 [0.733–0.959] vs. 0.622 [0.502, 0.742]; P < 0.001). Improvements in NRIs, IDIs, and clinical utility were also evident in both cohorts (all P < 0.05). MR analysis confirmed causal relationships of REN ($\beta = 0.084$ [0.001–0.137]; P = 0.048), GPNMB ($\beta = 0.074$ [0.001–0.153]; P = 0.049), and SIGLEC7 ($\beta = 0.125$ [0.021–0.090]; P = 0.019) with incident DR.

Conclusions: Proteomics profiling has proven effective in identifying robust fingerprints for predicting future DR development, providing novel insights into the early stages of DR pathophysiology.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Kaner Hall 403

Prevalence and Associated Factors of Diabetic Retinopathy in Urals

First Author: Aigul NIZAMUTDINOVA
Co-Author(s): Mukharram BIKBOV, Jost JONAS, Gyullu KAZAKBAEVA, Songhomitra PANDA-JONAS

Purpose: To assess the prevalence of diabetic retinopathy (DR) and its associated factors in a Russian population.

Methods: Out of 7328 eligible individuals, the population-based cross-sectional Ural Eye and Medical Study included 5899 (80.5%) individuals aged 40+ years, who underwent a detailed medical and ophthalmological examination. Using ocular fundus photographs and optical coherence tomographic images, we assessed the prevalence and degree of DR in 5105 participants.

Results: DR was present in 99/5105 individuals (1.9%; 95% confidence interval [CI]: 1.6, 2.3). Its prevalence increased from 6/657 (1.0%; 95% CI: 0.2, 1.6) in the age group of 45-50 years to 24/680 (3.5%; 95% CI: 2.1, 4.9) in the age group of 65-70 years, and decreased to 3/153 (2.0%; 95% CI: 0.00, 4.2) in the age group of 80+ years. In multivariable analysis, higher DR prevalence was associated with higher serum glucose concentration (odds ratio [OR]: 1.30; 95% CI: 1.20, 1.41), longer diabetes duration (OR: 1.06; 95% CI: 1.02, 1.09), type of diabetes therapy (OR: 4.19; 95% CI: 3.08, 5.70), lower educational level (OR: 0.81; 95% CI: 0.67, 0.98), lower manual dynamometric force (OR: 0.96; 95% CI: 0.94, 0.99), shorter ocular axial length (OR: 0.73; 95% CI: 0.56, 0.96), and higher diastolic blood pressure (OR: 1.04; 95% CI: 1.01, 1.06), or alternatively, higher estimated cerebrospinal fluid pressure (OR: 1.09; 95% CI: 1.01, 1.18).

Conclusions: In the urban and rural Russian population aged 40+ years, DR prevalence was relatively low. It showed an inverted U-shaped association with age, and in a cross-sectional study design, it was associated with shorter axial length and higher estimated cerebrospinal fluid pressure.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Kaner Hall 403

Prevalence and Causes of Visual Impairment Among School Children in Three Districts in Sri Lanka

First Author: Pradeepa SIRIWARDENA

Purpose: Visual impairment in childhood has a negative and irreversible impact persisting into adulthood affecting the quality of life. The current school health program in Sri Lanka conducts annual school medical inspections on certain grades, including vision screening for children with referral of those with issues. The study was conducted to detect school children with visual impairment, identify the causes, and offer corrective measures

Methods: A cross-sectional study among school children, age range 6-18 years, in districts 3 out of the 25 districts in Sri Lanka (Anuradhapura, Puttalam, and Kurunegala districts). A total of 343,628 children from all grades of 985 schools were screened for refractive errors and eye health problems between December 2022 and July 2024 by trained public health workers and teachers. Children with <6/6 vision in either eye were referred to refraction camps. They underwent refraction and examination and were provided with the required treatment. Children with refractive errors were provided free spectacles.

Results: A total of 21,340 (6.2%) of 343,628 screened were referred. 16,207 (4.7%) attended refraction camps. True positives with errors were 69.5%. Spectacles were provided for all with refractive errors {11,137 (68.7%)}. Types of RE: Astigmatism 66%, myopia 19%, myopic astigmatism 11%, high myopia 3%, hypermetropic astigmatism 1%, cataract 6, ptosis 1, squint 12.

Conclusions: The prevalence of refractive errors among school children in 3 districts in Sri Lanka was 3.2%. Astigmatism was the most common type. Training public health workers and teachers improved screening.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Kaner Hall 403

Prevalence of Visual Impairment and Its Causes in Adults Aged 50 Years and Older: Estimates From the National Eye Surveys in Malaysia

First Author: Siti Nurhuda SHARUDIN
Co-Author(s): Norasyikin MUSTAFA, Mohamad Aziz SALOWI, Wan Radziah WAN NAWANG

Purpose: We conducted simultaneous surveys in two regions in Malaysia in 2023 to estimate the prevalence of visual impairment (VI), identify its main causes, and compare the results with the survey in 2014.

Methods: The surveys were simultaneously done in Eastern and Sarawak administrative regions using the Rapid Assessment of Avoidable Blindness (RAAB) technique. It involved a multistage cluster sampling method, each cluster comprising 50 residents aged 50 years and older. The prevalence of visual impairment and its primary cause were determined through a visual acuity test and eye examination.

Results: A total of 10,184 subjects were enumerated, and 9,709 were examined (94.5% and 96.2% responses for Eastern and Sarawak, respectively). The prevalence of blindness and severe VI appeared lower than the previous survey. For blindness: Eastern 1.4%, 95%CI (0.9, 1.9) to 0.8%, 95%CI (0.5, 1.1) and Sarawak: 1.6% 95%CI (1.0, 2.1) to 0.6%, 95%CI (0.3, 0.9). For severe VI: Eastern 1.2%, 95%CI (0.8, 1.7) to 0.9%, 95%CI (0.6, 1.1) and Sarawak 1.1% 95%CI (0.6, 1.6) to 0.9%, 95% CI (0.6, 1.2). The main cause of blindness was untreated cataracts: 77.3% (Eastern) and 75.0% (Sarawak). Diabetic retinopathy was the 2nd main cause of blindness for Eastern at 9.1%, but it only caused early to severe VI in Sarawak.

Conclusions: The lower prevalence of blindness and severe visual impairment in the recent survey could have been attributed to the implementation of a community cataract program in both regions. However, more efforts are needed to address the high percentage of avoidable blindness within both regions.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Kaner Hall 403

Relationship Between Diabetic Retinopathy and Age-Related Macular Degeneration in a Sub-Urban Population in Tianjin, China

First Author: Ju LIU

Co-Author(s): Fei GAO, Xiaorong LI

Purpose: To explore the association of age-related macular degeneration (AMD) and diabetic retinopathy (DR) in a suburban community in the Beichen district in Tianjin, China.

Methods: This population-based cohort study included subjects with type-2 diabetes mellitus (T2DM) with age ranging from 50 to 81 years. Baseline characteristics included demographic data and laboratory findings. Logistic regression models were used to estimate the odds ratio (OR) and 95% CI of AMD for the prevalence and two-year progression of DR.

Results: Of the 1413 patients with T2DM who volunteered for the study, 750 (185 of whom had DR) completed the follow-up assessment. In the cross-sectional analysis of baseline data, after adjustment for age and the duration of DM, AMD was identified as a risk factor for DR in the overall patient cohort (OR=1.406, p=0.039) and in the subset without follow-up (OR=2.112, p=0.006). In the follow-up group, AMD demonstrated a significant effect in the subgroup analysis within the age range of 50 to 65 years (OR=1.827, p=0.035) and in patients with a duration of diabetes mellitus of up to six years (OR=2.157, p=0.029). However, the prevalence of AMD in the baseline for the occurrence of progression of DR using logistic regression was found to be not significant (p>0.05).

Conclusions: After adjusting for traditional risk factors, AMD is an independent risk factor of DR. Age and duration of DM were found to be important confounding factors that cover up the relationship between AMD and DR.

Ophthalmic Trauma

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Champa Hall 304

Clinical Case Report: Total Cyclodialysis After Blunt Trauma

First Author: Truong Dang Minh PHAM

Co-Author(s): Thi Thuy Tien PHAM,
Quang Hong Diem VO

Purpose: To report the management of total cyclodialysis after blunt trauma with a complication of hypotony maculopathy.

Methods: Case report.

Results: A 22-year-old male patient had a chief complaint of blurred vision in his right eye, which was hit by a badminton ball four months ago. After the injury, the best-corrected visual acuity was counting fingers at 4 meters, and intraocular pressure was 4.4 mmHg. The clinical examination noted a clear cornea, shallow anterior chamber, and chorioretinal folds in the macula. Gonioscopy could not visualize the anterior chamber angle due to a soft eyeball. There was a total 360-degree cyclodialysis on ultrasound biomicroscopy. He was diagnosed with total cyclodialysis, with a complication of hypotony maculopathy, secondary to blunt trauma, and treated with Atropine 1% eye drops twice daily for two months. A re-evaluation showed that the cyclodialysis area was pressed against the nasal sclera in a 1 to 6-hour position. The patient underwent transscleral cryotherapy in the 6 to 12-hour position on the temporal side. Postoperatively, the visual acuity in the right eye improved after one day, one week, and one month, and intraocular pressure was normalized above 6mmHg.

Conclusions: Cyclodialysis is a rare post-traumatic condition that should be considered when intraocular pressure drops below 6 mmHg. Diagnosis could be established by clinical examination and ultrasound biomicroscopy. Treatment of cyclodialysis is with cycloplegic eye drops or surgical intervention when necessary.

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FREE PAPERS

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Champa Hall 304

Epidemiology of Occupational and Non-Occupational Eye Injuries: Cases Treated in Four Eye Hospitals in Bangladesh

First Author: Salman AHMED
Co-Author(s): Saeema ALHADHRAMI

Purpose: To study the epidemiological profile of occupational and non-occupational ocular injuries in Bangladesh.

Methods: This descriptive cross-sectional study was conducted on purposively selected 117 eye injury cases from four eye hospitals situated in Dhaka (2), Tangail (1), and Rajshahi (1), Bangladesh. A structured questionnaire was used to collect data from the study subjects.

Results: Respondents' mean \pm SD age was 29.70 \pm 15.95 years where a maximum (69.2%) of them were male. Secondary-level education was more common among the study subjects (24.8%). A great number of respondents (62.4%) monthly income ranges from 12,000- 30,999 Bangladeshi Taka. Not using/lack of protective measures, carelessness, and road traffic accidents were identified as the leading causes of eye injuries at the workplace, home, and other areas, respectively by most of the participants. On the other hand, maintaining or cleaning instruments at the workplace, looking after children at home, and riding vehicles were mentioned as the activities during eye injuries by the highest number of respondents. A statistical significance $p < 0.05$ was found between eye injuries and participants' age, gender, occupation, educational qualification, and monthly family income

Conclusions: Eye injuries are more or less common at home, the workplace, and other areas irrespective of epidemiological distribution. Therefore, measures should be taken to eliminate eye injuries at personal, community, and national levels.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Champa Hall 304

Functioning of an Orbito-Maxillofacial Reconstruction Unit in a Specialized Tertiary Eye Center: An Ophthalmologist's Perspective

First Author: Samir MOHAPATRA

Purpose: To audit the functioning of an established Orbitomaxillofacial reconstruction (OMF) unit at a specialized tertiary eye care center in the management of orbitofacial trauma.

Methods: A retrospective interventional study included consecutive patients with orbitofacial trauma who underwent reconstruction between August 2016 and December 2024. Data pertaining to demography, nature of trauma, reconstruction procedures, and outcomes were collected from the electronic medical records and analyzed. Outcome measures included cosmetic (restoration of facial symmetry) and visual (improvement/stabilization) status in the injured eye.

Results: This audit included 37 consecutive patients (Mean age: 29.24 \pm 9.73 years; 31 males). Reduction in vision (51.3%) and enophthalmos (48.6%) were major ocular complaints at presentation. The median time to presentation was 3 weeks (Range: 5 days – 40 weeks), and the time to intervention was 8 weeks (Range: 2 weeks - 2 years). Road traffic accident (RTA) was the most common cause of trauma. A complex orbitofacial fracture was repaired in 67.6% of patients. The median follow-up was 5 months (Range: 2 - 13 months). At the final review, 78.4% of patients had favorable cosmetic outcomes, and 62.2% of patients maintained stable vision. By Receiver Operating Characteristic curve analysis, a delay of up to 14 weeks seemed not to impact the outcome. There was a substantial reduction in indirect costs to patients.

Conclusions: OMF unit at a specialized tertiary eye care center provides good therapeutic and economic benefits. With increasing RTAs, such services are needed in many specialized eye centers across the country.

Orbital and Oculoplastic Surgery

Apr 04, 2025 (Fri) 11:30 - 13:00
Venue: Suryamukhee Hall 401

A Bridge Too Far – a Simple Technique for Management of Extensive Congenital Upper Eyelid Colobomas

First Author: Viji RANGARAJAN

Purpose: To describe a case series of 8 patients with extensive congenital upper eyelid colobomas. All patients were managed with horizontal transconjunctival transposition flap for posterior lamella and skin graft for anterior lamella.

Methods: We describe a novel technique for the management of large nasal congenital coloboma of the upper eyelid, which is a single-stage procedure and prevents occlusion amblyopia in a young child. This technique combines a horizontal tarsoconjunctival transposition flap for posterior lamella and a skin graft for anterior lamella. Description of upper lid coloboma repair by this technique is limited.

Results: All patients required surgical treatment of eyelid defects and their associated ocular pathologies. The most frequently associated ocular anomalies were dermoid cysts and symplepharon. This one-stage procedure is safe and simple, with good functional and cosmetic outcomes.

Conclusions: The management of congenital lid colobomas depends on the severity of the eyelid defect & health of the corneal surface. This technique is used for the reconstruction of up to 50- 60% of upper lid defects when there is insufficient laxity of adjacent tissue to mobilize the myocutaneous flap and also results in rapid rehabilitation and satisfactory cosmesis. The advantage of this technique is that it does not involve prolonged occlusion of an eye leading to amblyopia in children, requires only a single procedure & rehabilitation is also fast with satisfactory cosmesis.

Apr 04, 2025 (Fri) 11:30 - 13:00
Venue: Suryamukhee Hall 401

A Gel-Assisted Extraction Technique for Lacrimal Canalicular Stones

First Author: Akemi IWASAKI
Co-Author(s): Yoichi MANABE

Purpose: In lacrimal canaliculitis, residual canalicular stones can cause recurrence. We devised a novel Gel-Assisted Extraction Technique to facilitate the removal of canalicular stones.

Methods: Under local anesthesia, a 3-5 mm incision is made from the punctum towards the nasal side of the canaliculus. Initially, stones are removed using forceps or fingers. Subsequently, an 18- to 23-gauge catheter was inserted through the punctum and advanced as far as possible towards the common canaliculus. Approximately 0.5 mL of lubricant gel or lidocaine jelly is then injected. As a result, stones are extruded along with the gel through the punctum. This step is repeated until no more stones can be extracted. Afterward, a dacryoendoscope is inserted to check for any remaining stones in the canaliculus. We retrospectively reviewed eight cases treated with the Gel-Assisted Extraction Technique for canaliculitis from 2022 to July 2024.

Results: In all eight cases, stones that could not be removed by pressure alone were successfully extruded with the gel. Dacryoendoscopic examination showed that stones were almost completely removed in five cases. One case had a residual stone on the punctum side, and two cases had a small number of small stones remaining on the common canaliculus side.

Conclusions: The Gel-Assisted Extraction Technique for lacrimal canalicular stones proved to be a simple and effective method for removing stones that are difficult to extrude with standard pressure alone.

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FREE PAPERS

Apr 04, 2025 (Fri) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Application of 3D Printed Orbital Model and Preformed Absorbable Orbital Floor Plate in Orbital Burst Fracture Repair Surgery and Personalized Perioperative Care

First Author: Yining WANG

Purpose: To evaluate the application value of a 3D printed orbital model and preformed absorbable orbital floor plate in orbital burst fracture repair surgery and the perioperative personalized nursing countermeasures.

Methods: Sixty patients with unilateral orbital burst fracture were selected with enophthalmos and diplopia. Patients were randomly divided into 30 patients in the observation group and 30 patients in the control group, with or without 3D printing technology to assist the surgery. Patients in the observation group created a virtual orbital model through orbital CT scan data, imported the data into a 3D printer to prepare a 3D printed orbital model, designed the fracture repair materials, and used them as the template to preform the orbital floor plate, performed orbital fracture repair surgery. The control group was treated with conventional orbital fracture repair surgery and usual control care. To observe and compare the attachment of the orbital fracture, follow-up postoperative diplopia and eye movements were recorded to evaluate the outcome.

Results: One week after surgery, the size of the pupil was not changed, and the position of the orbital floor plate was good. 1 week, 1 month and 6 months after the operation, the mean difference between the observation and control groups was significant

Conclusions: 3D printing orbital model auxiliary design of preformed absorption orbital plate for orbital burst fracture repair has an exact effect, and surgical safety, accurate implant placement, combined perioperative personalized nursing for dipl, eye movement limited and eye eyeball symptoms improve the effect is good, patients postoperative recovery effect is better.

Apr 04, 2025 (Fri) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Causes of Failure After Primary Dacryocystorhinostomy Detected on Endoscopic Follow-Up of Ostium

First Author: Huy Thien Thanh HA

Purpose: The purpose is to describe the failure rate changes over the 12 follow-up months after primary endoscopic dacryocystorhinostomy and the causes of failure detected on endoscopy during the monitoring process.

Methods: Prospective case series on 84 endoscopic DCR with cold-steel technique. Post-operative ostial features were assessed through nasal endoscopic examination after 1 week, 1 month, 3 months, 6 months, and 1 year. These characteristics were recorded in Dacryocystorhinostomy ostium scoring.

Results: The rate of anatomic patency peaked at 98.81% at 1 week, gradually decreased over time after, and stabilized at 86.91% from 6 months onward up to 12 months. The anatomic success rate after 6 months was significantly lower than that at 1 month. The mean time to relapse in recurrent cases was 14.09 ± 9.28 weeks. Among 11 cases of failure, 63.64% had several causes. All of the failure cases had fibrous scars, and 27.27% had obstruction of the common canaliculus. Based on the DOS chart, more ostia-free from granuloma and/or adhesion is found at the 6-month visit compared to the 3-month. After 3 months, there was no new case of granuloma and adhesion, while 2.4% of new ostial cicatrization causing total or partial obstruction of the lacrimal passage was recorded.

Conclusions: To conclude, a follow-up is needed at least 6 months after surgery. Complications such as synechiae and granuloma were detectable and treated under endoscopic assessment of the ostium. After 1 year, the most common causes of recurrence were ostium cicatrization and obstruction of the common canaliculus. Routine endoscopic assessment after DCR is therefore recommended.

Apr 04, 2025 (Fri) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Comparison of External Dacryocystorhinostomy Versus Injection Botulinum Toxin in the Management of Functional Epiphora

First Author: Purnima RAJKARNIKAR STHAPIT
Co-Author(s): Aakashya RANA, Rohit SAIJU

Purpose: To compare the efficacy of external dacryocystorhinostomy (DCR) and botulinum toxin-A in the management of functional epiphora.

Methods: A prospective, comparative, interventional study included 45 patients with functional epiphora out of which 20 patients had undergone external dacryocystorhinostomy and 25 patients received 5 units of injection botulinum toxin in the palpebral lobe of lacrimal gland as per the patient's preference. All patients underwent syringing and fluorescein dye disappearance testing before the procedure. Epiphora was graded subjectively with Munk scores obtained before and after the intervention. Duration of side effects and severity were also noted.

Results: This study showed functional epiphora common in the elderly age group. Females constituted 71.11% and males 28.89 %, with a female: male ratio of 2.4:1. Left eye (42.22%) was predominantly involved. The overall success rate at 6 months after surgery for external DCR was 95% and that of injection botulinum was 91.17%. The overall success rate in both groups was not statistically significant ($p > 0.05$). Improvement in epiphora graded by Munk score was statistically significant after intervention in both groups.

Conclusions: This study showed injection of Botulinum toxin can be considered as an alternative management in case of functional epiphora for patients who do not want to undergo surgical intervention and for those with co-morbid conditions with high risk for surgical intervention like DCR.

Apr 04, 2025 (Fri) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Correlations Between Clinical Activity Score and Sero-Radiological Data in Treatment-Naïve Ethnic Han Chinese Thyroid Eye Disease

First Author: Kenneth LAI
Co-Author(s): Clement C THAM, Kelvin Kam-lung CHONG, Winnie CHU, Wilson YIP, Alvin Lerrmann YOUNG

Purpose: Unique clinical characteristics are observed among thyroid eye disease (TED) patients of different ethnicities, and the predictive value of clinical activity score (CAS) in the East Asian population remains unclear. This study aims to investigate the correlation between CAS and both serological and radiological data in treatment-naïve ethnic Han Chinese TED patients.

Methods: A cross-sectional study of treatment-naïve ethnic Han Chinese TED patients managed at the Chinese University from January 2014 to May 2022. Masked review of clinic- and medical records and orbital images. STIR sequence signal was measured using the signal intensity ratio (SIR). The serological profile included free T3, free T4, TSH, and TSI.

Results: A total of 255 patients, with an average onset age of 50 ± 14 years, had baseline TSI tested, and 74% (188/255) of them also had baseline MRI performed. The mean presenting CAS was 1.4 ± 1.3 . There was a weak positive correlation between TSI and CAS ($r = 0.28$, $P = 0.00031$). There was a weak positive correlation between CAS and the SIRs of levator palpebral superioris/superior rectus complex ($r = 0.196$, $P = 0.00709$), inferior rectus ($r = 0.185$, $P = 0.0112$), and medial rectus ($r = 0.167$, $P = 0.0224$). The subgroup analysis showed a moderate positive correlation between CAS and the SIRs of the lateral rectus ($r = 0.374$, $P = 0.0416$), medial rectus ($r = 0.3512$, $P = 0.0487$), and inferior rectus ($r = 0.335$, $P = 0.335$) in those presenting with CAS higher or equal to 3. No correlation was found in those with presenting CAS lower than 3.

Conclusions: The correlations between CAS and both STIR signal and TSI are weak. We recommend using a combination of serological and radiological methods to assess disease activity in Ethnic Chinese TED patients.

Apr 04, 2025 (Fri) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Cost-Efficiency Comparison Between Endoscopic and Non-Endoscopic Endonasal Dacryocystorhinostomy

First Author: Preethi JEYABAL
Co-Author(s): Tian Loon LEE

Purpose: Endonasal dacryocystorhinostomy (DCR) at most centres is currently undertaken as a combined operation between ophthalmologists and otorhinolaryngologists. Non-endoscopic endonasal DCR under direct visualization is proven to be a simple technique with minimal complications without the necessity of expensive instruments. We wanted to analyze the cost-effectiveness of a recently introduced non-endoscopic endonasal DCR done by ophthalmologists alone in comparison with endoscopic endonasal DCR done by ophthalmologists and otorhinolaryngologists at our centre.

Methods: A retrospective analysis of the cost of all cases of endoscopic endonasal DCR was performed between 2016 and 2023 compared with non-endoscopic endonasal DCR performed between 2022 and 2023 at our centre. Costs analysed included surgical services, treatment services, consultation fees, consumables, doctor's fees, daily treatment fees, investigations, medications, room charges, and miscellaneous charges.

Results: Endoscopic DCR was performed in 25 patients between 2016 and 2023, and non-endoscopic DCR was performed in 16 patients between 2022 and 2023. All were unilateral cases. Average number of otorhinolaryngology consultation visits attended by patients in the DCR group: pre-operatively = 1.12 (SD: 0.82, range: 0-3); post-operatively = 4.8 (SD:2.47, range: 0-10). The average total cost incurred by patients for endoscopic DCR was S\$ 9605, and for non-endoscopic endonasal DCR was S\$ 5045. The non-endoscopic group incurred significantly reduced fees for surgery services, treatment services, consumables, and consultation fees compared to the endoscopic group.

Conclusions: Non-endoscopic endonasal DCR is a cost-effective procedure that can be done by a trained ophthalmologist alone without expensive equipment, thereby significantly reducing the overall cost of surgery for patients.

Apr 04, 2025 (Fri) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Diverse Presentations of Orbital Tuberculosis

First Author: Sushant ADIGA
Co-Author(s): Malita AMATYA, Dikshya BISTA, Hom Bahadur GURUNG, Rohit SAIJU, Purnima Rajkarnikar STHAPIT

Purpose: This study aims to highlight the varied manifestations of orbital tuberculosis, contribute to existing literature, and increase awareness about its diverse presentations.

Methods: Orbital tuberculosis can present nonspecifically, often mimicking other common ocular conditions, leading to delay in diagnosis. This retrospective review discusses four distinct presentations of orbital tuberculosis, emphasizing the critical role of oculoplastic surgeons in early recognition and diagnosis through thorough evaluation, imaging studies, and histopathological examination. The first case involved a sub-brow mass attached to the periosteum, resembling a dermoid cyst. The second case featured unilateral proptosis with limited extraocular movements, and imaging revealed enlarged extraocular muscles, mimicking thyroid eye disease. The third case also presented with unilateral proptosis; imaging showed a well-defined enhancing lesion around the optic nerve, suggesting meningioma or glioma. The fourth case presented with unilateral proptosis and restricted movements in elevation and depression; imaging indicated an ipsilateral maxillary mass invading the orbit, suggesting malignant pathology or invasive fungal infection.

Results: All patients underwent orbitotomy followed by histopathological evaluation, leading to a diagnosis of tuberculosis. Subsequent systemic workup was done, and all patients completed a full course of anti-tubercular therapy.

Conclusions: This series underscores the importance of oculoplastic surgeons in the early detection and diagnosis of orbital tuberculosis, relying on comprehensive evaluation, imaging studies, and histopathological assessment.

Apr 04, 2025 (Fri) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Eyelid and Canalicular Reconstruction in Peripunctal Tumors: Single-Center Experience Over Seven Years

First Author: Jingwen DING

Purpose: Peripunctal tumors are uncommonly encountered. The management at the aesthetically and functionally sensitive area is demanding. This study aims to evaluate the effectiveness of sliding flaps in combination with stenting to reconstruct the eyelid margin and proximal canaliculus.

Methods: The retrospective, noncomparative, interventional case series study was conducted between January 2017 and December 2023. Demographic data, clinicopathological spectrum, and postoperative outcomes of patients with peripunctal lesions receiving primary surgical treatment and histopathological analysis were collected and assessed. The single-stage procedure combined sliding tarsoconjunctival flap and myocutaneous flap with bicanalicular stent placement to repair the defect after full-thickness block resection of the lesion.

Results: A total of 66 Han Chinese patients (68 eyelids) were included. The mean age at surgery was 43.6 years (range, 5-75 years). All cases were unilateral, and two cases were diagnosed as divided nevus-affected opposing eyelids. The lower eyelid was most frequently involved (49/68, 72%). Two patients had epiphora on presentation, whereas the lacrimal drainage system was patent in all patients. The most common lesion was melanocytic nevus (57/68, 84%). There were two malignant cases confirmed to be basal cell carcinoma. During the follow-up period (3-70 months), all the patients were satisfied with the surgical outcomes. Only one patient with a well-positioned and patent punctum reported epiphora.

Conclusions: Although rare, a high index of suspicion for malignancy should be maintained when treating peripunctal lesions. The procedure of sliding flaps combined with bicanalicular intubation provides an effective and less invasive strategy for medial eyelid margin reconstruction.

Apr 04, 2025 (Fri) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Impact of Orbital Triamcinolone Acetonide Injections on Eyelid Position in Patients With Thyroid Eye Disease

First Author: Yasushi FUJITA

Co-Author(s): Miwa AIKAWA, Tomoyuki KASHIMA, Yohei SATO

Purpose: This study aimed to assess changes in eyelid position following orbital injection of Triamcinolone Acetonide (TA) for upper and lower eyelid retraction associated with thyroid eye disease.

Methods: Twenty patients (40 eyes, 18 females, 2 males, mean age 42.1 ± 14.4 years) with thyroid eye disease-related upper and lower eyelid retraction received TA (1.0 ml, 40 mg/ml) injection percutaneously into the orbital cavity using a 30G needle (12 mm) at the upper and lower eyelid's orbital rim. Injections were administered monthly until the eyelid position stabilized. Changes in eyelid position were measured using MRD (Marginal Reflex Distance) -1, MRD-2, and the interlid area with Image J software®. Changes in proptosis were also assessed using a Hertel exophthalmometer.

Results: The mean number of injections was 2.75 ± 0.91. After treatment, significant improvements were noted in MRD-1 (1.40 ± 1.04 mm, P < 0.05) and the interlid area (34.9 ± 21.5 mm², P < 0.05). A positive correlation (r = 0.41) was found between MRD-1 and the interlid area. No significant changes were observed in MRD-2 (0.05 ± 1.06 mm, P = 0.38) and proptosis measurements (0.04 ± 0.61mm, P = 0.29).

Conclusions: Orbital injection of TA effectively reduced upper eyelid position in patients with thyroid eye disease. TA appears promising for improving upper eyelid retraction associated with thyroid eye disease.

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FREE PAPERS

Apr 04, 2025 (Fri) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Is Benign Essential Blepharospasm a “Benign” and/or an “Essential” Condition?

First Author: Quresh MASKATI
Co-Author(s): Sameera IRFAN

Purpose: The study was conducted to determine whether blepharospasm is a benign condition with no harmful effects on a patient's health and to identify triggering factors that cause it.

Methods: A prospective, observational study was conducted at a tertiary referral center from April 2000 till March 2017. All cases referred for blepharospasm were included. After a detailed medical, social, ophthalmic, and family history, a thorough ophthalmic examination was conducted to find a primary as well as any secondary triggering factors causing blepharospasm. Assessment of functional disability was made subjectively by a Quality of Life questionnaire filled out by the patient.

Results: A history of acute triggering events causing anxiety or depression was present in 61 cases (96.8%). Secondary triggers causing blepharospasm were meibomian gland dysfunction in 100% of cases, tear film instability in 96.8%, dry eyes in 85.71%, chronic Trachoma in 14.28%, concretions in 26.98%, trichiasis in 4.76%, and chronic blepharitis in 12.69%. At least 2 to 3 triggering factors were noted in all cases. An extreme visual and functional disability was present in all cases (100%). A thorough literature search pointed toward Basal Ganglia; a combination of primary and secondary triggering factors results in an overdrive of the putamen area and its hypertrophy, causing blepharospasm.

Conclusions: Blepharospasm produces severe physical and psychological disability in patients. It spreads to adjacent facial muscles. Therefore, it cannot be labeled a “benign” condition. A definite cause is responsible for triggering the blepharospasm and perpetuating it, therefore, it should not be considered an “essential” condition.

Apr 04, 2025 (Fri) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Rare Eyelid Schwannoma in a Five-Month-Old Infant

First Author: Pauline Andrea WONG
Co-Author(s): Raphael GUMAFELIX, Sharmaine Anjanette NG, Honeylen Maryl TEO

Purpose: To report a case of eyelid schwannoma, its clinical features and management that mimicked chalazion in an infant.

Methods: This is a case report of eyelid schwannoma in an infant.

Results: A nine-month-old girl has a four-month history of a gradually enlarging left lower lid (LLL) mass. The mass started as a 3mm papule, then gradually enlarged and developed skin erythema. Her pediatrician diagnosed her with chalazion, and prescribed oral and topical antibiotics for one week, without improvement. She was brought to an ophthalmologist, who performed incision and curettage and reported small, yellow globules from the mass; however, a biopsy was not performed. Over the next 3 months, the mass enlarged, so she was brought to our institution. Examination revealed an 8x11x12mm (transverse x craniocaudal x anteroposterior) firm, round, non-pigmented, non-erythematous, movable mass at the lateral third of the LLL. The eyelid margin and palpebral conjunctiva on the underside of the mass were normal. The rest of the ophthalmic and systemic exam and past medical and family history were unremarkable. Excision biopsy revealed an encapsulated, easily dissectible, tan-colored nodule. Histopathology revealed spindle-shaped cells with oval nuclei and small areas of loose myxoid tissues. Immunohistochemistry was positive for S-100, SOX10, and TLE1, which confirmed cellular schwannoma with plexiform features. There is no recurrence six months post-excision.

Conclusions: To our knowledge, this is the youngest reported case of eyelid schwannoma (5-month-old). Whilst extremely rare, schwannoma should be considered in a slowly growing, firm but mobile eyelid nodule.

Apr 04, 2025 (Fri) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Unilateral Hypoglossal Nerve Palsy After Repairing a Fractured Orbital-Zygomatic Complex: A Case Report and Literature Review

First Author: Zhangyi LI

Purpose: Hypoglossal nerve palsy (HNP) can be caused by nerve damage from the central nerve to a peripheral nerve. But when HNP is discussed as a rare complication of general anesthesia surgery, the limitations of our knowledge about it make medical practice uncertain. The aim of this study was to investigate the clinical features of HNP and to discuss its risk factors as well as the pathogenesis.

Methods: We present a case of HNP following orbital surgery. In addition, we provide a literature review and discussion of postoperative HNP.

Results: A total of 59 case reports were retrieved, and 51 documents were included after excluding non-English documents. There were a total of 57 cases, of which 42 (73.70%) were males and 15 (26.30%) were females. The mean age of participants was 46.47 ± 16.99 years. Surgical sites included shoulder and upper limbs (33.3%), oral and maxillofacial region (26.3%), chest, spine, abdomen, and cranium. 84.2% occurred after tracheal intubation, and 14.0% occurred after laryngeal mask ventilation. Among the tracheal intubation cases, the ratio of transoral intubation to nasal intubation was 38:5. The surgical position contained supine (24.6%), beach chair (21.1%), prone (7%), and lateral (5.3%). Spearman's correlation analysis showed no significant correlation between postoperative recovery time and anesthesia maintenance time ($s=0.279$, $p=0.104$). Possible etiologies of HNP include airway management, surgical injury, anatomical variations, and others.

Conclusions: Clinicians should be aware of the possibility of unilateral HNP following general anesthesia surgery.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Champa Hall 304

Congenital Eyelid Colobomas; Demographics, Histological Features and Surgical Outcomes in Bangladeshi Population

First Author: Narayon BHOWMIK

Co-Author(s): Syeed MEHBUB UL KADIR, Golam HAIDER, Mukti MITRA

Purpose: To describe our experience in the surgical management of congenital eyelid coloboma in the Bangladeshi population.

Methods: A descriptive, observational, retrospective study was performed in patients with congenital eyelid colobomas between 2010 and 2023.

Results: Fifty-four eyelids were included in this study. Eyelid colobomas predominantly affected the upper lid in 83.33 % (45) and were typically unilateral in 55.56 % (30) patients, isolated in 62.9% (34), and as part of a syndrome in 37.01% (20) patients. Congenital upper eyelid coloboma was commonly located in the medial upper lid (33 lids, 73,33%) and mostly involved the full thickness of the lid (38 lids, 70.37%). Corneal adhesion (25 eyes, 46.3%) and poorly formed eyebrows (29 eyebrows, 53.7%) were the most common ocular/adnexa associations. Histopathological features were epidermal acanthosis 40.74 % (22), scarred dermis 79.63 % (43), atrophic orbicularis oculi 88.89% (48), and atrophic or absent tarsus 70.37% (38). Visual acuity at the final follow-up was 20/50 or better in 18 (33.3%) eyes. Complete lid closure without lagophthalmos after one or more surgical procedures was achieved in 22 (41.1%) cases.

Conclusions: Eyelid colobomas are a potential threat to vision. In children it requires close monitoring of the visual development. Dermal scarring and defective orbicularis muscles are common. Achieving good cosmetic and functional success after management is always challenging.

2

FREE PAPERS

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Champa Hall 304

Exploring the Prevalence and Surgical Management of Aponeurotic Blepharoptosis in Yogyakarta: A Retrospective Study

First Author: Kevin SETIAWAN
Co-Author(s): Banu AJI DIBYASAKTI, Purjanto TEPO UTOMO

Purpose: Aponeurotic blepharoptosis, characterized by the drooping of the upper eyelid due to disinsertion or dehiscence of the levator aponeurosis, is a common condition affecting the elderly population. This study aims to explore the prevalence, clinical presentation, and surgical outcomes of aponeurotic blepharoptosis in Yogyakarta over a five-year period.

Methods: A retrospective case series was conducted on patients diagnosed with aponeurotic blepharoptosis in Yogyakarta from January 2016 to December 2020. Data on demographics, clinical presentation, surgical techniques, and postoperative outcomes were collected and analyzed.

Results: Ten patients (mean age: 44 years, range: 16-74 years) were included in the study. The majority of patients presented with unilateral ptosis, with an average marginal reflex distance-1 (MRD-1) of 2.1 mm preoperatively. Surgical correction was achieved in 8 patients, with an overall success rate of 80%, as defined by an MRD-1 of ≥ 2.5 mm postoperatively. Complications were minimal and managed conservatively.

Conclusions: This study highlights the significant prevalence of aponeurotic blepharoptosis in Yogyakarta and underscores the effectiveness of surgical intervention. In young adults, repeated habitual eversion of lids had probably caused stretching and mild chronic inflammation of the tarsus and lid retractors, leading to progressive thinning with disinsertion of the levator aponeurosis. Levator resection proved to be a successful technique with high patient satisfaction and minimal complications.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Champa Hall 304

Inhibition of Interleukin-6 Receptor (IL-6R) Signaling With Satralizumab in Thyroid Eye Disease (TED): Phase 3 SatraGO-1 and SatraGO-2 Trial Design

First Author: Kelvin Kam-lung CHONG
Co-Author(s): Daniel EZRA, Zdenka HASKOVA, Oluwatobi IDOWU, Galin SPICER, Marius STAN

Purpose: Satralizumab, a humanized monoclonal antibody targeting IL-6 and IL-6R, enables extended antibody circulation with subcutaneous administration every 4 weeks. This report details the design of the phase 3 SatraGO-1 and SatraGO-2 trials assessing satralizumab's efficacy and safety in active and inactive TED patients.

Methods: SatraGO-1 (NCT05987423)/SatraGO-2 (NCT06106828) are identical, global, phase 3, randomized, double-masked, placebo-controlled, multicenter studies in participants with moderate to severe active and chronic inactive TED which will recruit ~120 participants. Participants are randomized 1:1 to receive subcutaneous satralizumab or placebo at weeks 0, 2, and 4 (loading doses) and then Q4W through week 20 (maintenance doses). Based on the proptosis response at week 24, non-responders will receive satralizumab Q4W, and responders will be re-randomized 1:1 to receive satralizumab or placebo Q4W through week 44 to evaluate the long-term benefits of satralizumab. Rescue treatment is permitted based on protocol-defined criteria and per the investigator's discretion. Evaluate the long-term benefits of satralizumab. Rescue treatment is permitted based on protocol-defined criteria and per the investigator's discretion.

Results: The primary endpoint is the proportion of participants with active disease who achieve a proptosis response. Secondary endpoints include the proportion of participants with active and chronic inactive disease achieving a proptosis response, the proportion of participants achieving an overall response, and the proportion of participants achieving ≥ 1 grade improvement in diplopia. Safety outcomes include the incidence, seriousness, and severity of adverse events.

Conclusions: SatraGo-1/SatraGo-2 aims to explore IL-6 signaling inhibition via satralizumab in TED participants, offering a potential disease-modifying treatment while reducing the safety risks of existing therapies.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Champa Hall 304

Orbital Wall Fracture Restoration With Balloon-Assisted Primary Bone Fragment Repositioning

First Author: Wenwen YANG
Co-Author(s): Zaihong CHEN, Jindou TAO, Guangjun XU

Purpose: Some orbital surgeons believe it is challenging to restore the original position of the orbital wall in cases of fractures and difficult to secure it. As a result, artificial materials are often used to reconstruct the bone defect areas. In this study, we used a transmaxillary sinus balloon support technique to reposition the primary fracture fragments and evaluated the surgical outcomes.

Methods: We conducted a retrospective analysis of five patients with orbital wall fractures who underwent balloon-supported primary orbital wall fracture repair surgery at our hospital between October 2022 and March 2024. All patients underwent primary orbital wall fracture repair with temporary balloon support, and no orbital implants were placed. Surgical outcomes were compared using Naugle scale scores, preoperative and postoperative orbital volume, and follow-up assessments for maxillary sinus inflammation, patient postoperative experience, and complications such as balloon rupture.

Results: All five patients who underwent primary orbital wall fracture repair using transmaxillary sinus balloon support achieved successful outcomes with no complications. There was no maxillary sinus inflammation, and no balloon ruptures occurred. The orbital volume of the affected eye significantly improved compared to the preoperative volume, and there was no significant statistical difference in postoperative orbital volume compared to the unaffected side.

Conclusions: The temporary balloon support technique via the natural maxillary sinus opening can achieve good results in primary orbital wall fracture repair. The technique is safe and effective. And can reduce the economic burden on patients.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Champa Hall 304

Topography of Corrugator Supercilii Muscle Relative to the Eyebrow and Its Clinical Application With Botulinum Toxin Injection

First Author: Hyun Jin SHIN
Co-Author(s): You-jin CHOI, Wu-chul SONG

Purpose: The purpose of the present was to elucidate the topography of corrugator supercillii muscles (CSM) relative to the eyebrow with the aim of providing topographic guidance for botulinum toxin type A (BTX-A) injection in East Asians.

Methods: Thirty-six hemifaces of 18 cadavers were dissected. Prior to dissection, four specific points on the eyebrow were marked to serve as reference points and photographed with scale bars. During the dissection, the layers beneath the skin were carefully separated to expose the CSM. To analyze the position of the CSM in relation to the eyebrow, a superimposition method was utilized. We overlaid an image showing the dissected CSM onto a pre-existing image that contained reference lines marking the eyebrow landmarks.

Results: Results At the medial end of the eyebrow, the eyebrow position and the CSM almost overlap. Significantly, the central part of the CSM's width was positioned just above the upper point of the eyebrow, aligning closely with the midpupillary line. On the lateral side, the overlap of the CSM beyond the midpupillary line was minimal, indicating that the muscle's presence diminishes or becomes less distinct as it extends laterally from the midpupillary line.

Conclusions: For effective targeting of the CSM, it is recommended to administer botulinum toxin injections precisely at the center of the medial end of the eyebrow and just above the midpupillary line. Considering the minimal presence of the CSM beyond the midpupillary line, injecting BTX-A into the CSM in this lateral region is typically considered unnecessary.

Pediatric Ophthalmology and Strabismus

Apr 03, 2025 (Thu) 13:15 - 14:45

Venue: Suryamukhee Hall 401

Combine Extraocular Muscle Fenestration With Jensen Technique in Management of Chronic Sixth Nerve Palsy

First Author: Thi Thu Hang TRAN

Co-Author(s): Van Huy NGUYEN, Minh Tien VU

Purpose: To report the results of combining extraocular muscle fenestration with the Jensen technique in the management of chronic sixth nerve palsy.

Methods: Patients with chronic complete sixth nerve palsy with abduction below the midline and weak active force generation test for lateral rectus who underwent medial rectus fenestration and Jensen technique were prospectively enrolled in this study. Success at 6 months from enrollment was defined as decreased diplopia and deviation in primary position, improved abduction movements, and no complications. Patients with no follow-up were excluded.

Results: Fourteen patients (16 eyes) with a mean age of 27 years (range 9–68) were included in this study. The procedure was well tolerated by patients and reduced the angle of esotropia in the primary position from 62.22 ± 18.89 prism diopters (PD) (range 35 to 90) to 8.56 ± 11.40 PD. In 12 eyes (75%), the postoperative deviation was within 10 PD of orthotropia. Four eyes (25%) had residual esotropia (15 PD and 25 PD, respectively). At 6 months follow-up, 88.89% of eyes demonstrated greater improvement of abduction limitation than preoperation. The mean preoperative abduction limitation of -3.67 improved to -2.78 ($p < 0.0001$). None of the cases presented with anterior segment ischemia (success rate 100%).

Conclusions: Combining extraocular muscle fenestration preserving the two anterior ciliary arteries in the medial rectus with the Jensen technique is an effective procedure with a high success rate, and is probably less risky for anterior segment ischemia in the management of chronic complete sixth nerve palsy.

Apr 03, 2025 (Thu) 13:15 - 14:45

Venue: Suryamukhee Hall 401

Comparison Between Unilateral Lateral Rectus Recession and Medial Rectus Resection vs Bilateral Lateral Rectus Recession in Exotropia in Tertiary Eye Hospital

First Author: Sidratul Muntaha NAZMIN

Co-Author(s): Mohammad Mostafa HOSSAIN

Purpose: To compare the results between monocular lateral rectus recession and medial rectus resection vs bilateral lateral rectus recession in exotropia patients at a tertiary eye hospital in Bangladesh in contrast of deviation.

Methods: It was a prospective interventional study which was conducted at the pediatric department of an academic institution from January 2017 to December 2018 by multiple surgeons. Patients with alternate exo deviation basic type within 25-50 PD were included. Patients with unilateral exotropia, any ocular pathology, systemic pathology, associated hypotropia or hypertropia, or a history of previous ocular surgery were excluded. Detailed history taking, vision measurement, anterior and posterior segment examination, and orthoptic evaluation were done. A total of 60 selected patients with exotropia underwent surgery according to its pre-operative deviation in the primary position. The patient was divided into two groups according to the surgical procedure.

Results: Group 1 included 36 patients who underwent monocular lateral rectus recession- medial rectus resection. Group 2, having 24 patients, underwent bilateral lateral rectus recession. Females were 70% ($n=42$); males 30% ($n=18$). In group-1 full correction was 55.5 %($n=20$), under correction was 41.7%($n=15$) and overcorrection 2.8 %($n=1$). Group 2 showed full correction was 75% ($n=18$), under correction was 25% ($n=6$), and no overcorrection.

Conclusions: Bilateral lateral rectus recession is more effective than unilateral recession-resection procedure in correcting the basic type of exotropia. More studies are needed to establish this result.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Epi-Off Conventional Versus Accelerated Corneal Collagen Crosslinking for Progressive Keratoconus in Children

First Author: Ashok SHARMA
Co-Author(s): Rajan SHARMA

Purpose: To evaluate the efficacy and safety of epi-off conventional and accelerated corneal collagen cross-linking in the treatment of progressive keratoconus in children.

Methods: The conventional (standard) CXL epi-off technique was performed in 82 eyes (S-CXL group) and accelerated CXL in 68 eyes (A-CXL group). Refraction, keratometry, cylindrical equivalent, spherical equivalent, slit lamp examination, pachymetry, corneal tomography, anterior segment ocular coherence tomography, and visual acuity were performed.

Results: In the S-CXL group: the flat K values decreased from 47.43±5.13 D to 46.01±3.51 D at 4-8 years; steep K decreased from 51.53±6.80 to 49.70±4.59 D at 4.8 years; mean K decreased with 1.32 D at 4.8 years. In the A-CXL group: the flat K values decreased from 45.95±4.49 D to 45.65±4.15 D at 2.1 years; steep K decreased from 49.84±5.37 D to 48.90±5.04 D at 2.1 years; mean K decreased from 47.85±4.56 D to 47.19±4.49 D at 2.1 years. The preoperative mean UCVA in the S-CXL group was 0.8 ±0.23 logMar and improved during the follow-up reaching 0.65 ±0.24 logMar at 4 years (p=0.072). A similar improvement of BCVA was observed during the follow-up.

Conclusions: Epi-off conventional and accelerated CXL are safe and efficient procedures to halt the progression of keratoconus in pediatric patients. Accelerated and conventional CXL were comparable and both are viable options for Keratoconus in children.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Suryamukhee Hall 40

Is Surgical Intervention Avoidable in Congenital Nasolacrimal Duct Obstruction (CNLDO)?

First Author: Sameera IRFAN

Purpose: A prospective, interventional study was conducted to determine whether surgical intervention can be avoided in infants with CNLDO by proper conservative management.

Methods: The study was conducted from March 2013 till Dec 2019. 338 prospective cases presenting with epiphora, eyelid discharge, and regurgitation on lacrimal sac compression were included in the study. Out of these, 166 were females (49.11%) and 172 males (50.88%). The age at enrolment was 1-47 weeks (median 23 weeks, mode 21 weeks), with 31 premature babies, (9.2%). The cases were divided into Primary (41 cases, 12.13%), who presented early with no prior therapy & Secondary categories (297, 87.86%), who presented late and had been using topical antibiotics and sac massage. Patients' caretakers were taught the proper technique of lacrimal sac compression with a cotton tip. Topical Tobramycin eyedrops were prescribed 3 times daily for 5 days only in cases with a purulent discharge or eyelid swelling. Regular follow-up was conducted at 1, 3, and 6 months after the initial visit.

Results: A total of 316 cases (93.49%) had complete resolution of epiphora and discharge by lacrimal sac compression. 22 symptomatic cases (6.50%) at the end of the study needed surgical probing. There was no significant difference amongst genders (p=0.684), or amongst primary versus secondary cases (p=0.062); they all responded to the correct conservative management.

Conclusions: CNLDO can be resolved conservatively by the proper technique of sac compression and eyelid cleaning. To avoid recurrent symptoms, this must be continued until the infant is one year old.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Multimodal Imaging-Assisted Surgery in Traumatic Strabismus

First Author: Amar PUJARI

Co-Author(s): Sudarshan KHOKHAR

Purpose: To describe the pathophysiology, importance of the multimodal imaging approach, and the clinical outcomes of incomplete lacerating rectus muscle injuries.

Methods: A retrospective review was conducted to identify patients with ocular deviation secondary to rectus muscle injuries. Between 2019 to 2022, a total of 30 patients were identified, amongst whom, eleven patients had incompletely lacerated rectus muscles (secondary to penetrating adnexal trauma and sino-orbital surgeries). Patients' demography, nature of injury, computed tomography/magnetic resonance imaging features, anterior segment optical coherence tomography (ASOCT) features, intra-operative findings, and post-operative outcomes were reviewed.

Results: The mean age of 11 patients was 31.36±14.38 years. All patients had external trauma, which severed the muscle in its anterior portion. Five patients had isolated inferior rectus muscle injury (45.45%), three had inferior and medial rectus muscle injuries together (27.27%), two had isolated lateral rectus muscle injury (18.18%), and one remaining patient had isolated medial rectus muscle injury (9.05%). In ten patients (90.90%), CT/MRI revealed features suggestive of muscle injury. However, details with respect to muscle insertion and scleral course were lacking. In this difficult scenario, ASOCT filled these lacunae in nearly 90% of the patients by providing surgically useful details. Moreover, when CT/MRI-ASOCT imaging features were put together then the management and outcomes were more predictable.

Conclusions: Penetrating rectus muscle injuries can be better identified as incompletely lacerated muscle using a multimodal imaging approach with intraoperative correlation. This simple image correlation process customizes the treatment approach and, hence, the clinical outcomes.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Pediatric Third Nerve Palsy – Clinical and Demographic Profile of Patients Presenting to a Tertiary Care Center in South India

First Author: Lubhavni DEWAN

Co-Author(s): Ramesh KEKUNNAYA

Purpose: To investigate the etiological and demographic profile of third nerve palsy in the pediatric population presenting to a tertiary care set-up.

Methods: A retrospective review of records spanning from January 2015 through December 2023 was done. All files of children aged <16 years at presentation with diagnoses of "congenital third nerve palsy" or "acquired third nerve palsy" were retrieved. We excluded cases with an alternate final diagnosis (ocular myasthenia, congenital fibrosis of extraocular muscles, monocular elevation deficit, or chronic progressive external ophthalmoplegia) and those with co-existing other cranial nerve palsy (orbital apex syndrome, cavernous sinus syndrome, and traumatic ophthalmoplegia). Relevant clinical details were tabulated.

Results: A total of 101 records (43 males and 58 females) were analyzed. The commonest etiology was seen to be congenital (53.4%), with 45.5% being acquired. Within the congenital group, pupillary involvement was seen in 44.4% (29.6% showing mid-dilated pupil, 12.9% miotic) and aberrant regeneration in 32%. The most common imaging finding was thinning of the extraocular muscles (37%), with hypoplasia or non-visualization of the third nerve in its cisternal segment reported in 27.7%. Acquired cases comprised traumatic (33.3%), inflammatory (20%), compressive (13.3%), infective (6.7%), and vascular (4.4%) etiologies. Oculomotor schwannoma was seen in 8.9% of cases, while no cause was determined in 11.1%.

Conclusions: To the best of our knowledge, this could be the largest series of 3rd nerve palsy in the pediatric population. The role of neuroimaging in this cohort is indispensable to pick up on etiologies such as oculomotor schwannoma that may be more common than previously known.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Sporadic Orbital Burkitt Lymphoma in Paediatric Population: A Case Series and Review of the Literature

First Author: Mason BURNS
Co-Author(s): Josefina HERRERA LOMBERA, Thomas HARDY, Verlyn YANG, Kareem ZAGHLOOL

Purpose: Burkitt Lymphoma (BL) is an aggressive B cell neoplasm with 3 distinct subtypes, of which sporadic is the most common outside of mainland Africa. Most commonly, Sporadic BL arises in the abdomen with less than 9% arising from the head and neck, with orbital involvement being rarer still. We describe four paediatric orbital BL cases together with a comprehensive review of the literature. Reporting the clinical presentation, imaging findings, histology, genetics, and treatment outcomes.

Methods: Retrospective review of published cases of sporadic orbital BL between 1950 and 2023. Data was collected from each of the identified articles on the age of presentation, sex, initial presentation, tumour location, imaging, histopathology, immunohistochemistry, EBV status, and treatment outcomes.

Results: We present a comprehensive review of 28 published cases of sporadic paediatric orbital BL with 4 additional cases from our series. Clinical presentation of orbital BL most often was due to the mass effect of the lesion resulting in proptosis, ophthalmoplegia, and periorbital swelling. Treatment of BL is guided by FAB/LMB96 study protocol which has an over 80% survival rate at 4 years. Markers of poor prognosis in Burkitt Lymphoma include high LDH, CNS disease, bone marrow involvement, and relapsing disease.

Conclusions: Orbital involvement of sporadic BL is uncommon, with 28 reported cases in the paediatric population. Orbital signs are often the first manifestation, reflecting the importance of considering BL as a differential in a child presenting with proptosis. Early diagnosis and treatment have a good prognosis.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Suryamukhee Hall 401

Surgical Outcome of Unilateral Lateral Rectus Recession With Medial Rectus Resection in Management of Exotropia

First Author: Tariq ALDOAIS
Co-Author(s): Atheer ATEIK, Rehab ALI

Purpose: To evaluate the success rate of unilateral lateral rectus recession combined with medial rectus resection in the treatment of exotropia.

Methods: A prospective observational case series study was conducted in Rowad Alnour Eye Centers from 1 June 2022 to 30 June 2023. A total number of 116 patients with exotropia (all types of exodeviation with variable degree of deviation) of either sex and variable age group underwent a surgical procedure of unilateral lateral rectus recession and medial rectus resection. All those patients were treated in Rowad Alnour Eye Center, Sana'a, Yemen, during the period of 1 year from 6 June 2022 to 6 June 2023.

Results: A total number of 116 patients presented to the pediatric department in Rowad Alnour Eye Center with exotropia during the study period. Among them, 47.8% were male and 52.2% were female. The mean age was 18.53 ± 9.4617 SD, with a range from 2 to 50 years. The duration mean was 11.04, with refraction normal (55.2%), astigmatism (20.9), myopia astigmatism (13.4%), myopia (6%), and hyperopic astigmatism (4.5%) of the right eye and left eye normal (85.2%), myopic astigmatism (22.4%), astigmatism (10.4%), and myopia (9%). Most of them were primary (94%). Ophthalmic exams of most of them were normal (91%). Type of anesthesia: general (85.1%), local (10.4%), and topical (4.5%). Post-operative result: ortho (94%), and residual (6.0%).

Conclusions: Unilateral lateral rectus recession combined with medial rectus resection in the treatment of exotropia is one of the best results with low recurrent cases or consecutive.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Suryamukhee Hall 401

The Prevalence of Different Types of Strabismus in Strabismic Yemeni Patients

First Author: Saeema ALHADHRAMI
Co-Author(s): Salman AHMED, Tariq ALDOAIS

Purpose: To determine the frequency of different types of strabismus in the patients of pediatric ophthalmology clinics from 2023-2024.

Methods: This retrospective cross-sectional study involved 2200 strabismic patients, following a brief history and general and ocular examination.

Results: Accommodative esotropia (ET) was the most prevalent type of strabismus, accounting for 30.04% of all strabismic patients, while intermittent exotropia (XT), nonaccommodative ET, and partially accommodative ET, with 12.09%, 11.24% and 10.39%, respectively, were relatively common. Also, 63.03% of all strabismic patients had esodeviation, with XT coming second, accounting for 24.53% of patients. The most common association with those types of strabismus was inferior oblique over action accounting for, and 320 patients had nystagmus in addition to strabismus

Conclusions: The prevalence of ET was two and a half times higher than that of XT. This study suggests that strabismus screening of children could be useful in the early detection of strabismus, appropriate management of it, and prevention of strabismic amblyopia.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Suryamukhee Hall 401

The Relationship Between Small-Angle Intermittent Exotropia and Myopia Progression in Adolescents, and the Effect of Exotropia Surgery on Myopia

First Author: Yunyun WANG
Co-Author(s): Duo XU

Purpose: To investigate the relationship between small-angle intermittent exotropia (IXT) and myopia, and the effect of surgery on myopia.

Methods: A total of 200 patients of IXT aged 6~18 years, diopter -1.00D ~ -7.50D, were divided into two

stages. The first stage: They were divided into two groups; the observation group 100 was a small-angle IXT-10 $\Delta \sim 20\Delta$, the score of eye position control ability was ≤ 3 points, and the contrast intensity of IXT was $-20\Delta \sim 50\Delta$, and the control ability was > 3 points. In the second stage, patients with strabismus $\geq 15\Delta$ and a control score (≥ 5) were treated with strabismus surgery according to their will.

Results: After 1 year, the spherical equivalent (SE) of the observation group and the control group increased compared with that of preintervention ($P < 0.05$), and the AL in both groups increased by $0.48 \pm 0.68\text{mm}$ and $0.32 \pm 0.28\text{mm}$ ($P < 0.05$). After 1 year, the score of eye position control ability, compared with 1 year ago, and the control force was worse ($P > 0.05$). In the small degree observation group, the difference was significant ($P < 0.05$). (the second stage), the SE and AL of the two groups were significantly increased compared with those before surgery ($P < 0.05$).

Conclusions: Children with small-angle IXT and better eye position control ability are more likely to have myopia and increased AL drift in order to control the increase in eye position convergence, and surgical correction can significantly slow down the rapid progression of myopia.

Apr 03, 2025 (Thu) 13:15 - 14:45
Venue: Suryamukhee Hall 401

The Use of Perceptual Learning to Improve Vision Patients With Congenital Nystagmus – a Prospective Open Label Randomized Controlled Clinical Study

First Author: Yair MORAD
Co-Author(s): Idan HECHT, Eran PRAS, Sigal ZMUJACK-YEHAM

Purpose: To evaluate the efficacy of Visual Perceptual Learning in improving vision in congenital nystagmus patients.

Methods: This was a prospective randomized controlled open-label study performed at Shamir Medical Center during 2022-2023. Included were patients between the ages of 9-55 years with congenital nystagmus, and stable corrected distance visual acuity (CDVA) between 20/40-20/200. The treatment group underwent Perceptual Learning

Therapy using the RevitalVision® training system for four months. The control group was followed without treatment. CDVA, contrast sensitivity, stereoacuity, and binocular functions were assessed and compared.

Results: A total of 26 patients were included in the treatment arm and 10 in the control arm. The mean patient age was 22.47±12 and was similar between groups (p=0.389). In the treatment group, CDVA improved by 0.10±0.07 logMAR (one ETDRS line) compared with 0.015±0.09 logMAR in the control (p=0.006). Visual acuity for near improved by 0.16±0.14 logMAR (1.6 ETDRS lines) compared with 0.05±0.13 logMAR in the control (p=0.040). Contrast sensitivity improved by 292±391% and stereopsis by 508±520 arcsecs in the treatment group compared with 152±67% and 246±376 arcsecs in the control group, respectively (p=0.089; p=0.157). 6/26 patients in the study group gained VA eligible for driving licenses during the study. Six months after the completion of the study vision remained stable.

Conclusions: In this prospective randomized controlled open-label study, visual perceptual learning resulted in significant improvement in near and distance visual acuity, with a corresponding trend for improvement in contrast sensitivity and stereopsis among patients with congenital nystagmus. Some patients gained a driving license VA.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Suryamukhee Hall 401

Bacteriological Profile and Antimicrobial Resistance in Children Under 2 Years of Age With Congenital Nasolacrimal Duct Obstruction

First Author: Aida KAPANOVA
Co-Author(s): Botagoz ISSERGEPOVA,
Kairat RUSLANULY, Zhansaya SULTANBAYEVA

Purpose: To determine the antibiotic sensitivity of microflora and create a resistance profile to select effective treatment strategies for children under 2 years old with congenital nasolacrimal duct obstruction (CNLDO), thereby enhancing treatment outcomes through informed antibiotic therapy choices.

Methods: This retrospective single-center descriptive analysis was conducted from January 2017 to December 2022. The study included children under 2 years with CNLDO who had positive microorganism cultures. Exclusions were made for children with prior interventions or topical antibiotic use. Samples were cultured on 5% blood agar, Endo agar, and saline agar (CHROMagar™, France), with fungal cultures on Sabouraud agar (Microgen, Russia). Antimicrobial susceptibility testing was performed using Vitek 2 Compact (France), and statistical analysis was conducted using GraphPad Prism 8 (USA).

Results: From 1210 conjunctival cultures, gram-positive bacteria were found in 77.25% of cases, gram-negative bacteria in 22.26%, and fungi in 0.57%. Facultative anaerobes comprised 75.08% of isolates. Common gram-positive bacteria included Staphylococcus spp. (*S. epidermidis* 17.49%, *S. aureus* 10.73%). Among gram-negative bacteria, *Pseudomonas aeruginosa* (3.96%) and *E. coli* (5.78%) were notable. High antibiotic sensitivity was observed for moxifloxacin (92.52%) and levofloxacin (88.99%), with high resistance to erythromycin (32.84%) and clindamycin (28.13%).

Conclusions: The most common bacteria in CNLDO in children under 2 include Gram-positive staphylococci (*S. epidermidis*, *S. aureus*) and Gram-negative bacteria (*E. coli*, *Enterobacter* spp.). Facultative anaerobes are significant. Analyzing the microbiological profile and antibiotic sensitivity supports the development of rational antibiotic therapy approaches for young children.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Suryamukhee Hall 401

COVID-19 and Acute Acquired Concomitant Esotropia (AACE): A Meta-Analysis of Retrospective Studies

First Author: Muhammad ALFATIH
Co-Author(s): Ida MUTHMAINNAH, Diski SAISA

Purpose: To review the association between the COVID-19 pandemic and the characteristics of Acute Acquired Concomitant Esotropia (AACE) patients.

Methods: All aspects of the systematic review and meta-analysis adhered to the Cochrane Handbook. Eligibility criteria include retrospective studies that directly compare the data of AACE patients between pre-COVID-19 and COVID-19 pandemic. Three databases (PubMed, Scopus, and CENTRAL) were systematically searched using queries stemming from “COVID-19” and “Acute Acquired Concomitant Esotropia”. Synonyms, Boolean operators, and wildcards were used. Variations might occur due to databases’ scripts. Two independent authors performed titles and abstract screening, study quality assessment, and data collection. If there were any conflicting decisions, the third author would decide. Meta-analysis with random-effects models was done using RevMan 5.4.

Results: After a rigorous selection process, two studies were ultimately included. One study was conducted in China and another in Italy. Both studies showed that since the COVID-19 pandemic, the number of AACE cases has been increasing. There were no significant results from the meta-analysis of comparing the age (MD=-4.82, 95%CI [-14.32, 4.69]), gender (MD=1.61, 95%CI [0.85, 3.07]), maximum far (SMD=0.13, 95%CI [-0.18, 0.43]), and near (SMD=0.21, 95%CI [-0.11, 0.54]) deviations, and the left (MD=1.40, 95%CI [-0.70, 3.51]) and right (MD=1.89, 95%CI [-0.02, 3.81]) equivalent spherical degree between the AACE patients in pre-pandemic and post-pandemic era. The only significant result is the low odds of pre-pandemic patients having type III/Bielschowsky (OR=0.14, 95%CI [0.04, 0.55]) compared to post-pandemic patients.

Conclusions: COVID-19 impacts the incidence and characteristics of AACE patients, especially by increasing their odds of being a Bielschowsky type.

Apr 04, 2025 (Fri) 16:45 - 18:15

Venue: Suryamukhee Hall 401

Clinical Characteristics, Diagnosis, and Treatments of Pediatric Nystagmus

First Author: Supathida JIAMSAWAD

Co-Author(s): Rawi JONGPIPATCHAI,

Pittaya PHAMONVAECHAVAN

Purpose: To report the clinical characteristics, types, causes, and management of pediatric nystagmus diagnosed over a 15-year period.

Methods: A retrospective study was conducted on pediatric patients under the age of 18 diagnosed with nystagmus at Siriraj Hospital from 2005 to 2019. Data on demographics, characteristics, causes, and treatments of nystagmus were collected.

Results: A total of 328 nystagmus patients were enrolled. The median age at diagnosis was 1.8 years, with 180 male patients (54.9%). The most prevalent cause was nystagmus associated with retinal and optic nerve abnormalities (42.4%), followed by idiopathic infantile nystagmus syndrome (INS, 17.7%) and anterior segment abnormalities (11.6%). Idiopathic INS was more common in Down’s syndrome patients (37.5%) compared to non-Down’s syndrome patients (14.3%). Of the electroretinogram (ERG) results for nystagmus associated with retinal or optic nerve abnormalities, 83.7% were abnormal. Treatments varied based on the cause of nystagmus, with refractive correction being the most common (40.5%). Nystagmus from central nervous system (CNS) tumors showed the highest tendency for isolated surgical treatments (42.9%), while anterior segment abnormalities often required multimodal treatments (34.2%).

Conclusions: This study provides insights into the characteristics, prevalence, and treatment of pediatric nystagmus in a tertiary care hospital in Thailand. The primary cause identified was nystagmus associated with retinal/optic nerve abnormalities. ERG is recommended for uncertain diagnoses or when retinal function is in question. Treatment modalities are determined by the underlying cause, with refractive correction being the most commonly employed approach.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Suryamukhee Hall 401

Effects of Surgery and Non-Surgery on Binocular Visual Function and Refractive Status in Patients With Latent Oblique Muscle Overaction

First Author: Duo XU

Co-Author(s): Ben Chu FENG, Yunyun WANG

Purpose: To analyze the changes in binocular vision function and ocular refractive status in patients with latent oblique muscle overaction (LOMO) before and after strabismus surgery, as well as in non-surgical patients.

Methods: A prospective study was used to select 30 patients with LOMO (vertical strabismus $< 10\Delta$ in one eye, but obvious lower oblique hyperactivity +2, +3) from June 2021 to 2023, and they were randomly divided into two groups: Group A was vertical strabismus $< 10\Delta$, obvious lower oblique hyperactivity +2, +3, and Group B was vertical strabismus $< 10\Delta$ with obvious lower oblique hyperactivity +2, +3, no operation was performed, regular review was selected; The blank control group had vertical strabismus $< 10\Delta$, but no oblique hyperactivity;

Results: 1. Before intervention, the stereoscopic vision of group A, group B and the control group was statistically significant ($P < 0.05$). The stereovision of the AB group with oblique muscle hyperactivity was worse than that without oblique muscle hyperactivity. Six months after oblique muscle weakening in the A group, the stereoscopic vision of three groups was statistically significant ($P < 0.05$). Before intervention, the saccade function scores had no statistical significance ($P > 0.05$). After 6 months, the difference was statistically significant ($P < 0.05$). 2. Changes in refractive status: Before intervention and after six months, the spherical equivalent in group A, the difference was not statistically significant ($P > 0.05$).

Conclusions: For patients with latent oblique muscle overaction, the eye with muscle overaction is mostly manifested as the non-dominant eye. After surgery, the stereoscopic and saccadic functions of both eyes are significantly improved.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Suryamukhee Hall 401

Epidemiological Perspectives on Adolescent Visual Health: Emerging Methods in Binocular Vision Assessment

First Author: Yingqing YU

Purpose: Despite the use of corrective refractive measures, myopic students exhibit a higher risk of visual dysfunction compared to their non-myopic peers. However, there is a lack of research investigating the impact of myopia on high-order visual functions. This study employs binocular rivalry tests, which engage high-order visual processing pathways, to elucidate differences in high-order visual processing capabilities between myopic and non-myopic students.

Methods: We developed an innovative rivalry-binocular vision screening protocol that integrates rivalry tasks with standard binocular vision assessments. This protocol includes three primary tests: the Rivalry-Simultaneous-Vision test, the Rivalry-Fusion-Vision test, and the Rivalry-Stereoscopic-Vision test.

Results: Among the students, the prevalence of myopia was 50.0% (715/1430). The overall deficiency rates for the Rivalry-Simultaneous-Vision test, Rivalry-Fusion-Vision test, and Rivalry-Stereoscopic-Vision test were 40.4% (578/1430), 31.2% (446/1430), and 45.3% (648/1430), respectively. A statistically significant difference was observed in the rate of Rivalry-Fusion-Vision impairment between myopic and non-myopic students (36.80% vs 26.57%, $\chi^2 = 14.194$, $P < 0.001$). No significant differences were found between myopic and non-myopic students in the Rivalry-Simultaneous-Vision test (41.5% vs 39.3%) and the Rivalry-Stereoscopic-Vision test (44.1% vs 46.6%).

Conclusions: Myopic students exhibit significantly poorer performance in the Rivalry-Fusion-Vision test compared to non-myopic students, suggesting diminished capacities in high-order visual processing mechanisms when faced with tasks involving binocular rivalry.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Suryamukhee Hall 401

Gamma Knife Radiosurgery of Diffuse Choroidal Hemangioma in Sturge-Weber Syndrome

First Author: Vera YAROVAYA
Co-Author(s): Aiza GALBATSOVA, Andrey GOLANOV, Valeri KOSTUCHENKO, Roman LOGINOV

Purpose: To determine the feasibility of gamma knife radiosurgery (GKRS) in the treatment of symptomatic diffuse choroidal hemangioma (DCH).

Methods: Six patients aged from 3 to 15 years with DCH associated with Sturge-Weber syndrome were treated with GKRS. One child had the only seeing eye. Ophthalmologic examinations revealed choroidal thickening up to 7.0 mm and localized or subtotal exudative retinal detachment associated with DCH in all cases. Brachytherapy or laser treatment used earlier in three patients was ineffective. Irradiation plans (one or two planned target volumes) included the most prominent parts of the DCH, excluding the macular area. The prescribed 50% isodose marginal dose was 18Gy.

Results: The tumor volume decreased, and the retina was reattached by the last follow-up in all patients. Visual acuity of the affected eyes was improved in all cases were no adverse effects of radiation such as retinopathy or optic neuropathy. The follow-up period ranged from 18 to 49 months. No recurrence of exudative retinal detachment occurred.

Conclusions: There is no standard therapy for DCH, and GKRS can be an effective alternative treatment for symptomatic DCH.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Suryamukhee Hall 401

Pediatric Staphyloma Classification: New Perspectives via Ultrawide Field Three Dimension Swept Source Optical Coherence Tomographic Angiography

First Author: Xiaoyan DING

Purpose: This study employed wide-field three-dimensional optical coherence tomographic angiography, integrating various pieces of

information to characterize the features and disease associations of pediatric posterior staphyloma.

Methods: UWF 3D SS-OCTA imaging, integrating posterior eye curvature maps and posterior eye height maps strategies, was employed to analyze staphyloma presentations in the pediatric cohort. This data was then set against the traditionally established adult classifications. Additionally, the etiology of staphylomas was investigated.

Results: The UWF 3D SS-OCTA modality, when integrated with posterior eye curvature maps and posterior eye height maps, showcased superior imaging detail and better classification compared to ultrawide field scanning laser ophthalmoscope (UWF SLO), offering a more nuanced view of staphyloma patterns in pediatric patients. Specifically, only 54.7% of the pediatric cohort fit into previously recognized categories. The pediatric group displayed prominent temporal and inferior temporal staphylomas, likely linked to the high prevalence of peripheral vascular diseases. The study led to the proposal of five unique pediatric staphyloma classifications.

Conclusions: The UWF 3D SS-OCTA modality with posterior eye curvature maps and posterior eye height maps offers unparalleled insights into staphyloma patterns, especially in pediatric patients. Pediatric staphylomas exhibit a unique presentation, divergent from adults, with two novel types identified. The findings underline the importance of updating classification systems, ensuring they reflect the realities observed in pediatric pathology and diagnostics.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Suryamukhee Hall 401

Strabismus Profile in a Tertiary Eye Care Centre in Manipur

First Author: Chongtham DEVI
Co-Author(s): Yambem DINAKUMAR, Noornika KHURAIJAM, Sachindra LAISHRAM

Purpose: To study the trends of strabismus patients in a tertiary eye care centre in Manipur.

Methods: Retrospective data of 1890 patients attending the outpatient department of the hospital from March 2015 to March 2020 having strabismus

was collected. A detailed history with complete ophthalmologically examination and strabismus workup was done for all patients. The data was then analysed.

Results: Of 1890 patients, 986 were females, and 904 were males. 756 were children, and 1134 were adults. For children, the majority had exotropia. For exotropes, intermittent exotropia was the most common, 51% in children and 42% in adults. Superior oblique palsy was the main vertical strabismus in patients with pure vertical strabismus. For esotropes, the majority was essential infantile esotropia in children and non-accommodative esotropia in adults. In children, myopia was more common in esotropia and hyperopia in esotropia. Myopia was more common in adults. Amblyopia was found in 30% of children and 14% of adults.

Conclusions: Exotropia was the most common strabismus in patients attending the centre, with a slight female preponderance.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Suryamukhee Hall 401

The Effectiveness of Using Liquid Crystal Glasses in the Amblyopia Treatment in Children

First Author: Ekaterina NEKRASOVA
Co-Author(s): Sati AGAGULYAN

Purpose: To evaluate the effectiveness of using liquid crystal glasses in amblyopia treatment in children.

Methods: We observed 20 patients aged from 10 to 17 (average 14.4±0.3) years with amblyopia (dysbinocular amblyopia in 7 cases with convergent strabismus up to 5 degrees, in 2 cases with divergent strabismus up to 5 degrees, refractive amblyopia - 9 cases and deprivation - in 2). We used liquid crystal glasses developed in our clinic. As a result of treatment, in 8 patients with unstable binocular vision, it became stable; in a patient with simultaneous vision, it became binocularly unstable. The duration of alternating darkening of the right and left glasses was 50 ms. The course of treatment included 15 sessions of 20 minutes per day. Game patterns of the computer program were used as a visual stimulus; the magnitude of deviation and fusion reserves were assessed using the "Blade" computer program.

Results: As a result of the use of liquid crystal glasses, an increase in visual acuity was observed in the better-seeing eye from 0.85±0.03 to 0.98±0.01 (p<0.001), and in the worse-seeing eye from 0.59±0.06 to 0.78±0.05 (p<0.001) and binocular visual acuity from 0.85±0.03 to 0.99±0.01 (p<0.001). The deviation decreased from 1.7±0.4 to 0.5±0.2 degrees (p=0.01). Positive fusion reserves increased from 3.7±0.6 to 7.4±0.7 (p<0.001), negative - from 1.6±0.3 to 2.2±0.3 (p<0.001).

Conclusions: Thus, the result demonstrated the positive dynamics of visual functions as a result of the use of liquid crystal glasses in amblyopia treatment in children.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Suryamukhee Hall 401

The Profiles and Clinical Significance of Extraocular Muscle-Expressed lncRNAs and mRNAs in Oculomotor Nerve Palsy

First Author: Lianqun WU
Co-Author(s): Mingsu SHI, Chen ZHAO

Purpose: To evaluate lncRNAs profiles in extraocular muscles of oculomotor nerve palsy (ONP).

Methods: Medial rectus tissue samples from ONP and constant exotropia (CXT) patients were collected for RNA sequencing. Differentially expressed mRNAs and lncRNAs were revealed and included in the functional enrichment analysis. Co-expression analysis, target gene prediction of differentially expressed lncRNAs, and lncRNA-microRNA and lncRNA-transcription factor-mRNA interaction networks were applied. RT-qPCR was applied to validate the expression levels of important lncRNAs and mRNAs, whose clinical significance was examined by ROC curve analysis.

Results: A total of 618 differentially expressed lncRNAs and 322 differentially expressed mRNAs were identified. The up-regulated mRNAs were significantly related to cholinergic synaptic transmission (such as CHRM3 and CHRND) and the components and metabolism of extracellular matrix (such as CHI3L1 and COL19A1), while the down-regulated mRNAs were significantly correlated with the composition (such as MYH7 and MYL3) and contraction force (such as MYH7 and TNNT1) of muscle fibers. Co-expression analysis and target

gene prediction revealed a strong correlation between MYH7 and NR_126491.1, as well as MYOD1 and ENST00000524479. Moreover, the differential expressions of lncRNAs (XR_001739409.1, NR_024160.1, and XR_001738373.1) and mRNAs (CDKN1A, MYOG, MYOD1, MYBPH, TMEM64, STATH, and MYL3) were validated by RT-qPCR. ROC curve analysis showed that lncRNAs (XR_001739409.1, NR_024160.1, and NR_002766.2) and mRNAs (CDKN1A, MYOG, MYOD1, MYBPH, TMEM64, and STATH) might be promising biomarkers of ONP.

Conclusions: These results may shed light on the molecular biology of EOMs of ONP, as well as the possible correlation of lncRNAs and mRNAs with clinical practice.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Suryamukhee Hall 401

Unlocking Non-Invasive Retinopathy of Prematurity Screening From Tear Proteomic Biomarker Profile - the Suppressed LXR/RXR Activation Pathway

First Author: Alicia LIU
Co-Author(s): Connie LAI, Thomas Chuen LAM, Wai-ching LAM, Man Hin LEUNG, Oi Ying WONG

Purpose: Retinopathy of prematurity (ROP) is the leading cause of preventable childhood blindness. Tear protein biomarkers identified from next-generation label-free proteomics may offer an accessible, non-invasive option for ROP screening.

Methods: Infants whose birth weight was ≤ 1500 g or gestational age ≤ 30 weeks were recruited. Examination began at 4 weeks chronologic age or 31 weeks postmenstrual age. ROP was diagnosed according to the International Classification for Retinopathy of Prematurity. ROP (n=13) and non-ROP (n=21) tear samples were collected with Schirmer's strips. Tear proteins were identified and quantified using data-independent acquisition mass spectrometry. Further gene ontology functional and enrichment analyses were completed on the resulting differential proteins.

Results: A total of 2,279 unique proteins (1% FDR) were quantified, with 362 significantly differentiated proteins ($FC \geq 1.5$ or ≤ 0.5 , $p < 0.05$). Gene ontology pathway analysis revealed that the most significantly

suppressed canonical pathway was the LXR/RXR activation pathway ($p < 0.01$, $|z| \geq 2$), with several key associated proteins of the same class being significantly down-regulated.

Conclusions: LXR/RXR activation pathway is reported to regulate gene expression in the retina. LXR α/β is suggested to regulate angiogenesis and contribute to ocular neovascularization by increasing the expression of ATP-binding cassette transporters (ABCA1 and ABCG1) by interfering with the signaling of vascular endothelial growth factor receptor 2 (VEGFR2). Suppressed LXR/RXR activation pathways can, therefore, result in disrupted lipid rafts that could interfere with neovascularization in ROP. Further validation of the key ROP tear biomarkers that we discovered may facilitate the development of a non-invasive ROP screening kit for clinical application.

Refractive Surgery

Apr 05, 2025 (Sat) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Belin-Ambrósio Deviation (BAD-D) Index Is Not a Predictor of Two-Year Refractive Outcomes of Photorefractive Keratectomy (PRK)

First Author: Siamak ZAREI-GHANA VATI
Co-Author(s): Samira HASANZADEH, Seyyed Saeed SHAMS

Purpose: To assess the effect of preoperative BAD-D index on two-year visual, refractive, and tomographic outcomes, as well as the efficacy and safety of PRK surgery.

Methods: This prospective cohort study included 66 patients (66 eyes) who underwent PRK surgery, with a minimum follow-up period of 2 years. Participants were divided into two groups: preoperative BAD-D ≥ 1.60 (high BAD-D) and preoperative BAD-D < 1.60 (low BAD-D). Pre- and postoperative visual, refractive, and tomographic parameters were evaluated, and the efficacy and safety of the procedure were compared between groups.

Results: Sixty-six patients with a mean age of 35.50 years ± 8.21 (range 22 to 55 years) were included.

Post-operatively, the mean spherical equivalent (SE) of refractive error was $+0.32 \pm 0.65D$ in the high BAD-D group and $+0.18 \pm 0.66D$ in the low BAD-D group ($p=0.40$). Also, at two years of follow-up, the mean uncorrected visual acuity was 0.98 ± 0.07 in the high BAD-D group and 0.97 ± 0.08 in the low BAD-D group ($p=0.905$). Among the postoperative tomographic parameters, front elevation thickness (F.Ele.Th), maximum Ambrósio relational thickness (ARTmax), astigmatism, and central corneal thickness were significantly different between the two groups (all, $p < 0.05$). At the two-year follow-up, the mean safety Index was 1.02 ± 0.04 , and 1.01 ± 0.04 in high and low BAD-D groups respectively ($p=0.37$) and the mean efficacy Index was 0.99 ± 0.07 and 0.98 ± 0.06 in high and low BAD-D groups respectively ($p=0.40$).

Conclusions: The preoperative BAD-D index does not predict postoperative visual, refractive, and tomographic outcomes in patients with low-to-moderate myopia. However, in patients with normal preoperative BAD-D values, a higher agreement was expected between the attempted and achieved SE.

Apr 05, 2025 (Sat) 11:30 - 13:00

Venue: Suryamukhee Hall 401

Changes in Binocular Corneal Innervation and Binocular Imbalance After Unilateral SMILE and tPRK

First Author: Liang HU

Co-Author(s): Qianwen GONG, Kaiyan HUANG

Purpose: The studies aimed to evaluate the bilateral changes in the corneal sub-basal nerve plexus, ocular surface function, and the relationship between binocular imbalance and myopic shift in the unoperated eyes following unilateral small incision lenticule extraction (SMILE) and transepithelial photorefractive keratectomy (tPRK) procedures.

Methods: The first study included 34 patients (SMILE: 21, tPRK: 13). Ophthalmic examinations, tear film function tests, and Cochet-Bonnet esthesiometry assessed corneal nerves and tear function. In vivo confocal microscopy and ELISA measured corneal nerve plexus, dendritic cells, and tear neuromediators. The second study included 51 participants (SMILE: 28, tPRK: 23) categorized based on changes in spherical equivalent refractive errors of the unoperated eye, undergoing routine ocular

examinations and spatial sensory eye dominance assessments.

Results: Both procedures caused bilateral corneal nerve degeneration, reduced corneal sensitivity, worsened dry eye symptoms, and altered tear neuromediators bilaterally. In SMILE, corneal sensitivity correlated positively with nerve fibre length and negatively with dendritic cell area bilaterally; in tPRK, it correlated positively with nerve fibre density. Stronger sensory eye dominance in unoperated eyes correlated with greater myopic shift, influenced by spatial frequency variations.

Conclusions: Unilateral refractive surgery may bilaterally affect the morphology and function of corneal nerves and ocular surface status postoperatively. Patients with stronger sensory eye dominance in the unoperated eye are more susceptible to myopic shift in the unoperated eye, influenced by spatial frequency variations.

Apr 05, 2025 (Sat) 11:30 - 13:00

Venue: Suryamukhee Hall 401

Comparative Study of Changes of Corneal Curvatures and Uncorrected Distance Visual Acuity Prior to and After Corneal Collagen Crosslinking: 1-Year Results

First Author: Nader NASSIRI

Co-Author(s): Sara KAVOUSNEZHAD,

Kourosh SHEIBANI, Maryam YADGARI

Purpose: To evaluate the effect of CXL on corneal topographic and uncorrected distance visual acuity (UDVA) by Oculus Pentacam in the 15-30-year-old population.

Methods: In this descriptive-analytic study, we enrolled 38 eyes of 27 patients suffering from progressive keratoconus who were candidates for CXL. UDVA and the anterior and posterior corneal curvatures were assessed prior to and 12 months after CXL. Data were analyzed by the paired t-test, and $p < 0.05$ was considered significant.

Results: One year after the CXL, the mean UDVA significantly improved by 0.1 ± 0.25 logarithm of the minimal angle of resolution ($p = 0.012$). Changes for steep keratometry values, flat keratometry, and mean keratometry on the anterior corneal surface were statistically significant (all $p < 0.005$). However,

the difference observed in maximum keratometry and astigmatism was not significant ($p = 0.421$ and $p = 0.745$, respectively). After 12 months, all four keratometry values on the posterior corneal surface had increased significantly ($p < 0.005$), while no significant change was observed in astigmatism ($p = 0.303$).

Conclusions: Corneal collagen crosslinking has been revealed as an effective and minimally invasive intervention for the treatment of progressive keratoconus that can improve UDVA.

Apr 05, 2025 (Sat) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Comparison of Anterior Chamber Iris-Fixated IOL and Microkeratome-Assisted LASIK Surgery Outcome in Mongolian Adults

First Author: Narangarav GUNCHIN-ISH
Co-Author(s): Soningerel BAT-OCHIR

Purpose: There are significantly few studies which have introduced the comparison of anterior chamber iris-fixated intraocular lens (IOL) implantation and Microkeratome-Assisted LASIK surgery to correct high Myopia. Thus, in the present study, we aimed to compare anterior iris-fixated phakic intraocular lens and LASIK surgery in Mongolian adults.

Methods: This study was conducted of 68 eyes with high myopia was conducted. Females comprised 69.12% ($n=47$) in both groups. The mean age of the participants was 31.47 ± 9.29 in the iris-fixated phakic IOL group and 29.40 ± 6.59 in the LASIK group.

Results: Pre-operative uncorrected visual acuity (UCVA) was 1.46 ± 6.56 LogMAR in the Iris-fixated phakic IOL group, and 2 weeks after surgery, UCVA had increased to 0.22 ± 21.18 LogMAR. In the LASIK, pre-operative UCVA was 0.97 ± 17.20 , and the value was 0.06 ± 18.23 LogMAR 2 weeks after surgery. Pre-operative best-corrected visual acuity (BCVA) Iris-fixated phakic IOL and LASIK group were 0.46 ± 18.38 and 0.02 ± 4.31 LogMAR, respectively.

Conclusions: The best-corrected visual acuity and was better for LASIK surgery than Iris-fixated phakic IOL surgery. The techniques resulted in similar visual outcomes at a minimum follow-up of 2 weeks after surgery.

Apr 05, 2025 (Sat) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Corneal Epithelial and Stromal Thickness Profile After Photorefractive Keratectomy (PRK) Using Anterior Segment Optical Coherence Tomography (AS-OCT)

First Author: Basitali LAKHANI
Co-Author(s): Niruban GANESAN

Purpose: To study the epithelial remodeling after photorefractive keratectomy (PRK) using Anterior segment Optical Coherence Tomography (AS-OCT).

Methods: This prospective observational study was performed from October 2018 to March 2020. A total of 85 eyes with simple myopia in the age group of 21-38 years and spherical equivalent range of -2.25 to -6 underwent PRK with Mytomicin-C (MMC). Epithelial and corneal thickness maps were acquired by AS-OCT preoperatively and postoperatively at 1 week, 1 month, 3 months, and 6 months.

Results: The visual acuity of all patients was 0 LogMAR until 6 months. We observed epithelial thickening of the cornea at 1 week. followed by a decrease at 1 month and a slight increase at 3 months and 6 months. The mean corneal thickness increased from the baseline values in the central 2mm 2 to 5mm and 5 to 7mm zones at 6 months respectively ($p < 0.001$).

Conclusions: The corneal epithelial thickness increased up to 6 months after PRK-MMC and did not have any significant effect on the visual acuity.

Apr 05, 2025 (Sat) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Correlation of Vault Changes With Dysfunctional Lens Index and Nuclear Sclerosis After Presbyopic Phakic Intraocular Lens Implantation

First Author: Manpreet KAUR
Co-Author(s): Sridevi NAIR, Jeewan TITIYAL

Purpose: To evaluate refractive outcomes, vault, dysfunctional lens index (DLI), and nuclear sclerosis after posterior chamber presbyopic phakic intraocular lens (pIOL) implantation.

Methods: Prospective interventional study of 48 eyes implanted with presbyopic pIOLs. The primary outcome was UNVA. Secondary outcomes were UIVA, UDVA, vault, DLI, and cataract formation at 5 years.

Results: The mean age of patients was 46.2 ± 3.7 years. At 5 years, 75% of eyes achieved UNVA of 20/40 or better, while all eyes achieved UDVA of 20/20 and UIVA of 20/32 or better. Vault decreased from $571.2 \pm 241.2 \mu\text{m}$ to $348.7 \pm 179.2 \mu\text{m}$ over 5 years ($p=0.001$); DLI decreased from 8.38 ± 0.89 to 6.32 ± 1.21 ($p<0.001$). A decrease in vault correlated with a decrease in DLI (Pearson coeff 0.221; $p=0.027$). Nuclear cataract developed in 20% (6/48); the mean time to cataract surgery was 22.3 ± 13.2 months, with DLI 2.1 ± 0.63 .

Conclusions: Presbyopic pIOL provides spectacle independence for nearly 75% of cases. A positive correlation was observed between a decrease in vault and DLI over 5 years. Nuclear sclerosis requiring surgery was observed in 20% of cases within the initial 2 years, associated with decreased DLI.

Apr 05, 2025 (Sat) 11:30 - 13:00

Venue: Suryamukhee Hall 401

Intraocular Lens Calculation of a Non-Diffractive Wavefront-Shaping Extended Depth of Focus Intraocular Lens Following Myopic LASIK

First Author: Thomas KOHNEN

Co-Author(s): Julian BUCUR, Tyll JANDEWERTH, Klemens KAISER, Titus SCHUG

Purpose: To evaluate ray-tracing for intraocular lens (IOL) calculation of a non-diffractive wavefront-shaping extended depth of focus IOL after myopic laser in-situ keratomileusis (LASIK) without historic data.

Methods: In this retrospective, consecutive case series, we included patients after cataract surgery with implantation of AcrySof IQ Vivity (Alcon) after myopic LASIK. Preoperative assessments included Pentacam AXL (Oculus Optikgeräte GmbH). Seven IOL calculation formulas for use in eyes after myopic LASIK have been analyzed: Potvin-Hill-Shammas-PM, Barrett True-K No History with measured (mBTK) and predicted (pBTK) posterior corneal astigmatism,

OKULIX ray-tracing, PEARL DGS and PEARL DGS with posterior radial curvature (PRC), Hoffer QST, and EVO 2.0. Prediction errors (PE) were analyzed using an online tool (Eyetemis), which meets ISO standards of assessing accuracy based on precision and accuracy using robust t-tests comparing trimmed means of data with respect to heteroscedasticity.

Results: Thirty-six eyes of twenty-four patients were enrolled. Trimmed mean PE values of all formulas were not significantly different from zero, except for OKULIX ray-tracing ($p<0.01$). The best-performing formulas in terms of trimmed mean absolute PE (tMAE) were Potvin-Hill-Shammas-PM and EVO 2.0 (both 0.30 diopters [D]). Potvin-Hill-Shammas-PM (58%) and mBTK (50%) showed the most eyes within $\pm 0.25\text{D}$. While EVO 2.0, Potvin-Hill Shammas PM, and mBTK landed within $\pm 0.50\text{D}$ in $\geq 75\%$ of eyes, all seven formulas landed within $\pm 1.00\text{D}$ in $\geq 89\%$ of eyes.

Conclusions: The Potvin-Hill-Shammas-PM formula best predicted actual postoperative refraction in myopic LASIK patients in terms of tMAE and percent within target refraction.

Apr 05, 2025 (Sat) 11:30 - 13:00

Venue: Suryamukhee Hall 401

Management of Residual Refraction After Trifocal IOL Implantation Using SMILE Surgery

First Author: Fetih Furkan ARSLAN

Co-Author(s): Njomza HIMA-MUSA, Ceren Ece SEMIZ, Faruk SEMIZ

Purpose: To assess the effectiveness of Small Incision Lenticule Extraction (SMILE) in improving visual acuity and patient satisfaction following trifocal intraocular lens (IOL) implantation.

Methods: This retrospective study included 124 patients (162 eyes) who underwent cataract surgery with Zeiss AT Lisa tri 839MP IOL implantation. Preoperative myopic refraction ranged from -1.0 to -2.75 diopters (D), and astigmatism ranged from -0.75 to -2.50 D. Following SMILE, all patients were followed for 1 year. They completed questionnaires both before and 1 year after SMILE to assess their perceptions of vision and vision difficulties. ClinicalTrials.gov Identifier: NCT04693663.

Results: The uncorrected distance visual acuity increased from 0.66 ± 0.07 log MAR preoperatively to 0.07 ± 0.02 log MAR at 12 months postoperatively ($p < 0.001$). Patient satisfaction measures after SMILE significantly increased.

Conclusions: The study showed that using the SMILE technique can effectively address residual refraction, a common concern after trifocal IOL implantation. This treatment modality was found to be safe and successful in enhancing visual acuity for patients with pseudophakic myopic refractions. Ultimately, the use of SMILE post-trifocal IOL implantation can lead to increased patient satisfaction.

Apr 05, 2025 (Sat) 11:30 - 13:00
Venue: Suryamukhee Hall 401

One-Year Clinical Outcomes of Two Different Ablation Profiles (Regular and Strong) With the SUPRACOR Presbyopic Lasik Treatment

First Author: Robert ANG

Purpose: To evaluate refractive and visual outcomes of the presbyopic laser algorithm SUPRACOR with two different ablation profiles (strong and regular) using the TECHNOLAS TENEO 317 Model 2 Excimer Laser Platform.

Methods: This was a prospective, 12-month, randomized, single-surgeon study of 60 patients (36 myopic, 24 hyperopic). The dominant eye targeted for emmetropia was treated using the aspheric ablation profile PROSCAN, and the non-dominant eye was randomized to either SUPRACOR strong or SUPRACOR regular ablation profile with a refractive target of $-0.50D$. Examinations included manifest refraction spherical equivalent (MRSE), monocular and binocular visual acuity (VA) at all distances (uncorrected [U], corrected [C], distance [D], intermediate [I], and near [N]), defocus curve, contrast sensitivity, and patient-reported outcomes measures.

Results: At 1 year post-surgery, mean \pm standard deviation (SD) MRSE improved from $-1.54 \pm 3.13D$ preoperatively to $-0.57 \pm 0.47D$ (regular) and from $-2.84 \pm 2.81D$ to $-0.71 \pm 0.56D$ (strong). Mean logMAR \pm SD binocular CDVA was -0.01 ± 0.03 (regular) and -0.01 ± 0.04 (strong); UDVA was -0.01 ± 0.04 (regular) and 0.00 ± 0.05 (strong); UIVA was 0.00 ± 0.06 (regular) and 0.00 ± 0.08 (strong); UNVA was 0.09 ± 0.10

(regular) and 0.10 ± 0.12 (strong). No statistically significant differences were observed between groups. The Binocular defocus curve reported useful VA (≥ 0.2 logMAR) up to $-2.5D$, and patient-reported questionnaires showed high spectacle independence for both groups.

Conclusions: Both treatment options demonstrated restoration of VA at intermediate and near distances. Patients treated with SUPRACOR regular or strong in the non-dominant eye and PROSCAN in the dominant eye achieved a high level of VA over the full range of distances, with no statistical differences between groups.

Apr 05, 2025 (Sat) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Residual Refraction Correction After LASIK By Adjusting Corneal Q-Value with SMILE Module

First Author: Faruk SEMIZ

Co-Author(s): Fetih Furkan ARSLAN, Njomza HIMA-MUSA, Ceren Ece SEMIZ

Purpose: To show the effectiveness of addressing hyperopia residual refraction and presbyopia post-LASIK by altering corneal shape (Q value) through fresh intrastromal myopic lenticule transplantation (FMLT) using the SMILE module.

Methods: This study involved 64 eyes of 32 patients aged between 38 and 55 years old, who presented with post-LASIK hyperopic residual refraction. The patients had residual hyperopia and astigmatism ranging from $+0.75$ to $+2.75 D$ and $+0.75$ to $+2.50 D$, respectively. Fresh Intrastromal Myopic Lenticule Transplantation was performed using the SMILE module based on corneal topography. To prevent glare disturbances while driving at night, the donor lenticule diameter was maintained 1 mm larger than the recipient's mesopic pupil size. All patients were monitored for an average of 1 year. ClinicalTrials.gov Identifier NCT04793893

Results: The improvement in UDVA from preoperative 0.67 ± 0.08 LogMAR to postoperative at 12 months (0.07 ± 0.05 LogMAR; $p < 0.001$) was observed. Preoperative UNVA (near visual acuity at 40 cm) was J7, and postoperative UNVA at 40 cm was J2. Preoperative UNVA at 80 cm was J6, and postoperative UNVA at 80 cm was J3.

Conclusions: Fresh intrastromal myopic lenticule transplantation is a safe and effective treatment for hyperopic residual refractions and presbyopia post-LASIK, modifying the corneal Q value. This procedure improves both distance and near visual acuity.

Apr 05, 2025 (Sat) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Safety and Efficacy of Customised Photorefractive Keratectomy Treatments Followed by Corneal Crosslinking in Patients With Keratoconus

First Author: Thomas KOHNEN
Co-Author(s): Moritz KERN, Titus SCHUG

Purpose: With the evolution of keratoconus treatments, the integration of corneal crosslinking (CXL) has significantly curbed disease progression. Over time, more demand for good refractive outcomes is expected by the patients. Simultaneous photorefractive keratectomy (PRK) and CXL have been shown to aid in visual rehabilitation. Postoperative refraction, visual acuity, and patient satisfaction were evaluated in keratoconus patients following customised PRK and CXL.

Methods: In this retrospective study, patients with keratoconus underwent customised PRK with subsequent crosslinking using the Athens protocol.

Results: To date, the study includes three participants, with plans to expand the cohort to nine until the Meeting, ensuring a minimum three-month follow-up period for each. Preoperative refraction ranged from +2.25 / -5.50 x 65° to 0.50 / -2.25 x 65°. Postoperative refraction ranged from 0 / -1.0 x 96° to -1.50 / -2.50 x 17°. Mean uncorrected and corrected visual acuity preoperatively ranged from 20/63 to 20/80 and 20/25 to 20/20 respectively. Postoperative visual acuity without correction ranged from 20/125 to 20/25. Visual acuity with correction had a range from 20/20 to 20/16. Patient satisfaction was high.

Conclusions: This preliminary study demonstrates that combined customised PRK with CXL yields positive refractive outcomes and high levels of patient satisfaction in treating keratoconus. Further research with a larger sample size is needed to confirm these results.

Apr 05, 2025 (Sat) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Successful Treatment of Hyperopia and Presbyopia Through Lenticule Transplantation With SMILE Surgery

First Author: Faruk SEMIZ
Co-Author(s): Fetih Furkan ARSLAN, Njomza HIMA-MUSA, Ceren Ece SEMIZ

Purpose: The objective of this study is to explore the efficacy of treating both distance and near visual acuity by modifying the corneal shape (Q value) through the implantation of a myopic lenticule using the Small Incision Lenticule Extraction technique. This approach aims to address the challenges associated with hyperopia and presbyopia.

Methods: A total of 30 patients (40 eyes) participated in this study. The participants were aged between 20 and 50 years, with a minimum corneal thickness of 450 µm and a maximum of 550 µm. The lenticule implantation was performed using allogenic implants sourced from myopic patients with refractive errors ranging from -4.0 D to -6.50 D. These lenticules were implanted into hyperopic patients with refractive errors ranging from +4.0 D to +6.50 D, and astigmatism between +0.75 D and +1.75 D, utilizing the Small Incision Lenticule Extraction module according to corneal topography. The patients were followed for one year. ClinicalTrials.gov Identifier: NCT04616144.

Results: The Q value decreased from -0.50 ± 0.04 log MAR preoperatively to -0.78 ± 0.05 log MAR one year postoperatively ($p < 0.001$). Uncorrected near visual acuity (UNVA) at 35 cm improved from J7 preoperatively to J2 postoperatively, and UNVA at 70 cm improved from J6 preoperatively to J3 postoperatively.

Conclusions: This method effectively treats distance, intermediate, and near vision by reshaping the cornea. It is safe and effective for hyperopia and presbyopia patients without cataracts and with corneal thickness below 550 µm.

Apr 05, 2025 (Sat) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Unpredictable Outcomes Post Phakic Intraocular Lens Implantation

First Author: Garvita DABAS
Co-Author(s): Kruthika SIDDAPPA HIKKALAGUTTI, Kanika BHARDWAJ, Tulika CHAUHAN

Purpose: Phakic IOL implantation is a viable option for high myopic errors and has promising visual outcomes. However, despite meticulous pre-operative planning and calculations, one may encounter unpredictable outcomes post-phakic IOL implantation. At such times, it becomes difficult to decide whether to intervene or not. We hereby present a compilation of four such cases and their management.

Methods: Records of all patients who underwent phakic IOL implantation in the refractive department of our institute in the past 2 years (Jan 2021 to Dec 2022) were reviewed. All cases who had any significant finding in the early post-operative period in terms of decreased visual acuity, raised intra-ocular pressure, and findings on anterior segment optical coherence tomography (AS-OCT) were included. Those who underwent additional surgical intervention post phakic IOL implantation were also included.

Results: Out of 4 eyes of 4 patients, 1 eye underwent toric, and 3 eyes underwent spherical phakic IOL implantation. The eye with toric phakic IOL had residual cylindrical error in early postoperative period, it underwent redialling twice and was ultimately explanted to be replaced with a larger size phakic IOL. Out of the remaining 3 eyes, 1 eye had reverse orientation and required re-surgery for proper orientation. One eye had an extremely high vault and was kept under observation. One eye had an extremely low vault, and needed phakic IOL explantation with a larger size phakic IOL implantation.

Conclusions: Despite best efforts one may land up into unpredictable outcomes. Decision to intervene depends primarily on clinical examination and AS-OCT findings in such cases.

Apr 05, 2025 (Sat) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Visual Outcomes of 1500 Eyes Post-SMILE Surgery Using a 2000 Hz System

First Author: Sonu GOEL
Co-Author(s): Madhav GOEL

Purpose: The study was performed to evaluate visual outcomes in terms of UCVA BCVA. Aberrations. Quality of vision and astigmatism correction

Methods: Patients were evaluated for 1 UCVA, 2 best corrected visual acuity, 3 HOA pre- and post-astigmatism magnitude, and axis surgeries were performed by a single surgeon using Visumax 800 over a period of one year and follow-up for 6 months.

Results: Excellent outcome was achieved in all 1500 eyes with myopia ranging from -1 to -8 and cyl of -0.25 to -4.5 diopters significant fall in HOA with almost 90% patients close to -0.26 +~.

Conclusions: SMILE Pro, with inside-out techniques, is very effective in terms of refractive correction.

Retina (Medical)

Apr 04, 2025 (Fri) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Assessment of the Clinical Effects of Anti-Ang-2 With Faricimab Based on Key Outcomes From the YOSEMITE/RHINE Trials and Real-World FARETINA/FARWIDE Studies in Patients With Diabetic Macular Edema (DME)

First Author: Paisan RUAMVIBOONSUK
Co-Author(s): Francis ABREU, Kara GIBSON, Judy KIM, Niranjana MANOHARAN, David TABANO

Purpose: Summarise key findings from phase 3 YOSEMITE/RHINE trials and real-world FARETINA/FARWIDE studies of faricimab in DME patients.

Methods: Patients in YOSEMITE/RHINE (NCT03622580/ NCT03622593; n=1,891) received faricimab 6mg every 8 weeks (Q8W) or treat-and-extend; or aflibercept 2mg Q8W after loading doses.

Efficacy and safety were assessed through week 100. FARETINA and FARWIDE, two retrospective studies utilizing 2022-2023 data from IRIS Registry (US), and Medisoft EHR (UK), respectively, assessed patients receiving faricimab for ≥ 12 months.

Results: In YOSEMITE/RHINE, robust vision gains comparable with aflibercept, and greater central subfield thickness (CST) reductions with faricimab vs aflibercept (FvA) were achieved. At year 2, $\sim 80\%$ of faricimab-treated patients achieved $\geq Q12W$ dosing. First CST $< 280\mu\text{m}$ or absence of intraretinal fluid were achieved faster with fewer injections with FvA. After 16 weeks of head-to-head dosing, more patients achieved macular leakage resolution with FvA. Hyperreflective foci volume reductions were greater at week 48, and epiretinal membrane formation risk was lower at 2 years, with FvA. In FARETINA (n=1,139) and FARWIDE (n=101), mean (SD) faricimab injection frequencies during months 1–6 vs 7–12 were 3.5 (1.6) vs 1.7 (1.7) and 4.5 (0.9) vs 1.8 (1.3), respectively. Visual acuity mean (SD) change from baseline at month 12 was +3.8 (11.6) and +5.3 (1.2) letters, respectively. Mean (SD) CST improvement in FARETINA (n=96 eyes) at 12 months was -62.0 [0.8] μm .

Conclusions: Findings from YOSEMITE/RHINE trials demonstrated robust disease control and extended durability with faricimab. Retinal biomarkers showed improvements in a larger proportion of eyes with FvA. Faricimab was well tolerated and supported by increasing real-world data.

Apr 04, 2025 (Fri) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Comparison of the Results of Two Common Genetic Testing Panels for Inherited Retinal Degeneration

First Author: Hossein AMERI
Co-Author(s): Yichneg BAO, Andrew MOSHFEGHI, Margaret RUNNER, Betty SITU

Purpose: The aim of this study was to compare the test results of two laboratories providing widely available free-of-charge sponsored genetic tests for patients with inherited retinal degeneration (IRD).

Methods: This retrospective study examined genetic testing reports from patients who underwent testing

via Invitae or Blueprint Genetics (BG) IRD panels at an academic institution.

Results: A total of 216 genetic testing reports, 109 from Invitae and 107 from BG, were included in the study. The test positivity rate was 33.9% for Invitae and 42.1% for BG reports. Autosomal recessive, autosomal dominant, and X-linked IRD constituted 70.3%, 27%, and 2.7% of positive Invitae reports and 51.1%, 35.6%, and 8.9% of positive BG reports, respectively. Invitae reports contained an average of 4.1 variants of unknown significance (VUS) and 0.87 pathogenic variants; these numbers were significantly lower for BG reports, with an average of 1.5 VUS and 0.58 pathogenic variants. Invitae issued 59 follow-up amendments for 40 original reports, while BG issued only 3 amendments for 3 original reports. The amendments led to a change in the classification of 71 genes in the Invitae reports and 4 genes in the BG reports. 66.2% of Invitae amendments reclassified VUS as benign, and 21.1% changed VUS to pathogenic or likely pathogenic.

Conclusions: This study highlights significant differences in genetic testing reporting between Invitae and BG laboratories, underscoring the importance of clinical judgment when interpreting the test results.

Apr 04, 2025 (Fri) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Evaluation of Renal Function After Intravitreal Injection of Bevacizumab in Patients With or Without Diabetic Kidney Disease

First Author: Tariq ALI
Co-Author(s): Naznin SULTANA

Purpose: To investigate the effect of intravitreal bevacizumab (anti-VEGF) injection on renal function.

Methods: This was a quasi-experimental study. A total of 40 patients with retinopathy treated with intravitreal injection bevacizumab were included in this study, out of which 20 patients had diabetic kidney disease (DKD) and the remaining 20 patients without diabetic kidney disease (No DKD). The DKD patients had Urinary Albumin Creatinine Ratio (UACR) ≥ 30 mg/g or Effective Glomerular Filtration Rate (eGFR) $< 60\text{mL}/\text{min}/1.73\text{m}^2$, whereas No DKD

patients had UACR < 30 mg/g or eGFR \geq 60ml/min/1.73m². UACR, Serum Creatinine, and eGFR were measured pre-injection and 1 month after 3rd dose of intravitreal injection of bevacizumab. The results were compared between the groups.

Results: The mean pre-injection serum creatinine was 1.23 \pm 0.53 mg/dl in DKD and 0.87 \pm 0.22 mg/dl in No DKD. The mean post-injection serum creatinine was 1.19 \pm 0.45 mg/dl in DKD and 0.87 \pm 0.16 mg/dl in No DKD. The mean pre-injection eGFR was 69.35 \pm 25.91 ml/min/1.73m² in DKD and 96.7 \pm 30.59 ml/min/1.73m² in No DKD. The mean post-injection eGFR was 73.3 \pm 33.87 ml/min/1.73m² in DKD and 93.6 \pm 29.7 ml/min/1.73m² in No DKD. The mean pre-injection UACR was 1294.9 \pm 968.26 mg/g in DKD and 13.8 \pm 5.99 mg/g in No DKD. The mean post-injection of UACR was 1142.11 \pm 1024.06 mg/g in DKD and 13.01 \pm 6.87 mg/g in No DKD. The mean difference of serum creatinine, eGFR, and UACR were not significant ($p > 0.05$) between pre-injection and post-injection groups.

Conclusions: Intravitreal injection Bevacizumab has no adverse effect on kidney function in patients with diabetic kidney disease

Apr 04, 2025 (Fri) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Faricimab for Polypoidal Choroidal Vasculopathy: Week 16 Results From the Phase 3b/4 SALWEEN Trial

First Author: Timothy LAI
Co-Author(s): Ruobing BAI, Gemmy CHEUNG, Anh Nguyen DUC, Tomohiro IIDA, Philippe MARGARON

Purpose: SALWEEN (ISRCTN69073386) is a phase 3b/4 multicentre, open-label trial evaluating the effectiveness, safety, and durability of faricimab in patients with polypoidal choroidal vasculopathy (PCV) from Asian countries. Here, we present interim, week 16 results.

Methods: Patients with symptomatic macular PCV (N=135) received 4 initial every-4-week (Q4W) doses of faricimab 6.0 mg, followed by faricimab Q8W, Q12W or Q16W based on disease activity assessments at weeks 20/24. At weeks 44/48 through 104, patients will follow a treat-and-extend-based regimen with treatment intervals ranging from Q8W

to Q20W. Primary endpoint: change from baseline best-corrected visual acuity (BCVA) averaged over weeks 40–48. Week 16 analyses: change from baseline BCVA and central subfield thickness (CST), the proportion of patients with no intra- and subretinal fluid (IRF and SRF), resolution of polypoidal lesions (PL), as assessed by indocyanine green angiography, and safety.

Results: Mean (95% CI) BCVA and CST changes from baseline at week 16 were +7.8 letters (+6.4, +9.3) and -144.6 μ m (-167.0, -122.2), respectively. The proportion of patients with no IRF/SRF at week 16 was 80.3%. Amongst patients with baseline PL as confirmed by the central reading centre (CRC) and who attended week 16 visits (n=100), 51.0% had complete regression of PL. Faricimab was well tolerated. There was 1 reported case of retinal vasculitis, however, this was not supported by the independent CRC on the review of images.

Conclusions: Dual angiotensin-2/vascular endothelial growth factor-A inhibition with faricimab resulted in robust improvements in vision and anatomy, and regression of PL, after the loading period in patients with PCV from Asian countries.

Apr 04, 2025 (Fri) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Five-Year Outcomes of Eplerenone in Central Serous Chorioretinopathy

First Author: Pradeep KUMAR

Purpose: The research was carried out in a tertiary care eye institute where the visual and anatomical outcomes of fresh cases of acute CSCR were treated with oral eplerenone.

Methods: Randomised controlled trial, interventional study. At baseline, BCVA, contrast, OCT characteristics, and FFA & ICGA characteristics of every case were noted. The patients were randomised into two subgroups: Group 1 treated with eplerenone and Group 2 with placebo. The patients were treated with Oral Eplerenone 50 mg once a day with fortnightly serum electrolyte monitoring. There was a provision for rescue treatment for all cases which failed to achieve NSD resolution at 12 weeks. After five years, these patients

were again tested for the same parameters along with documentation of a total number of recurrences.

Results: N- 84 patients Gp Eplerenone: 42 patients were initially recruited, out of which 37 could be analyzed at the end of five years. Gp Placebo: 42 patients were initially recruited, out of which 35 could be analyzed at the end of five years. BCVA did not show a statistically significant difference between the two groups. Contrast sensitivity was better in the Eplerenone group. OCT biomarkers of Ellipsoid zone integrity and RPE Bruch's disturbance were better in the plerenone group. FFA & ICGA characteristics showed improvement in the Eplerenone group. The number of recurrences and approximate time duration of NSD were significantly less in the Eplerenone group.

Conclusions: Oral Eplerenone should be used in acute CSCR to achieve better visual and anatomical outcomes.

Apr 04, 2025 (Fri) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Implication of Presence of Telangiectatic Capillaries (Telcaps), in the Management of Chronic Cystoid Macular Edema (CMO) in Retinal Branch Retinal Vein Occlusion

First Author: Ranjana MATHUR
Co-Author(s): Cheng Sim Anna TAN

Purpose: To study the role of multimodal imaging in detecting Telcaps and management of CMO. Changes in the central foveal thickness post-treatment, final BCVA, retinal microvascular assessment, response of telcaps to therapy, and impact on IVI were assessed.

Methods: A retrospective case study of 11 eyes in 11 patients who underwent multimodal imaging to delineate telcaps. We assessed their response to therapy.

Results: The average age was 68.9 years (range 53-81), SD \pm 10.42), and the baseline visual acuity was 6/12 to 6/120. On OCT, the larger capillary aneurysms were seen as vertically oval structures (diameter range 347-189 μ) with heterogeneous lumen. The severity of hard exudates was predictive of the presence of Telcaps. All patients underwent

Intravitreal injection with complete resolution of CMO in 6 patients. Two of them underwent focal lasers but had to be maintained on intravitreal Dexamethasone injection every 3-4 months. Five were treated with laser photocoagulation, facilitated by ICGA, which delineated the Telcap with resolution or reduction of CMO. The final BCVA range was 6/9 to counting fingers. The mean central sub-field thickness decreased from 453 \pm 119 μ m at baseline to 317 \pm 85 μ m at the final visit.

Conclusions: In this series, telCaps were seen in chronic CMO and a cluster of chronic hard exudates. Monotherapy with intravitreal injection can successfully reduce the small caliber of telCaps, and angiographically guided focal laser to the larger Telcaps may be a better strategy. The affinity of ICGA for lipids and proteins within Telcaps is likely the driver for the late staining of TelCaps in ICGA.

Apr 04, 2025 (Fri) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Investigation of an Oral Retinol Binding Protein 4 Antagonist in the Treatment of Childhood-Onset Stargardt Disease

First Author: John GRIGG
Co-Author(s): Fred CHEN, Ta Ching CHEN, Robyn JAMIESON, Nathan MATA

Purpose: Data from a 24-month, open-label, Phase 2 study of adolescent Stargardt Disease 1 (STGD1) patients treated with tinlarebant, an orally available retinol binding protein 4 (RBP4) antagonist, is presented.

Methods: Thirteen STGD1 patients aged 12-18 years showing only hyperautofluorescent (QDAF) lesions at baseline were enrolled. Tinlarebant (5 mg/day) was administered over 24 months. Atrophic lesions identified as definitely decreased autofluorescence (DDAF) on fundus autofluorescence (FAF) photography, visual function, and adverse events were monitored during treatment. Genotype-phenotype relationships were also evaluated.

Results: Tinlarebant produced a sustained reduction of RBP4 (80-90%) throughout the treatment period and was reversible upon drug cessation. FAF imaging revealed no incident DDAF lesions in 5 subjects

(42%) at Month 24. In 6 of 7 subjects showing incident DDAF lesions, increased DDAF lesion area corresponded with decreased QDAF lesion area and there was no significant increase in the overall lesion QDAF+DDAF area over the treatment period. BCVA was stable with a mean loss of 5 letters and all adverse events were mild in severity. Genetic analyses showed that a majority of subjects (67%) harbored severe bi-allelic ABCA4 mutations; 62.5% developed DDAF lesions after Month 12 on average. Loss of BCVA and lesion growth varied significantly among sibling subjects with identical ABCA4 genotypes.

Conclusions: The safety and efficacy of tinlarebant over 24 months of treatment suggest that reduced retinol delivery to the eye may be an effective treatment approach for STGD1 patients. Differences in disease progression among subjects with identical ABCA4 genotypes are worthy of further study.

Apr 04, 2025 (Fri) 09:45 - 11:15
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Long-Term Up to 7 Years Efficacy and Safety Outcomes of the Port Delivery System (PDS) for Neovascular Age-Related Macular Degeneration (nAMD) Patients From Ladder to Portal Study

First Author: Shih Jen CHEN
Co-Author(s): Steven BLOTNER, Dominic HEINRICH, Sophie LEPOGAM, Manejeh YAQUB

Purpose: Patients with nAMD require frequent anti-VEGF injections with a high treatment burden. The PDS delivers continuous suppression of VEGF in the eye without the need for frequent injections. This abstract presents long-term efficacy and safety data from Ladder to Portal (NCT02510794) patients treated with the PDS.

Methods: Ladder patients received the PDS (10, 40, or 100 mg/mL refills as needed) or monthly intravitreal ranibizumab 0.5 mg injections. Once rolled over to Portal, patients received PDS 100 mg/mL with fixed refills every 24 weeks. Efficacy (prior PDS 100 mg/mL; at 5.5 years) and safety (all PDS pooled) outcomes were assessed at the study exit.

Results: In the prior PDS 100 mg/ml patients (n=59), BCVA was 20/54 at 5.5 years from Ladder baseline

(BL) with a mean (95% CI) change from BL BCVA: -7.4 letters (-12.9, -1.9). Center point thickness was stable; mean (95% CI) change from BL of -19.6 μ m (-45.6, 6.3). In all PDS patients (n=197) up to 7 years, the most common ocular adverse events of special interest (AESIs) in study eyes were cataract in 51 patients (25.9%), vitreous hemorrhage in 18 patients (9.1%), and conjunctival erosion in 17 patients (8.6%).

Conclusions: The Ladder to Portal cohort was followed until study exit, up to 7 years for some patients, with 5.5 years follow up for the majority. The mean BCVA of patients treated with PDS 100 mg/ml showed a Snellen equivalent of 20/54 with stable anatomy. The PDS was generally well-tolerated, with a well-characterized safety profile.

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Venue: Suryamukhee Hall 401

Port Delivery System With Ranibizumab (PDS) for Continuous Treatment in Diabetic Retinopathy (DR) Without Centre-Involved Diabetic Macular Edema (CI-DME): 2-Year Data From the Phase 3 Pavilion Trial

First Author: Timothy LAI
Co-Author(s): Carl C. AWH, Margaret CHANG, Arshad KHANANI, Paul LATKANY, Kailin TIAN

Purpose: To evaluate long-term (week 100) results of continuous ranibizumab 100 mg/mL delivery via PDS with fixed refill-exchanges every 36 weeks (PDS Q36W) in patients with DR without CI-DME.

Methods: In the phase 3 Pavilion trial (NCT04503551), patients were randomized 5:3 to PDS Q36W or control. PDS Q36W patients received two ranibizumab 0.5 mg loading doses before PDS implantation at week (W) 4. Control patients received standard-of-care (monthly clinical monitoring) until W60; control patients then received two ranibizumab doses before PDS implantation at W64 (control-PDS Q36W). PDS refill-exchange occurred Q36W through W100. Patients could receive supplemental ranibizumab treatment at each study visit except refill-exchange visits.

Results: In the PDS Q36W arm (n=106), 80.2% (95% CI, 72.6%–87.8%) of patients achieved \geq 2-step DR severity scale (DRSS) improvement from baseline at W100. Through W100, 2% of PDS Q36W patients

received supplemental treatment. In the control arm, 29 patients were implanted, of whom 91.7% (95% CI, 80.6%–100.0%) achieved ≥ 2 -step DRSS improvement from baseline at W100 (observed data). No control-PDS Q36W patients received supplemental treatment after PDS implantation. Safety results were consistent with the primary analysis. One PDS Q36W patient developed endophthalmitis and received a refill-exchange after successful treatment. No control-PDS Q36W patients developed endophthalmitis after PDS implantation. No device dislocation events were reported in either arm.

Conclusions: Long-term Pavilion results support the primary analysis, with PDS Q36W showing continued efficacy through 2 years. No new safety signals were observed through W100. PDS has the potential to provide long-term disease control with one refill-exchange every 9 months.

Apr 04, 2025 (Fri) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Quantitative Characterization of Types 1 and 2 Macular Neovascularization in Neovascular Age-Related Macular Degeneration With Intravitreal Conbercept: An Analysis Utilizing Optical Coherence Tomography Angiography

First Author: Liu TINGTING

Purpose: To delineate the quantitative characterization of two distinct subtypes of macular neovascularization (MNV) in patients with neovascular age-related macular degeneration (nAMD) treated with intravitreal conbercept (IVC), employing optical coherence tomography (OCT) and OCT angiography (OCTA) metrics.

Methods: In this retrospective and observational case series, subjects were categorized into Type 1 or Type 2 MNV groups. A comprehensive array of OCT and OCTA parameters was meticulously assessed, including central macular thickness (CMT), MNV area, vessel tortuosity (VT), and vessel dispersion (VDisp). Subjects underwent a standardized IVC regimen [3+ pro re nata (PRN)] with a 12-month follow-up.

Results: A total of 101 participants met the inclusion criteria, with Type 1 MNV (n=51, mean age 67.32 \pm 9.12 years) and Type 2 MNV (n=50,

mean age 64.74 \pm 5.21 years). The mean number of IVC injections was 3.98 \pm 1.53 for type 1 MNV and 3.73 \pm 0.81 for type 2 MNV. Visual acuity was significantly improved in both MNV subtypes, with a marked reduction in CMT and MNV area (p<0.05) 12 mo after treatment. In the case of type 2 MNV, a significant reduction in VT was noted (p<0.05), while type 1 MNV showed no significant change in VT. And VDisp was not significantly changed in all patients. In type 1 MNV, there was a significant positive correlation between final BCVA (LogMAR) and pre- and post-treatment CMT. In type 2 MNV, there was a significant positive correlation between the number of drug injections and final CMT.

Conclusions: IVC demonstrates efficacy in the treatment of MNV types 1 and 2 with significant improvements in visual acuity and substantial reductions in CMT and MNV areas. These findings bear significant implications for the stratification and prognostication of MNV, providing an enriched understanding of disease progression and therapeutic response.

Apr 04, 2025 (Fri) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Response of Large or Serous Pigment Epithelial Detachment to Faricimab Versus Aflibercept in Patients With Neovascular Age-Related Macular Degeneration: A Subgroup Analysis From TENAYA and LUCERNE

First Author: Kenneth FONG

Co-Author(s): Emma HARRELL, Timothy LAI, Philippe MARGARON, Shriji PATEL, Ming YANG

Purpose: Post-hoc analysis of TENAYA (NCT03823287)/LUCERNE (NCT03823300) trials to evaluate pigment epithelial detachment (PED) outcomes of faricimab treatment in patients with neovascular age-related macular degeneration (nAMD).

Methods: Treatment-naïve nAMD patients (n=1329) were randomized 1:1 to faricimab 6.0 mg up to every 16 weeks (n=665) or aflibercept 2.0 mg every 8 weeks (n=664) after loading. PED, defined as retinal pigment epithelium elevations ≥ 350 μ m wide, was graded as predominantly/purely serous (serous PEDs) or predominantly/only fibrovascular (fibrovascular

PEDs). The assessments included baseline PED characteristics, proportion of eyes with serous PED at baseline and week 12, time to first reduction (TTFR) of maximum PED thickness by 50% from baseline (TTFR 50%) through week 60 in eyes with baseline PED $\geq 125\mu\text{m}$ /baseline serous PED.

Results: Baseline PED characteristics were balanced for presence of PED (faricimab: 97.4%; aflibercept: 96.2%), maximum PED thickness (median [Q1–Q3] μm) (faricimab: 185.0 [126.5–316.0]; aflibercept: 176.5 [125.0–300.5]), proportion of serous PED (faricimab: 20.1%; aflibercept: 17.8%), and mean serous PED thickness (faricimab: 462.8 μm ; aflibercept: 432.1 μm). In eyes with baseline serous PED, serous PED at week 12 was 3.9% with faricimab versus 12.3% with aflibercept (nominal $P=0.026$). The 75th percentile of TTFR 50% was 52 weeks with faricimab versus not reached with aflibercept. In eyes with baseline PED $\geq 125\mu\text{m}$, TTFR 50% was 48 weeks with faricimab versus not reached with aflibercept.

Conclusions: In TENAYA/LUCERNE trials, faricimab elicited greater improvements in PED outcomes than aflibercept. These findings are consistent with the greater drying effect of retinal fluid observed with faricimab.

Apr 04, 2025 (Fri) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Shape and Size of Foveal Avascular Zone in Normal Subjects Using Optical Coherence Tomography Angiography (OCTA)

First Author: Adeel CHAUDHRY

Purpose: To determine the shape and size of the foveal avascular zone (FAZ) in terms of perimeter, circularity, roundness, and axial ratio using optical coherence tomography angiography (OCTA).

Methods: A cross-sectional study was conducted in Yaqeen Vision Clinic from January 2020 to December 2022. Two hundred and eight subjects (17 to 84 years) with Best corrected visual acuity of $\geq 6/6$ and normal retina were included. Persons with a history of any ocular or systemic disease, previous ocular surgery/intraocular injection, high refractive errors of more than 6.0 diopters, and poor signal strength of images or image artifacts were excluded. FAZ

was measured using OCTA. Perimeter, circularity, axial ratio, and roundness were assessed. Perimeter was defined manually and other parameters were calculated with formulas. Pearson's coefficients of correlation were used for correlation, and a P value of < 0.05 was considered significant.

Results: The mean age was 56.55 ± 16.6 years. Mean values for perimeter, circularity, axial ratio, and roundness were $2.18\pm 0.3\text{mm}$ (1.4 to 2.99mm), 0.93 ± 0.12 (0.12 to 1.35), 1.18 ± 0.23 (0.73 to 2.82) and 8.09 ± 1.41 (1.026 to 11.85) respectively. There was a statistically significant variation in the perimeter of FAZ with age ($p = 0.001$). Circularity, axial ratio, and roundness did not show statistically significant variation with age ($p = 0.628, 0.940, 0.653$, respectively).

Conclusions: FAZ in Pakistani individuals is larger, and there is more variation in the size of FAZ than in shape, which makes shape a more reliable factor in retinal vascular diseases.

Apr 04, 2025 (Fri) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Similar Visual, Anatomic and Durability Gains Are Observed With Aflibercept 8mg Treatment in nAMD Irrespective of Baseline Characteristics: A Post-Hoc 96 Week PULSAR Analysis

First Author: Andrew CHANG

Co-Author(s): On Behalf Of The Pulsar Study Team, Richard GALE, Justus GARWEG, Tobias MACHEWITZ, Xin ZHANG

Purpose: To determine the effect of baseline characteristics on the efficacy and durability of aflibercept 8 mg at Week 96 (W96) in patients with treatment-naïve neovascular age-related macular degeneration (nAMD) in PULSAR (NCT04423718), a double-masked, 96-week, Phase 3 trial.

Methods: Patients were randomly assigned 1:1:1 to receive intravitreal aflibercept 8q12 or 8q16 or 2q8 after three initial monthly injections. Outcomes stratified by key baseline characteristics (including BCVA and central retinal thickness [CRT]) were evaluated.

Results: At W96, mean increases from baseline BCVA were numerically larger in patients with lower (≤ 54 letters) vs higher (≥ 74 letters) baseline BCVA (range: 6.5–11.7 vs 0.9–1.5 letters, respectively) and were

similar across the 8q12, 8q16, and 2q8 treatment groups. Mean decreases from baseline in CRT at W96 were numerically larger in patients in the higher ($\geq 423 \mu\text{m}$) vs lower ($\leq 278 \mu\text{m}$) baseline CRT quartiles. Absolute CRT values and BCVA gains were similar across the 8q12, 8q16, and 2q8 treatment groups across CRT quartiles. The proportion of patients on 8q12 and 8q16 extending dosing intervals through W96 will also be presented by subgroups. At W96 Mean \pm SD baseline BCVA, CRT, and CNV area, respectively, were 59.4 \pm 12.8 letters, 364 \pm 130 μm and 6.1 \pm 5.0 mm² in patients assigned to q24; 61.0 \pm 13.0 letters, 352 \pm 122 μm and 6.2 \pm 5.1 mm² in patients assigned to q16; and 60.6 \pm 10.6 letters, 400 \pm 128 μm , and 7.1 \pm 5.9 mm² in 71/583 patients assigned to q8.

Conclusions: In nAMD comparable sustained visual, anatomic and durability outcomes were achieved with aflibercept 8mg irrespective of baseline characteristics and assigned interval.

Apr 06, 2025 (Sun) 09:45 - 11:15

Venue: Suryamukhee Hall 401

Association Between Mean Platelet Volume and Retinal Vein Occlusion (RVO): A Comparative Study

First Author: Tariq ALI

Co-Author(s): Shahreen FERDOUS

Purpose: To assess the association between mean platelet volume and retinal vein occlusion.

Methods: This was an observational cross-section study involving 30 cases of RVO and 30 cases of age and sex-matched control of 21-80 years. Following a brief history, general and ocular examination blood samples were taken from the subjects to measure platelet count and indices using the Electrical Impedance Cell Counting method in SYSMEX Automated Haematology Analyser.

Results: The mean age in the case was 51.1 (± 11.9) years, and that of the control was 54.5 (± 12.7) years. The mean platelet count was 2,948,66 (± 87772)/mm³ and 2,97,667 (± 60250)/mm³, respectively, in cases and controls, respectively, without any statistically significant difference between these two groups ($p=0.886$). The mean MPV was 11 (± 1.5) fl and 9.8 (± 1.3) fl in the cases and controls, respectively, and the difference between them was statistically

significant ($p=0.002$). There was a positive correlation between MPV and RVO ($r=0.376$; $p=0.003$) as well as logistic regression analysis demonstrated a 1.9 times higher likelihood of developing RVO for every femto litre increase in MPV (OR=1.949; $p=0.001$). ROC curve analysis also demonstrated that MPV has good sensitivity and specificity (70% and 67% respectively for an MPV cut-off of 10.35 fl) for the prediction of RVO ($p=0.004$; AUC=0.717).

Conclusions: Total platelet number and size have long been considered a causative factor for the development of RVO. Our study suggested that not platelet count, but mean platelet volume was an independent risk factor for the development of RVO.

Apr 06, 2025 (Sun) 09:45 - 11:15

Venue: Suryamukhee Hall 401

Association of Night Vision Symptoms and Visual Acuity in Age-Related Macular Degeneration

First Author: Thilaka ARUNACHALAM

Purpose: Night vision symptoms have been associated with an increased risk of progression to advanced age-related macular degeneration (AMD). Psychometric tools, such as the Night Vision Questionnaire-10 (NVQ-10), have been developed to assess a patient's perceived difficulty performing tasks under low luminance conditions. Despite previous efforts to evaluate the association between NVQ-10 score and objective measures of visual function, this relationship remains unclear. The purpose of this study was to determine the association between self-reported visual difficulties under low luminance conditions and best-corrected visual acuity (BCVA) in AMD.

Methods: Participants (n=2474) from the Age-Related Eye Disease Study 2 (AREDS2) completed a 10-item Night Vision Questionnaire (NVQ-10) at their final visit of the 5-year clinical trial. BCVA was measured using the Early Treatment of Diabetic Retinopathy Study charts. The eye with better BCVA was analyzed. Multivariable linear regression was used to determine the association between the NVQ-10 composite score (higher score indicates worse night vision) and the outcome of BCVA, adjusted for demographic and clinical covariates.

Results: The NVQ-10 composite score was significantly associated with BCVA. For every 1 unit increase in the score, the BCVA decreased by 5.0 letters (95% confidence interval 4.5-5.4, $p < .0001$). Other factors associated with BCVA were age, sex, education level, and intermediate and late AMD ($p < .01$).

Conclusions: We retrospectively analyzed a subset of AREDS2 participants, who self-reported night vision symptoms using the NVQ-10. We found that the severity of night vision symptoms was significantly associated with poor visual acuity, even after adjusting for demographic and clinical covariates.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Bilateral Optic Nerve Drusen - a Misdiagnosed Entity

First Author: Shachi SRIVASTAVA
Co-Author(s): Vandana KOHLI, Sandeep KUMAR, Kunika TANWAR

Purpose: To describe the case of a 13-year-old girl with bilateral Optic nerve head drusen which was misdiagnosed and treated for papilledema.

Methods: This is a case report of a 13-year-old girl who came with a complaint of chronic headaches for over a year. Visual acuity was normal. Her color vision and pupillary response were also normal. Her perimetry revealed no field defects. She was diagnosed 6 months back with grade 3 papilledema and treated as a case of raised intracranial hypertension (ICT). However, her fundus examination did not suggest true disc edema and was suspicious for optic nerve head drusen. On Fundus autofluorescence, there were multiple hyperfluorescent foci in the disc, which aided in the diagnosis. OCT of the optic nerve head further helped in its confirmation.

Results: After confirmation of the diagnosis of Bilateral Optic nerve head drusen and after neurological re-consultation, the patient was taken off Carbonic anhydrase inhibitors and was counselled about her condition and is on regular follow-up.

Conclusions: It is very important to have a high index of suspicion for the diagnosis of optic disc drusen as the condition very closely mimics disc edema. Confirmation by various diagnostic imaging

like Papillary OCT, FAF, USG, etc, helps in clinching the diagnosis and can thus change the course of the treatment.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Comparison of Standard Laser (Uni Spot) and Pattern Laser (Multi-Spot) in the Treatment of Proliferative Diabetic Retinopathy

First Author: Selma MILISIC

Purpose: Prospective, interventional study of patients with PDR with or without prior laser treatment. Patients were divided into two groups and two subgroups (pan-retinal and supplemental laser photocoagulation), 70 eyes of 41 patients were studied.

Methods: Prospective, interventional study of patients with PDR with or without prior laser treatment. Patients were divided into two groups and two subgroups (pan-retinal and supplemental laser photocoagulation). A total of 70 eyes of 41 patients were studied. The number (percentage) of patients for each group with the persistence of neovascularization after retinal PRP was evaluated, and the microstructural changes of burns in both types of laser were assessed six weeks after laser treatment.

Results: The average pain to standard laser was 6.3 for PRP and 7.8 for supplemental laser, with a total average of 7.1. Pain for pattern laser in PRP averaged 4.2 and 5.1 for supplemental laser, with a total average of 4.7 ($p < .0001$). The average time elapsed per session for standard laser PRP was 08:00 minutes, and 06:15 minutes for supplemental laser. The average time for multi-spot laser PRP was 04:02 minutes and 04:28 minutes for supplemental laser. The average fluence calculated for the standard laser was 31.97 J/cm² and 30.56 J/cm² for the supplemental laser. The average fluence was 10.51 J/cm² and 9.92 J/cm² for PRP and 10,21 J/cm² for supplemental treatment with multi-spot.

Conclusions: The laser was better tolerated in terms of pain, as reported by patients. In contrast to standard photocoagulation, the time required per session for PRP with pattern laser was roughly half.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Consistency-Driven Enhancement for Robust Cardiovascular Risk Prediction From Retinal Images

First Author: Weiyi ZHANG
Co-Author(s): Mingguang HE, Danli SHI

Purpose: Cardiovascular Disease (CVD) presents a pressing global health concern, underscoring the need for accurate early prediction and risk assessment. Despite the promise of deep learning in CVD risk prediction from retinal images, result consistency remains a challenge. This study introduces a novel deep learning model for predicting World Health Organization (WHO) CVD risk scores from retinal images, aiming to enhance prediction consistency.

Methods: Our model integrates a bidirectional contrastive loss to enhance prediction consistency in two key areas: (i) reinforcing consistency between left and right eyes or different retinal image categories of the same individual (horizontal direction) and (ii) boosting consistency across consecutive years (longitudinal direction). The model was trained and tested on data from 4,754 subjects spanning seven years.

Results: Our model demonstrates promising performance across various regression metrics, with the test set showing an R2-Score of 0.5668, a mean absolute error of 8.84, and a root-mean-square error of 11.34. Ablation experiments confirm the critical role of bidirectional contrastive loss in both horizontal and longitudinal directions. Visualization techniques and quantitative analyses, including Vyshyvanka plots, further illustrate the efficacy of our approach in enhancing prediction stability over time.

Conclusions: Our findings suggest that the proposed bidirectional contrastive loss function significantly enhances the consistency of deep learning models in predicting CVD risk from retinal images. This affirms the potential of fundus photographs in robust CVD risk prediction. Future research will focus on validating our model across diverse populations and ethnicities.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Early Fluid Resolution Is Associated With Short- and Long-Term Extended Durability in Patients With Neovascular Age-Related Macular Degeneration Treated With Faricimab: A Post Hoc Analysis of the TENAYA/LUCERNE Trials

First Author: Marten BRELEN
Co-Author(s): Manuel AMADOR, Nicholas DAGINCOURT, Roberto GALLEGO-PINAZO, Philippe MARGARON, Ivo STOILOV

Purpose: The head-to-head phase of TENAYA (NCT03823287)/LUCERNE (NCT03823300) trials demonstrated greater retinal fluid (intraretinal [IRF]/subretinal fluid [SRF]) resolution with faricimab, a dual angiopoietin-2/vascular endothelial growth factor-A inhibitor, than aflibercept in neovascular age-related macular degeneration. This post hoc analysis assessed the association between early fluid resolution and extended treatment intervals with faricimab.

Methods: Patients in TENAYA/LUCERNE randomized trials received 6.0 mg faricimab up to every 16 weeks (Q16W) after initial loading (4 doses). Following weeks 20/24 assessment, patients received fixed dosing up to Q16W until week 60 and then a treat-and-extend-based regimen. This pooled analysis evaluated the association between rapid fluid resolution (defined as the absence of fluid [IRF/SRF] at weeks 4, 8, and 12) and durability at weeks 20/24 (short-term extended durability) and end of study (long-term extended durability).

Results: Patients with IRF/SRF at baseline with rapid fluid resolution through week 12 (n=538) had twice the odds (odds ratio [OR] 2.00; 95% confidence interval [CI]: 1.24-3.25; P=0.0047) of extending to Q16W vs every 8 week (Q8W) dosing immediately after loading (weeks 20/24). Patients with a rapid resolution of fluid (IRF/SRF) through week 12 (n=474) had approximately 80% higher odds (OR 1.80; 95% CI: 1.11-2.89; P=0.0161) of being on Q16W vs Q8W dosing at the end of the study (week 112).

Conclusions: This post hoc analysis from the TENAYA/LUCERNE trials demonstrates that rapid fluid resolution through week 12 with faricimab may

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be associated with short- and long-term extended durability (Q16W) supporting dual pathway inhibition impact on early disease control and vascular stability.

Apr 06, 2025 (Sun) 11:30 - 13:00

Venue: Suryamukhee Hall 401

Early Onset, Worsening Outlook: The Relationship Between Age and Diabetic Retinopathy Severity

First Author: Gajendra CHAWLA

Co-Author(s): Neha BIJLANI

Purpose: To investigate the influence of diabetes onset age on the development & progression of Diabetic Retinopathy among patients presenting at a single eye Centre in Central India.

Methods: A retrospective analysis of consecutive patients of diabetic retinopathy (DR) treated at our Centre between May 2019 to April 2023 was performed. Patients were divided into 2 groups, Group 1: Age of onset of diabetes (AOD) < 40 years and Group 2: AOD ≥ 40 years. Diabetic retinopathy (DR) and Diabetic Macular edema (DME) were classified using the International Clinical Classification of DR severity scale. A multi-level mixed effects model was used for comparison between 2 groups. Only those patients who completed at least 1 year of follow-up were included in the study.

Results: A total of 161 patients were included in the study, 42 in AOD < 40 years and 119 in AOD ≥ 40 years. There was a higher prevalence of Proliferative Diabetic Retinopathy (PDR) with high-risk characteristics (HRC) in the AOD < 40 years group at baseline (26% vs. 13%) and at 1-year follow-up (28% vs. 7%); P < 0.001. Systolic hypertension and poor glycemic control were risk factors in both groups, with no difference in these modifiable risk factors between groups.

Conclusions: People with early-onset diabetes are likely to present with a more severe form of DR despite similar modifiable risk factors. Therefore, aggressive control of glycemic status and hypertension right from the time of diagnosis, along with regular screening of DR, is critical to preserve vision in such cases.

Apr 06, 2025 (Sun) 09:45 - 11:15

Venue: Suryamukhee Hall 401

Early Thinning Rate of the Peripapillary Retinal Nerve Fiber Layer and the Risk of Developing Diabetic Retinopathy: A 4-Year Prospective Cohort Study

First Author: Xiaoying ZHONG

Co-Author(s): Wei WANG

Purpose: To investigate whether the rapid rate of peripapillary retinal nerve fiber layer (pRNFL) thinning in the short term is associated with the future risk of developing diabetic retinopathy (DR).

Methods: This prospective cohort study utilized four-year follow-up data from the Guangzhou Diabetic Eye Study. pRNFL thickness was measured by swept-source optical coherence tomography. DR was graded by seven-field fundus photography after pupil dilation. Correlations between pRNFL thinning rate and DR were analyzed using logistic regression. The additive predictive value of the prediction model was assessed using the C-index, net reclassification index (NRI), and integrated discriminant improvement index (IDI).

Results: A total of 1012 diabetic patients (1012 eyes) without DR at both baseline and 1-year follow-up were included. Over the four-year follow-up, 132 eyes (13.04%) developed DR. After adjusting for confounding factors, a faster rate of initial pRNFL thinning was significantly associated with the risk of DR (odds ratio per SD decrease, 1.15; 95% CI, 1.08-1.23; P < 0.001). Incorporating either the baseline pRNFL thickness or its thinning rate into conventional prediction models significantly improved discriminatory power. Adding the rate of pRNFL thinning further enhanced the discriminative power compared to models with only baseline pRNFL thickness (C-index increased from 0.685 to 0.731; P = 0.040). The IDI and NRI were 0.114 and 0.463, respectively (P < 0.001).

Conclusions: The rate of initial pRNFL thinning was associated with DR occurrence and improved the discriminatory power of traditional predictive models. This provides new insights into the management and screening of DR.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Effect of Intravitreal Bevacizumab on Coagulation Profile of Patients With Diabetic Retinopathy

First Author: Iqra KHALID
Co-Author(s): Tayyaba MALIK

Purpose: Intravitreal injection of Bevacizumab is widely used all over the world to treat Diabetic Retinopathy. However, there are thromboembolic events reported with its use. As blood coagulation is related to thromboembolism, the purpose of this study was to determine the effect of intravitreal injection of Bevacizumab on the coagulation profile of diabetic patients.

Methods: It was a quasi-experimental study conducted at the Department of Ophthalmology, Lahore General Hospital, from January 2023 to August 2023. Patients with treatment naïve proliferative DR and diabetic macular edema were included, and those with renal disease, hypertensive retinopathy, chronic liver disease, ischemic heart disease, previous history of stroke, retinal vascular occlusion, any malignancy, history of using anti-coagulants and aspirin and the patients who lost to follow up and did not complete the blood work up after injection were excluded. Patients' Prothrombin time, bleeding time, clotting time, international normalized ratio, and activated partial thromboplastin time were checked before and one week after intravitreal injection of Bevacizumab. Paired t-test was used for analysis, and $p < 0.05$ was set for significance.

Results: There were 138 patients who fulfilled the inclusion criteria (92 males and 46 females). The mean age was 55 ± 8 years. There was a statistically insignificant difference between the coagulation profile before and after intra-vitreous injection of Bevacizumab.

Conclusions: The coagulation profile is not affected after one intravitreal injection of Bevacizumab. Other factors must be taken into account while injecting Bevacizumab in patients with a history of thromboembolic events.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Effects of Microperimetric Biofeedback Training to Reading Speed in Patients With Age-Related Macular Degeneration

First Author: Sri Hudaya WIDIHASTHA

Purpose: This study aims to assess the impact of microperimetric biofeedback training on the reading speed of patients diagnosed with age-related macular degeneration (AMD).

Methods: This study was a prospective and interventional study with subjects of age-related macular degeneration patients in the National Eye Center Cicendo Eye Hospital between March and June 2022. The patients would receive six sessions of 10-minute time duration microperimetric biofeedback training using Nidek MP-3. Reading speed (words/minute) was subsequently evaluated after the training.

Results: The number of subjects enrolled in this study was 18 patients. The baseline best-corrected visual acuity (BCVA) was 1.24 ± 0.416 logMAR. Post-intervention, there was a statistically significant improvement in reading speed, increasing from an average of 40.83 ± 30.411 words per minute to 65.06 ± 31.598 words per minute ($P < 0.001$).

Conclusions: Microperimetric biofeedback training significantly enhances reading speed in patients with age-related macular degeneration. This improvement suggests that such training could be a beneficial addition to the therapeutic strategies for managing AMD, potentially leading to better visual outcomes and improved quality of life for patients.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Faricimab in Diabetic Macular Edema: Results From the RHONE-X Long-Term Extension Trial

First Author: Andrew CHANG
Co-Author(s): Arshad KHANANI, Alex KOTAK, Achal KOTECHA, Dawn SIM, Yannan TANG

Purpose: RHONE-X (NCT04432831) evaluated the long-term safety and efficacy of faricimab in patients with diabetic macular edema (DME).

Methods: RHONE-X was a 2-year, phase 3, multicenter, open-label extension trial. Patients with DME who completed either YOSEMITE (NCT03622580) or RHINE (NCT03622593) trials (parent trials) without treatment discontinuation were enrolled. All patients entering RHONE-X received faricimab 6 mg according to a treat-and-extend (T&E)-based regimen with up to Q16W dosing (based on prespecified vision and anatomic criteria per parent trials), irrespective of treatment assignment in parent trials. Patients were evaluated during masked monthly visits for the first 16 weeks of the trial; thereafter, study visits were open-label and aligned with their T&E interval.

Results: RHONE-X included 1474 patients, with 81.6% (1204) completing the trial. Faricimab was well tolerated across the 2 years as demonstrated by the low rate of adverse event (AE)-related study discontinuation. Intraocular inflammation AE rates were low (1.3%). There were no cases of retinal vasculitis/retinal occlusive vasculitis. Vision gains and central subfield thickness (CST) reductions achieved during the parent trials were maintained at 1 and 2 years with faricimab T&E dosing. At the RHONE-X trial conclusion, faricimab resulted in DME absence (CST <325 µm) in >90% of individuals regardless of treatment assignment in parent trials. Approximately 80% of patients were on extended dosing intervals.

Conclusions: RHONE-X shows that faricimab is well tolerated, with a safety profile consistent with parent trials. The efficacy and durability achieved with faricimab during the parent trials were maintained throughout this 2-year long-term extension trial.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Greater Reduction in Hard Exudates With Faricimab Versus Aflibercept in Patients With Diabetic Macular Edema: Biomarker Results From the Phase 3 Yosemite/Rhine Trials

First Author: Gavin TAN
Co-Author(s): Kara GIBSON, Roger GOLDBERG, Michael IP, Andreas MAUNZ, Diane USCHNER

Purpose: Exploratory analysis of YOSEMITE/RHINE (NCT03622580/NCT03622593) trials evaluated if dual inhibition of angiopoietin-2 (Ang-2) and vascular endothelial growth factor A (VEGF-A) with faricimab reduces hard exudates (HE) in patients with diabetic macular edema (DME) compared with aflibercept.

Methods: Patients with DME were randomized 1:1:1 to receive intravitreal faricimab (6.0 mg every 8 weeks [Q8W] or treat-and-extend [T&E]) or aflibercept (2.0 mg Q8W). HE presence was evaluated by a central reading centre using color fundus photography within the Early Treatment of Diabetic Retinopathy Study grid at screening and weeks 16, 52, and 96. HE volumetric analyses on optical coherence tomography (OCT) will be performed.

Results: HE was evaluated in 1870 patients (faricimab Q8W=626, faricimab T&E=628, aflibercept=616). HE proportions at baseline were similar across the three treatments (80.8-81.6%) and decreased over time. In patients with baseline HE, HE proportions at week 16 were similar between faricimab and aflibercept. By weeks 52 and 96, fewer faricimab (Q8W/T&E) patients had HE vs aflibercept-treated patients (79.0%/75.8% vs 86.2% and 52.8%/55.9% vs 64.5%, respectively). This corresponded to a difference (95% confidence interval) of -7.2% (-12.2%,-2.2%; nominal P=0.0058) and -10.5% (-15.6%,-5.4%; nominal P<0.0001) at 52 weeks and -11.7% (-18.6,-4.8; nominal P=0.0013) and -8.9% (-15.7,-2.1; nominal P=0.0124) at 96 weeks for faricimab Q8W and T&E over aflibercept, respectively. Retinal segmentation and quantification of HE volume on OCT will be presented.

Conclusions: Faricimab showed greater HE reduction than aflibercept in patients with DME and may reflect improved vascular stability with dual Ang-2/VEGF-A inhibition, as demonstrated in other biomarker analyses.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Impact of Early Intraretinal Fluid Reduction on One-Year Outcomes in Diabetic Macular Edema

First Author: Gavin TAN

Co-Author(s): Derrek HIBAR, Jennifer LIM, Katie M LITTS, Srinivas SADDA, Yiyi WANG

Purpose: To assess the relationship between early treatment response using intraretinal fluid (IRF) volume reduction at one month and one-year anatomical and visual outcomes in patients with diabetic macular edema (DME).

Methods: Study eyes (n=887) from Phase 3 YOSEMITE/RHINE (NCT03622580/NCT03622593) trials treated with faricimab or aflibercept were included in this exploratory analysis. IRF and subretinal fluid (SRF) volume and total, outer nuclear layer, and inner retinal thickness (RT) averaged over the entire 3-mm diameter Early Treatment Diabetic Retinopathy Study subfield were assessed at baseline and Weeks 4 and 52 using spectral domain optical coherence tomography and analyzed via a deep learning-based segmentation model. Patients were grouped based on IRF volume reduction (<20%, 20–50%, >50%) at week 4 from baseline.

Results: At week 4, IRF volume reduced by <20%, 20–50%, and >50% in 242, 248, and 397 patients, respectively. At year 1, IRF volume decreased by 297, 383, and 390 nL for the respective groups adjusted for baseline IRF; total RT decreased by 93, 112, and 117 μm . SRF volume reduction showed no difference between groups at 1 year. Patients with >50% IRF volume reduction at week 4 showed nominally greater letter gains at 1 year than with 20–50% (12.1 versus 10.6 letters, $p=0.0502$) or <20% (12.1 versus 8.3 letters, $p<0.0001$) (adjusted for baseline IRF).

Conclusions: Greater IRF volume reduction at one month correlates with improved one-year anatomical and visual outcomes in patients with DME, suggesting the importance of rapid fluid reduction for better long-term results.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Suryamukhee Hall 401

In Vivo Visualization of Cone Photoreceptors in the Human Eye Using a Modified Scanning Ophthalmoscope

First Author: Xinyuan ZHANG

Purpose: To characterize the cone photoreceptor mosaic at the retinal location spanning the central 600 in the human retina to evaluate the effectiveness of a modified scanning laser ophthalmoscope (SLO) for high-resolution in vivo.

Methods: A modified SLO equipped to correct for ocular aberrations and increase image resolution was developed. SLO images (80) with a signal threshold of 400 were acquired at 780nm from 5 locations, from 300 nasal to 300 temporal retinas, in 30 healthy volunteers and 20 patients with known retinal pathologies. After foveal registration of the acquired images with the color photos, images of the cone density and spacing (diameter) within the 60x60 μm region of interest were calculated. We compared these images with published standard data from the adaptive optics (AO)-SLO method.

Results: The modified SLO provided detailed images of the cone mosaic with significantly higher resolution than standard imaging techniques. In healthy subjects, the average cone density in the foveal center was measured at approximately 25,000-40,000 cones/ mm^2 , consistent with previous histological studies and the AO-SLO method. In patients with retinal diseases, variations in cone density and irregularities in cone arrangement were clearly visualized, correlating with clinical diagnoses.

Conclusions: Using an alternative method for reducing equipment consumption costs successfully enabled the in vivo visualization of cone photoreceptors at a cellular level. This method offers significant advantages in diagnosing and monitoring retinal diseases by providing detailed cone density and arrangement assessments. The enhanced imaging capability holds promise for advancing clinical research and improving patient outcomes in retinal disease management.

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FREE PAPERS

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Key Clinical Outcomes With Faricimab in Treatment-Naïve Patients With Neovascular Age-Related Macular Degeneration (nAMD): Results From the TENAYA/LUCERNE Trials and Real-World FARETINA/FARWIDE Studies

First Author: Chaitra JAYADEV
Co-Author(s): Gloria CHI, Aachal KOTECHA, Philippe MARGARON, David TABANO, Ming YANG

Purpose: To summarize clinical pearls from phase 3 TENAYA/LUCERNE and real-world FARETINA/FARWIDE studies in treatment-naïve nAMD patients treated with faricimab.

Methods: Patients in TENAYA/LUCERNE (NCT03823287/NCT03823300; N=1,329) received faricimab 6.0 mg up to every 16 weeks (Q16W) or aflibercept 2.0 mg Q8W. Outcomes were assessed monthly through Week 112. FARETINA and FARWIDE, two retrospective studies utilizing 2022–23 data from the IRIS Registry (US), and NHS sites using Medisoft EHRs (UK), respectively, assessed patients receiving faricimab for ≥ 12 months. The analysis focused on treatment-naïve eyes.

Results: In TENAYA/LUCERNE, patients always on $\geq Q12W$ or only Q16W achieved stable functional/anatomical outcomes; $>50\%$ met pre-specified criteria for potential Q20W dosing. Central subfield thickness (CST) reduction, retinal fluid resolution, and decrease in maximum serous pigment epithelial detachment thickness were greater with faricimab vs aflibercept during head-to-head dosing. In FARETINA (n=2,368) and FARWIDE (n=176), mean (standard deviation [SD]) number of faricimab injections during Months 1–6 vs 7–12 was 4.1 (1.3) vs 2.4 (1.6), and 4.7 (0.6) vs 2.0 (1.1), and mean (SD) change in visual acuity from baseline to Month 12 was +3.9 (16.4) and +4.6 (1.1) letters, respectively. Mean (SD) CST improvement in FARETINA (n=196 eyes) after 12 months was -49.3 (10.1) μm ($p < 0.001$).

Conclusions: These clinical pearls from TENAYA/LUCERNE demonstrate robust disease control and extended durability with faricimab. Various biomarkers showed greater anatomical improvements with faricimab vs aflibercept during

head-to-head dosing. Stable outcomes in patients on extended dosing intervals suggest potential for further interval extension. These data with faricimab are supported by increasing real-world data.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Optical Coherence Tomography Angiography Evaluation of the Macular Vasculature

First Author: Colin TAN

Purpose: To determine the size of the superficial and deep foveal avascular zone (FAZ) in healthy adults using Optical Coherence Tomography Angiography (OCTA), and to ascertain the effects of demographic and ocular parameters on the FAZ.

Methods: In a prospective cohort study of 170 eyes, healthy volunteers underwent OCTA scans. The FAZ from 3mm x 3mm scans was independently graded using the ImageJ software. The effect of central retinal thickness (CRT), axial length (AL), and spherical equivalent were analyzed using multiple linear regression analyses.

Results: The mean age was 22.7 years (21 – 30, SD ± 1.5), with a mean spherical equivalent of -4.3 D. The mean CRT was 260.6 μm (220 μm – 301 μm , SD ± 16.6). The mean superficial FAZ area was 0.25 mm² (0.04 mm² – 0.48 mm²), while the mean deep FAZ area was 0.38 mm² (0.12 mm² – 0.66 mm²). The deep FAZ was significantly larger than the superficial FAZ ($p < 0.001$). Females had a larger superficial (0.28 mm² vs. 0.22 mm², $p < 0.001$) and deep FAZ (0.41 mm² vs. 0.36 mm², $p = 0.006$). On univariate linear regression, both superficial and deep FAZ areas had significant correlations with CRT, sex, AL, and spherical equivalent, but not with age. By multiple linear regression analysis, superficial and FAZ areas varied significantly with CRT ($p < 0.001$) and sex ($p < 0.001$).

Conclusions: Both the superficial and deep FAZ size varies significantly among healthy young adults. Factors such as CRT, sex, and spherical equivalent influence the size of the FAZ, and should be accounted for when assessing whether the FAZ appears abnormal.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Outcome of Combination Therapy of Intravitreal Ranibizumab (RBZ) and Triamcinolone Acetonide (TA) vs Intravitreal RBZ Monotherapy in Treatment Naive Diabetic Macular Edema (DME)

First Author: Charu MALIK

Purpose: To compare the outcome of combination therapy of intravitreal RBZ and TA with RBZ monotherapy in patients with CI-DME.

Methods: Prospective comparative interventional study with 1-year duration, at Ophthal Deptt, SMS&R, Sharda University, Greater Noida. Sample size: 40 (20 in each group). All patients included in the study received complete ophthalmic examination, including best-corrected VA, slit-lamp biomicroscopy, tonometry, and funduscopy, at baseline. Ancillary tests included color fundus photography, FFA (wherever indicated), and SD-OCT, done at baseline and on a monthly basis till at least 3 months from the first injection (weeks 4, 8, 12). Eyes were randomized into: Group A (combination therapy): treated with 0.5 mg RBZ combined with 2 mg TA or Group B (monotherapy): treated with 0.5mg RBZ at baseline, and were followed up monthly, for at least 3 months. PRN regimen was followed for further injections. A maximum of 3 injections were given. The final follow-up was at 1 month of the last injection or at 3 months, whichever was later. The primary outcome measures were BCVA, CMT changes, and incidence of potential adverse events.

Results: BCVA at 3months treatment improved significantly in group A. The greatest reduction of OCT at 3months was achieved by group A.

Conclusions: The results of our study show that patients with DME treated with a combination of RBZ and TA (group A) obtained better visual outcomes at 3 months and a greater reduction of the CMT at 3 months. Group A received fewer injections, and no safety issues were found in terms of IOP rise with TA.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Port Delivery System With Ranibizumab (PDS) for Continuous Treatment of Diabetic Macular Edema (DME): 2-Year Data From the Phase 3 Pagoda Trial

First Author: Andrew CHANG

Co-Author(s): Carl C. AWH, Anastasios DAKOURAS, Jordan M. GRAFF, Mel RABENA, Carl D. REGILLO

Purpose: To evaluate the long-term results after >2 years of treatment of continuous delivery of ranibizumab 100 mg/mL via the PDS with fixed refill-exchanges every 24 weeks (PDS Q24W) in patients with centre-involved DME.

Methods: In the ongoing phase 3 Pagoda trial (NCT04108156), patients with DME were randomised 3:2 to PDS Q24W or monthly ranibizumab. PDS Q24W patients received four ranibizumab 0.5 mg loading doses before PDS implantation at week (W) 16. Monthly ranibizumab patients received monthly ranibizumab through W60; at W64 patients received PDS (IVT-PDS Q24W). After implantation, PDS refill-exchanges occurred Q24W through W112. Patients were eligible for supplemental ranibizumab treatment at the two visits before each refill-exchange if the criteria were met.

Results: In the efficacy population (N=588; PDS Q24W: n=381; IVT-PDS Q24W: n=207), BCVA was maintained through W112 with an adjusted mean change from baseline of +9.8 and +9.3 letters in the PDS Q24W and IVT-PDS Q24W, respectively. In both arms, central subfield thickness reduction was sustained through W112 and >95% of patients assessed did not receive supplemental treatment during each refill-exchange interval. From implantation through W112, endophthalmitis rates were 0.6% (2/320) and 0.8% (2/236) in the safety population of the PDS Q24W and IVT-PDS Q24W arms, respectively. No new safety signals were observed.

Conclusions: Year 2 Pagoda results support the primary analysis, with PDS Q24W showing continued efficacy for more than 2 years. No new safety signals were observed through W112. PDS provides long-term functional and anatomic benefits with one refill-exchange every 6 months.

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FREE PAPERS

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Purtscher-Like Retinopathy Secondary to Febrile Illnesses in Pediatric Patients

First Author: Ping FEI
Co-Author(s): Mengxiao WU, Peiquan ZHAO

Purpose: Purtscher-like retinopathy is a rare microvascular occlusive disease that has been reported sparsely in the literature, especially in pediatric patients. The ocular manifestation is associated with various systemic disorders, though its distinct pathophysiology and appropriate therapies remain unclear. Thus, early detection and prompt intervention for Purtscher-like retinopathy are highly important for clinicians.

Methods: We describe three pediatric patients who experienced sudden bilateral blurred vision and were diagnosed with Purtscher-like retinopathy secondary to different febrile disorders.

Results: In this report, we describe a series of three pediatric patients (age range, 7-13 years) who experienced sudden bilateral blurred vision and were diagnosed with Purtscher-like retinopathy, secondary to febrile illnesses, including systemic juvenile idiopathic arthritis (sJIA), thrombotic microangiopathy (TMA), and COVID-19 infection. The most widely accepted theory puts forth that microembolization of retinal vasculature can lead to arteriolar precapillary occlusion and microvascular infarct of the retinal nerve fiber layer, resulting in the characteristic cotton-wool spots. All patients received steroidal therapy to control underlying conditions and ocular disease. Final vision acuities varied from 20/20 to 20/320, which is related to the severity of the diseases and the promptness of the treatment.

Conclusions: Clinician awareness of Purtscher-like retinopathy is crucial for the prompt diagnosis and treatment of pediatric patients with protracted high fevers and febrile viral illnesses.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Radiation Macular Edema: Risk Factors

First Author: Ekaterina MALAKSHINOVA
Co-Author(s): Roman LOGINOV, Denis VOLODIN, Andrey YAROVYO

Purpose: To evaluate the factors of macular edema (ME) development in patients with uveal melanoma (UM) after brachytherapy (BT).

Methods: There were 314 patients with UM treated with Ru-106 plaque radiotherapy from 2018 to 2024: 94 (30%) patients were men, 220 (70%) were women. The average age of patients was 56 years (from 10 to 89 years). The average tumor base was 10,8 mm (from 2 to 17,4), and the average tumor height was 4,6 mm (from 1,8 to 10,83). Retinal detachment occurs in 178 (60%) patients. Its average height was 1,8 4,6 mm (from 0,1 to 7,2). One hundred seventy of them were found to have radiation ME, and 144 had no signs of ME.

Results: Using Kaplan-Meier curves risk factors of radiation ME were evaluated: upper UM localization ($p=0,0249$), paramacular UM localization ($p=0,0378$), tumor thickness over 3,5 mm ($p=0,0003$), tumor base over 11,1 mm ($p=0,0015$), scleral dose over 527 Gy ($p<0,0001$), dose rate over 812 cGy ($p=0,015$), plaque size over 15 mm ($p=0,0004$).

Conclusions: Radiation ME is the most common BT complication that leads to irreversible visual loss. UM localization, its size, and the characteristics of BT are associated with radiation ME. These findings serve as prognostic tools to adjust the management of UM patients.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Radiation Maculopathy Treatment: Efficacy of Intravitreal Anti-VEGF and Steroid Implant Use

First Author: Ekaterina MALAKSHINOVA
Co-Author(s): Roman LOGINOV, Viktoria PISMENSKAYA, Vera YAROVAYA

Purpose: To present the efficacy of anti-VEGF and steroid implant (SI) use in patients with radiation maculopathy (RM) after uveal melanoma (UM) treatment.

Methods: Anti-VEGF and SI injections were performed in 170 patients (170 eyes) with RM, which developed either after brachytherapy or Gamma-knife stereotactic radiosurgery of UM. Fifty-one (30%) patients were men, while 119 (70%) were women. The average age of patients was 53 years (from 14 to 89 years). The average visual acuity (VA) before treatment was 0.2 (range from 0.002 to 0.7). According to optical coherence tomography, the average value of central macular thickness (CMT) before intravitreal injections was 330±86 microns, while the average value of volume cube (VC) was – 12±2. The average amount of intravitreal injections was 3 (from 1 to 10).

Results: The average VA after anti-VEGF and ID was 0.4. VA stabilization was demonstrated in 14% of patients, and 57% showed VA improvement. According to optical coherence tomography, the average CMT value after anti-VEGF was 251±95 microns ($p<0.001$), and the average VC value was 8±4 ($p<0.001$).

Conclusions: The single-center experience of intravitreal anti-VEGF and SI use has shown its effectiveness in VA improvement or stabilization and CMT decrease, which makes its use reasonable.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Safety Profile of Intravitreal Bevacizumab Biosimilar for Retinal Disease: A Single Center Retrospective Study

First Author: Sri Hudaya WIDIHASTHA

Purpose: The purpose of this study was to evaluate the safety profile of intravitreal injections of the bevacizumab biosimilar (Bevagen) product for retinal diseases at one single-center eye clinic in Bandung, Indonesia.

Methods: A retrospective study was conducted on the patients who had been administered intravitreal injections of biosimilar bevacizumab at a pro re nata (as-needed) basis due to retinal disease from January 2023 to June 2024. The study primarily assessed the incidence of adverse events and complications associated with the treatment over a period of four weeks after the injections.

Results: A total of 3134 intravitreal injections were administered to 630 patients, with a higher proportion of female patients (53.33%) and a mean age of 60 ± 13.5 years. The majority of patients were diagnosed with diabetic retinopathy, age-related macular degeneration, and branch retinal vein occlusion. The most common adverse event observed was increased intraocular pressure, reported in 7 cases. There were no reports of ocular pain at any follow-up visits. None of the eyes developed intraocular inflammation, endophthalmitis, corneal edema, cataract, vitritis, retinal detachment, or optic atrophy. Additionally, there were no reports of systemic disease worsening during the 4-week follow-up period.

Conclusions: Intravitreal bevacizumab biosimilar shows a favorable safety profile for treating various retinal conditions, with increased IOP being the most frequently observed adverse event. Although the long-term safety and efficacy remain uncertain, these short-term results indicate that biosimilar bevacizumab could emerge as a safe and cost-effective treatment for retinal diseases.

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FREE PAPERS

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Similar Visual and Anatomic Outcomes Were Observed With Aflibercept 8mg Treatment in Diabetic Macular Oedema (DMO) Irrespective of Baseline Vison and CRT: A Post-Hoc PHOTON Analysis

*First Author: Kelvin TEO
Co-Author(s): On Behalf Of The Photon Investigators, Sean ADREAN, Deepak SAMBHARA*

Purpose: To determine the effect of baseline characteristics on the efficacy of aflibercept 8 mg in patients with treatment-naïve DMO in PHOTON (NCT04429503), a double-masked, 96-week, Phase 3 trial.

Methods: Patients were randomly assigned 1:1:1 to receive intravitreal aflibercept 8q12 or 8q16 after three initial monthly injections of aflibercept 2q8 after 5 monthly injections. Key baseline disease characteristics (including BCVA and central retinal thickness [CRT]) were evaluated post hoc for patients completing 48 weeks of treatment.

Results: At week 48 in patients with baseline BCVA $\leq 20/50$, the mean BCVA change from baseline in 2q8, 8q12, and 8q16 was 10.7, 10.5, and 9.2 letters, respectively, and the mean CRT change from baseline was -195.0, -194.7, and -172.6 μm . In patients with baseline BCVA $\geq 20/40$, mean BCVA change from baseline was 6.0, 6.0, and 5.6 letters, respectively, and mean CRT change from baseline was 99.4, -134.1, and -107.9 μm . Across baseline CRT quartiles (Q1: $\leq 360 \mu\text{m}$; Q2: $>360\text{-}\leq 430 \mu\text{m}$; Q3: $>430\text{-}\leq 528 \mu\text{m}$; Q4: $>528 \mu\text{m}$) aflibercept 8 mg resulted in meaningful BCVA and CRT improvements at week 48. In eyes with the highest CRT at baseline, fluid reaccumulation was numerically less 8 weeks after the last Initial monthly dose with aflibercept 8 mg versus 2mg, suggesting a more durable treatment effect.

Conclusions: Comparable clinically meaningful and sustained visual and anatomic outcomes were achieved with aflibercept 8mg for DMO irrespective of baseline BCVA and CRT.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Suryamukhee Hall 401

Treatment Response and Safety of Faricimab in Underrepresented Patients With Diabetic Macular Edema (DME): Year 1 Top-Line Results From the Phase 4 ELEVATUM Study

*First Author: Shrinivas JOSHI
Co-Author(s): Manuel AMADOR, Jeremiah BROWN, Matthew A CUNNINGHAM, Andres EMANUELLI, Ming YANG*

Purpose: Minority populations experience higher prevalence and worse outcomes from diabetes and diabetic eye disease and have been historically underrepresented in clinical trials. The ELEVATUM study evaluates faricimab, a dual angiopoietin-2/vascular endothelial growth factor-A pathway inhibitor, in historically underrepresented patients with DME.

Methods: ELEVATUM (NCT05224102) is a phase 4, multicenter, open-label, single-arm faricimab study enrolling treatment-naïve patients with DME who self-identify as Black/African American (~45%); Hispanic/Latin American (~45%); or other minority groups (~10%). Key inclusion criteria include central subfield thickness (CST) $\geq 325 \mu\text{m}$ and best-corrected visual acuity (BCVA) of ≥ 20 and ≤ 73 Early Treatment Diabetic Retinopathy Study (ETDRS) letters. All patients receive faricimab 6.0 mg every 4 weeks up to week 20, then every 8 weeks up to week 52. The primary outcome is a change in BCVA from baseline at week 56.

Results: Enrollment began in the United States in February 2022, and the first wave of enrollment was completed in April 2023 (N = 124 across ~40 sites). This analysis reports a change in BCVA and CST from baseline at week 56, the proportion of patients with ≥ 2 -step Diabetic Retinopathy Severity Scale improvement, the proportion of patients gaining and avoiding a loss of $\geq 10/\geq 15$ ETDRS letters, key safety outcomes, and sociodemographic information.

Conclusions: ELEVATUM is the first industry-sponsored ophthalmology trial focused on underrepresented patients with DME, will identify ophthalmologic outcomes with faricimab, and explore the associated social, health, and operational barriers impacting recruitment and retention. ELEVATUM is expanding to other countries; data from Kenya and India will be presented when available.

Apr 06, 2025 (Sun) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Visual Acuity and Anatomic Improvements at Week 24 Maintained Through Week 72 With Faricimab Treat-and-Extend Dosing for Macular Edema Due to Retinal Vein Occlusion in the Phase 3 BALATON and COMINO Studies: Results and Patient Case Profiles

*First Author: Cheng Sim Anna TAN
Co-Author(s): Pablo ARRISI, Christiana DINAH, Ying LIU, Liliana P. PARIS, Anne-cecile RETIERE*

Purpose: Faricimab, a dual angiopoietin-2/vascular endothelial growth factor-A (Ang-2/VEGF-A) inhibitor and the first bispecific antibody for intraocular use, demonstrated efficacy and safety for treating macular edema due to retinal vein occlusion (RVO) in the phase 3 BALATON (NCT04740905) and COMINO (NCT04740931) randomized controlled clinical trials. Here the 72-week results and real-world patient case(s) are presented.

Methods: Patients in BALATON (N=553) and COMINO (N=729) trials received 6 monthly faricimab 6.0 mg or aflibercept 2.0 mg from day 1–week 20. The primary endpoint was a change in best-corrected visual acuity (BCVA) from baseline at week 24. From weeks 24–72, patients received faricimab following a modified treat-and-extend regimen based on central subfield thickness (CST) and BCVA.

Results: The results showed that BCVA gains and CST reduction at week 24 were maintained through week 72. Mean (95% confidence interval) BCVA and CST changes from baseline with faricimab, averaged over weeks 64, 68, and 72, were +18.1 (16.9, 19.4) letters and –310.9 (–315.6, –306.3) μm , and +16.9 (15.2, 18.6) letters, and –465.9 (–472.5, –459.3) μm in BALATON and COMINO trials, respectively. At week 68, more than 57% of patients in BALATON and more than 45% of patients in COMINO trials achieved \geq Q12W faricimab dosing. Faricimab was well tolerated with no new safety signals.

Conclusions: The 72-week results from BALATON and COMINO trials demonstrated that dual Ang-2/VEGF-A inhibition with faricimab offers long-term disease control in patients with RVO, and faricimab was well tolerated with no change in safety profile.

Retina (Surgical)

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Kaner Hall 403

A Modified Suturing Technique to Produce Temporary Scleral Buckling Effect for Noncomplex Rhegmatogenous Retinal Detachment

First Author: Zhaotian ZHANG

Purpose: To introduce a surgical technique for temporary scleral buckling (SB) of noncomplex rhegmatogenous retinal detachment (RRD) using a combination of non-absorbable and absorbable sutures that would induce minimal permanent refractive changes.

Methods: Twenty consecutive patients (20 eyes) with noncomplex RRD were prospectively included. SB was performed in all eligible subjects, and encircling buckling (EB) was added when necessary. The silicone elements were fixed on the sclera with 5-0 non-absorbable sutures and tightened to form a ridge with 6-0 absorbable sutures. Best-corrected visual acuity (BCVA), scleral ridge status, axial length (AL), spherical diopter (SD), and cylinder diopter (CD) were collected.

Results: All patients achieved primary retinal re-attachment with significant improvement of BCVA after surgery. Scleral ridge was obvious and in situ at the one-month follow-up but diminished at the three-month follow-up. At the one-month follow-up, AL increased from 24.78 \pm 2.14 mm preoperatively to 25.22 \pm 2.11 mm, and CD increased from –1.99 \pm 1.03 to –2.95 \pm 1.55 (both $p < 0.001$). At the three-month follow-up, AL, SD, and CD decreased significantly compared with the values at the one-month follow-up (all $p < 0.05$). No obvious complications were observed during the whole follow-up. Patients who underwent additional EB exhibited greater changes in AL and CD at the one-month follow-up (both $P < 0.001$).

Conclusions: The modified technique of SB with/without EB using both non-absorbable and absorbable sutures offers a safe and effective option to repair noncomplex RRD, which would offer an adequate temporary SB effect and induce minimal permanent refractive changes.

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FREE PAPERS

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Kaner Hall 403

A Novel Method of Measuring Foveal Displacement / Foveal Ectopia in Patients With Idiopathic Epiretinal Membrane (ERM) Compared to the Fellow Eye

First Author: Christopher GO
Co-Author(s): Silvia BOSCALLIA, Cheuk Lam Cherlin LEE, Teresa SANDINHA, David STEEL, Yalin ZHANG

Purpose: To investigate foveal ectopia in idiopathic ERMs and correlate this to pre-op parameters and post-op outcomes.

Methods: This is a 2-centre, retrospective, consecutive case series of unilateral ERM who underwent vitrectomy and membrane peel. The foveal location is measured using a semi-automated measurement. Four points of interest are marked on the near-infra-red image (NIR) on Heidelberg Spectralis; these include the foveola and 3 points on the optic disc (the most superior, inferior, and temporal points visualized on the NIR). An automated system is then used to draw a circle of best fit around the optic disc to find the center of the optic disc, and this is used to compare its location with the foveola marked. This is performed on both eyes pre-operatively as well as the operated eye post-operatively to determine the degree of foveal displacement.

Results: A total of 167 patients (58% female) were included across the 2 sites. The mean age of the cohort was 68.3 years old. The mean pre-operative VA was 0.51logMAR and a mean central subfoveal thickness of 465.5um. Pre-operatively, there was a mean horizontal difference of 122.64um more temporal and a mean vertical difference of 8.70um more inferiorly compared to the fellow eye. Post-operatively, the fovea shifted 176.98um nasally and a further 7.98um inferiorly. Further statistical analysis will be conducted to correlate with post-operative results.

Conclusions: ERM was found to have minimal vertical foveal displacement but a significant temporal shift was noted compared to the fellow eye, and this displacement was corrected post-operatively.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Kaner Hall 403

Characteristics of Low Vision Patients in Vitreoretinal Polyclinic of Indonesia National Referral Hospital

First Author: Eduard LUMINTA
Co-Author(s): Umar MARDIANTO, Tri RAHAYU, Andi Arus VICTOR

Purpose: Posterior segment diseases contribute a significant burden on visual impairment in Indonesia after cataract and refractive error. However, little has been known about the details of the exact diagnosis, treatment, and prognosis due to the methodology used for previous studies that mostly used the protocol from Rapid Assessment of Avoidable Blindness. In this study, we aim to describe the clinical characteristics and treatment outcomes of low-vision patients in a referral vitreoretinal polyclinic in Jakarta, Indonesia.

Methods: Retrospective data of low vision patients with initial visits in 2022 were obtained from the vitreoretinal polyclinic at Cipto Mangunkusumo Hospital, a national referral hospital. Clinical characteristics and outcome of treatment were noted, including the diagnosis, treatments, initial and last uncorrected and corrected visual acuity, as well as systemic diseases present.

Results: A total of 66 patients with low vision came to the polyclinic, with the majority being male and 77.3% being between 20-59 years old. The most common diagnosis found was proliferative diabetic retinopathy, tractional retinal detachment, cataracts, and vitreous hemorrhage. 32 eyes underwent surgery, dominated by vitrectomy and phacoemulsification, and 26 eyes underwent office-based procedures of laser photocoagulation and intravitreal injection. Out of 48 eyes that underwent treatment, 36 did not have changes in the vision impairment category.

Conclusions: Most patients with low vision were males within productive age. The majority of the diagnoses found in those patients were mostly PDR and its complications. Detection of ocular complications from diabetes is key to preventing low-vision patients.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Kaner Hall 403

Clinical Observation of Sharkskin Forceps in Epiretinal Membrane (ERM) Surgery

First Author: Yong TAO
Co-Author(s): Li CHEN

Purpose: We investigated the clinical effects of ERM surgery using sharkskin forceps in order to prevent shear stress and traction trauma when grasping epiretinal membranes.

Methods: In this prospective study, 38 patients with secondary ERM who underwent pars plana vitrectomy (PPV) combined with membrane peeling for ERM were randomly divided into two groups. One group peeled the membrane using Grieshaber Sharkskin forceps, and the other group peeled the membrane using general membrane forceps (Belleif instrument, Suzhou, China). Evaluation of ERM manipulation included postoperative slow-motion video analysis of the number of times that forceps are inserted into the eye, intraoperative count of membrane grasps, intraoperative peeling time, and observed injury to retinal tissue.

Results: The number of times that the sharkskin forceps inserted into the eye was less than that of general forceps (sharkskin forceps 2.1 ± 1.0 VS general forceps 2.3 ± 1.7 , $p=0.73$). The intraoperative peeling time of sharkskin forceps was shorter than that of general forceps (sharkskin forceps 195.1 ± 120.1 VS general forceps 235.2 ± 145.5 , $p=0.38$) and the intraoperative count of membrane grasps was less than that of general forceps (sharkskin forceps 7.5 ± 5.3 VS general forceps 11.2 ± 7.1 , $p=0.13$).

Conclusions: Despite the fact that sharkskin forceps have similar clinical efficacy and safety compared with general membrane forceps, the texturized surface on the tips of the sharkskin forceps is helpful for initiating ERM edges from the retinal surface during ERM peeling surgery. These novel forceps helped reduce both unnecessary surgical maneuvers and retinal injury.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Kaner Hall 403

Comparative Analysis of the Functional and Safety Outcomes of Anterior Versus Retropupillary Iris-Claw Intraocular Lens Implantation: Single Surgeon's Experience

First Author: I-chia LIANG
Co-Author(s): Yun-hsiang CHANG, Yi-ju SHEN

Purpose: To compare the outcomes between pre-pupillary and retro-pupillary iris-claw intraocular lens (PP and RP ICIOL) insertion.

Methods: Clinical data were collected retrospectively of ICIOL insertion in compromised capsule/zonule by a single surgeon. The difference between the two groups, and pre- and post- operative within each group was analyzed.

Results: Thirty-eight eyes of 37 patients were included (PP: 11, RP: 27). The pre- and post-operative best-corrected visual acuity (BCVA) in the first week, the first month, or the latest follow-up showed no difference. ($p=0.054, 0.987, 0.587, 0.627$). However, in the first week, the RP group had significant VA improvement ($p=0.005$), while the PP group had not ($p=0.722$). In the first month and latest follow-up, both groups showed BCVA improvement, while the RP group was more significant (p -value PP vs. RP: first month, 0.023 vs. <0.0001 ; the latest follow-up, 0.013 vs. <0.0001). The pre-operative spherical equivalent (SE) showed no difference between the two groups ($p=0.270$). However, the difference between the post- and pre-operative SE was smaller with RP than PP in one month (PP vs. RP: -1.1 ± 0.52 vs -0.2 ± 1.23 , $p = 0.07$) and the latest follow-up (-1.2 ± 0.48 vs -0.07 ± 1.0 , $p < 0.0001$). IOL disencapsulation developed in six eyes (PP: 2, RP: 4). The occurrence showed no difference (odds ratio= 1.228).

Conclusions: ICIOL gives reasonable anatomical and functional outcomes and safety. However, regarding the vision improvement and accuracy of refractive prediction, retro-pupillary implantation appears to be superior to pre-pupillary implantation. Surveys with longer follow-ups and larger sample sizes are necessary in the future.

2

FREE PAPERS

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Kaner Hall 403

Comparison Between Efficacy of Combined Intravitreal Triamcinolone Acetonide (TA) and Bevacizumab and Intravitreal Triamcinolone Acetonide Alone for Eyes With Unresolved Postvitrectomy Diabetic Vitreous Hemorrhage

First Author: Kiran SHAKYA
Co-Author(s): Sangita SHAKYA

Purpose: To compare between efficacy of combined Intravitreal TA and bevacizumab and intravitreal TA for Eyes with unresolved vitreous hemorrhage.

Methods: Twenty-two eyes were divided into two groups, Group A (combined intravitreal bevacizumab and triamcinolone) and Group B (intravitreal triamcinolone) consecutively. Group A was administered combined intravitreal bevacizumab 1.25mg and triamcinolone 1mg with aseptic precautions, while Group B was given intravitreal triamcinolone 2mg. Best-corrected visual acuity (BCVA), slit lamp biomicroscopy, fundus examination, and intraocular pressure (IOP) were evaluated on day 1, week 1, month 1, and month 2.

Results: Eleven eyes of each group A and B underwent intravitreal combined TA and bevacizumab and TA alone, respectively. In group A, the mean BCVA was 1.193±0.23 LogMAR on 1st week, 0.49±0.28 on 1st month and 0.38±0.29 on 2nd month, while in group B, the mean BCVA was 1.69±0.19 LogMAR on 1st week, 1.42±0.38 on 1st month and 0.89±0.32 on 2nd month. In group A, the mean IOP was 23.18±0.87 mmHg on 1st day post-operative and subsequently controlled IOP, while in group B, the mean IOP was 30.63±2.54 mmHg on 1st day postoperative day, 24.72±1.73 on 1st week, 21.09±2.4 on 1st month and 19.09±1.57 on 2nd month. No other significant complication was noted.

Conclusions: Combined TA and bevacizumab may be more beneficial for clearing vitreous hemorrhage resolution and IOP control than intravitreal triamcinolone acetonide (TA) alone.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Kaner Hall 403

Evaluation of the Efficacy of Surgical Treatment for Macular Holes Using the Inverted Flap Technique at a Tertiary Eye Care Center in Kazakhstan

First Author: Amina BEIBETOVNA
Co-Author(s): Lukpan ORAZBEKOV, Kairat RUSLANULY

Purpose: To evaluate the outcomes of the inverted internal limiting membrane (ILM) flap technique for small, medium, and large macular holes (MH).

Methods: This is a retrospective study analyzing patients who underwent surgery using the inverted ILM flap technique from 2021 to 2023. All patients received preoperative assessments, including best-corrected visual acuity (BCVA) and optical coherence tomography (OCT). Patients were divided into three groups: small (less than 250 µm), medium (250 to 400 µm), and large (more than 400 µm). Follow-up assessments were performed over 12 months.

Results: In the large MH group (45 eyes, 65.22%), the average MH size was 573.1 ± 170.2 µm. The mean preoperative BCVA was 0.09 ± 0.09, and the postoperative BCVA was 0.27 ± 0.22 (P < 0.001). Anatomical closure was achieved in 68.89% of cases. In the medium MH group (16 eyes, 23.19%), the average MH size was 337.7 ± 55.4 µm. The mean preoperative BCVA was 0.09 ± 0.07, and the postoperative BCVA was 0.29 ± 0.27 (P = 0.007). Anatomical closure was observed in 87.5% of cases. In the small MH group (2 eyes, 11.59%), the average MH size was 185.0 ± 32.95 µm. The mean preoperative BCVA was 0.17 ± 0.09, and the postoperative BCVA was 0.55 ± 0.16 (P < 0.001). Anatomical closure was observed in 100% of cases.

Conclusions: The inverted ILM flap technique has shown high efficacy in the treatment of full-thickness macular holes, especially in small and medium-sized holes.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Kaner Hall 403

Method for Vitreous Body Microsurgical Anatomy Studying

First Author: Natalia KISLITSYNA

Purpose: The purpose of the study is to develop the algorithm for the examination of the vitreous body microsurgical anatomy.

Methods: The proposed method of macro-microscopic examination was used to study the VB topographic anatomy of 38 cadaver eyeballs. In order to color transparent structures of the vitreous, poorly soluble metallic salts, barium sulfate (Vitrecontrast) was used. Macroscopic examination was performed using a TopconOMS-800 operating microscope with a magnification of x8 to x21, microscopic changes were evaluated by light microscopy at x50- x630 multiple magnification with Leica DM LB2 microscope followed by photographic recording.

Results: The result of macroscopic preparation was the compilation of individual anatomical and topographic maps of VB patients. A distinctive feature of the developed method is the ability to dissect any VB structure and to isolate each cortical layer with the possibility of studying its anatomical and topographic features and relationships with underlying tissues (internal limiting membrane, ciliary body, lens capsule). In addition, the method allows the maintenance of the shape and integrity of the specimens after passing through all stages of histological processing. In order to fixate VB samples, we used a method of fixing VB structures on a special adhesive-metric tablet and placing them in a biopsy bag placed in a biopsy cassette. After that, filled in formalin, the specimens were delivered to the laboratory, where all the stages of standard processing took place.

Conclusions: The developed technique of macro-microscopic examination of the vitreous allows the creation of an individual map of the VB topographic anatomy.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Kaner Hall 403

Surgical Outcome of Sutureless and Glueless Sclerally Fixated Intraocular Lens Implantation by Modified IOL Tuck Technique

First Author: Mohammad AMINUR RAHMAN
Co-Author(s): Dr.mowsumi CHOWDHURYCHOWDHURY

Purpose: To report the surgical outcomes of sutureless intrascleral fixation of a 3-piece intraocular lens in the ciliary sulcus applying a modified technique, in different age groups of patients with aphakia of various aetiology.

Methods: Retrospective, non-comparative, single-centre interventional study of 55 aphakic eyes of various causes, which underwent sutureless and glueless intrascleral fixation of 3-piece intraocular lens (IOL). Anatomical and functional outcomes obtained were statistically analyzed for significance.

Results: The analysis was conducted on 55 eyes from 54 patients with a mean \pm standard deviation (SD) follow-up of 5.56 ± 5.43 months. Patients were 39 (71%) men and 16 (29%) women with a mean \pm standard deviation (SD) age of 46.76 ± 18.55 years (range 8–90 years). The mean best-corrected visual acuity (BCVA) significantly improved ($p < 0.001$) through paired “t” test from 1.55 ± 0.53 logMAR (approx. Snellen equivalent 6/192) to 0.44 ± 0.23 logMAR (approx. Snellen equivalent 6/15), following surgery. Final visual acuity was 6/18 or better in 40 eyes. SFIOL was stable and well-centered in 51 eyes. Postoperative complications included IOL haptic dislocation ($n=3, 5.5\%$), Twisting of SFIOL ($n=1, 1.85\%$), Dispersed vitreous hemorrhage ($n=1, 1.85\%$), Post-operative CME ($n=2, 3.70\%$), Corneal decompensation ($n=2, 3.70\%$), Post-operative RRD ($n=1, 1.85\%$), Post-operative choroidal detachment ($n=2, 3.70\%$).

Conclusions: Sutureless glueless SFIOL implantation by modified IOL tuck technique can be considered an effective option for the management of aphakia, dislocated IOL, and lenses with poor capsular support. This modified IOL tuck technique is easier to learn with less complication.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Kaner Hall 403

Surgical Outcomes of High Myopic Refractory Macular Holes

First Author: Nishant Vijay RADKE
Co-Author(s): Miaoli LIN, Zhizhao PENG, Snehal Nishant RADKE

Purpose: To evaluate the surgical outcomes of refractory myopic macular holes (MH).

Methods: Retrospective case series of 15 eyes of 14 patients with high/pathological myopia with previously failed MH surgeries. All eyes underwent 25G re-vitrectomy with MH repair using internal limiting membrane (ILM) graft under PFCL, Pedicle or ILM inversion, macular massage, and autologous retinal/lens capsular grafts followed by endo-tamponade with perfluoro-octane gas and prone position for 2 weeks. Snellen's best corrected visual acuity (BCVA) was converted to LogMAR. Normal distribution was checked using the KS test. F-test was used to assess variance and subsequently paired T-test was used to determine outcomes. Fisher's exact test/ Chi 2 test was used to evaluate nominal data. Correlation coefficients were calculated to study relationships between MH diameter (MHD)-axial length (AXL), AXL-Final BCVA, and MH Diameter-Final BCVA.

Results: Mean AXL and MHD were 28.443mm and 663.267 microns. 13 eyes achieved MH closure. Male: female = 8:6. T-test p values were insignificant for differences between Male-Female AXL, MHD, pre-op BCVA, and male-female post-op BCVA. The values were statistically significant individually for paired samples of Male pre-op: post-op BCVA, female pre-op: post-op BCVA, and overall pre- and post-op BCVAs. Correlation coefficients were weakly positive for MHD: AXL ($r=0.109$), AXL: final BCVA ($r=0.193$), and strongly positive for MHD: final BCVA ($r=0.715$). Fisher's test evaluating pathological myopic features and type of anesthesia on outcomes were insignificant.

Conclusions: Although challenging, refractory, highly myopic MH achieves satisfactory anatomical and functional outcomes. The presence of pathological myopic maculopathy and the type of anesthesia did not affect the outcomes.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Kaner Hall 403

Surgical Outcomes of Primary Rhegmatogenous Retinal Detachment (RRD) Surgery in an Asian Tertiary Hospital

First Author: Leroy TAN
Co-Author(s): Widad MD YUSOF, Safinaz MOHD KHALDIN

Purpose: To describe the anatomical and surgical outcomes of primary RRD surgery, including the predictors of surgical success, comparisons between the interventions: scleral buckle (SB), pars plana vitrectomy (PPV), or a combination of SB and PPV (SB/PPV) and their complications.

Methods: A retrospective cohort study of all primary RRD surgeries (SB, PPV, SB/PPV) at Hospital Selayang in Malaysia from 2018 to 2021 ($n=344$). The main outcomes measured were Anatomical Success (total retinal reattachment) and Functional Success (best visual acuity of 3/60 or better) at 6-8 months postoperatively. Binary logistic regression adjusted for confounders to compare interventions and identify predictors of outcome success. Comparisons between intervention types and complications were assessed.

Results: Anatomical Success rates were SB=98.4%, PPV=98.6%, and SB/PPV=95.6% (Overall 97.4%), Functional Success rates were SB=93.7%, PPV=76.7%, and SB/PPV= 77.0% (Overall 79.9%). No surgical group showed statistical superiority against both outcome measures. Anatomical Success does not statistically predict Functional Success. Better presenting visual acuity was a predictor of functional success, whereas general anesthesia (GA), redetachment, and ocular hypertension decreased the odds of functional success. Cataracts and the need for cataract surgery were more common in PPV and SB/PPV compared to SB. The redetachment rate was 7.3%, with no difference among groups.

Conclusions: SB, PPV, and SB/PPV provide similarly good anatomical and functional success after accounting for confounders, with SB having the lowest complication rate. Better presenting visual acuity predicts functional success. GA, redetachments, and ocular hypertension predict failure to achieve functional success. Common complications include cataracts, ocular hypertension, and redetachments.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Kaner Hall 403

The Health Economics and Patient Experience of Removing Day 1 Post Vitreo-Retinal (VR) Surgery Clinic Visit

First Author: Christopher GO
Co-Author(s): Rhiannon EDWARDS, Max GRIEBSCH, Navid HAKIM, Teresa SANDINHA, David STEEL

Purpose: To investigate the health economics and patient experience of day 1 post VR surgery clinic visit and explore the feasibility of removing day-1 post-operative review (D1POR).

Methods: This is a prospective study comparing the economic cost and patient experience in the immediate 2-4 weeks post-operative period in patients who had (control) versus those who had not (study) had D1POR. Patients' follow-up schedules were at the surgeons' discretion. A patient survey was used to explore the cost associated with D1POR, including carers and unintended medical visits.

Results: Preliminary results over 4 weeks included 57 patients, and a further 4 weeks of collection is ongoing. There were 17 patients in the study group and 40 patients in the control group. Overall, 33% preferred medical contact (phone call or clinic visit) for D1POR, but only 26% (n=5) in the study group and all would have been satisfied with a phone call for reassurance. There was no significant difference (16% vs 10%) between the study and control group, in seeking extra medical attention between surgery and scheduled appointment. When asked about absolute cost, only 14 responded with a mean cost of £36. However, the true cost is significantly higher, with transport costs and accompanying person time often not considered. A more in-depth mathematical model will be used to calculate the projected cost following complete data collection in August 2024.

Conclusions: There is a significant cost associated with attending in-person D1POR, and most patients were happy without any D1POR, and those who did were satisfied with phone calls only.

Apr 04, 2025 (Fri) 16:45 - 18:15
Venue: Kaner Hall 403

The Yin-Yang Staining Technique to Create Non-Stained Internal Limiting Membrane Flap for Covering of Large Idiopathic Macular Hole

First Author: Zhaotian ZHANG

Purpose: To introduce a modified technique to make negative and positive (Yin-Yang) staining of the internal limiting membrane (ILM) using triamcinolone acetonide (TA) and indocyanine green (ICG) to create a non-stained ILM flap for covering of large idiopathic macular hole (IMH).

Methods: Thirty-one consecutive patients (31 eyes) with large IMH (>400 µm) were prospectively included. After the removal of the central vitreous, a drop of TA was injected into and covered the macular hole (MH) and its surrounding area. Sequentially, ICG was injected to stain the outer area of ILM. Then started creating an ILM flap from the temporal stained area. Finally, the non-stained ILM flap was inverted to cover the MH. The main outcomes were best-corrected visual acuity (BCVA), macular contour, and integrity of the outer retina.

Results: Twenty-eight eyes (90.3%) achieved primary MH closure. The mean of MH minimum linear diameter and base diameter were 593±119 µm and 1082±242 µm, respectively. 12 (38.7%) and 9 eyes (29.0%) regained U-shaped and V-shaped macular contour at the 6-month follow-up, respectively. The mean BCVA (logarithm of the minimal angle of resolution, logMAR) increased from 1.06±0.30 preoperatively to 0.56±0.31 at the 6-month follow-up (P<0.001). 21 (67.7%) and 16 (51.6%) eyes regained integrity of the external limiting membrane and ellipsoid zone at the 6-month follow-up, respectively.

Conclusions: The modified ILM staining technique sequentially using TA and ICG was a safe and effective option to create a non-stained ILM flap to cover large IMH, which would prevent the foveal area from direct contact with ICG.

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FREE PAPERS

Translational Research in Ophthalmology

Apr 05, 2025 (Sat) 09:45 - 11:15
Venue: Suryamukhee Hall 401

A Clinical Study of Allogeneic iPSC Cell-Derived Retinal Pigment Epithelial Cell Strips Transplantation for Retinal Pigment Epithelial Impairment Disease

First Author: Yasuo KURIMOTO
Co-Author(s): Yasuhiko HIRAMI, Tadao MAEDA, Michiko MANDAI, Daiki SAKAI, Masayo TAKAHASHI

Purpose: While there is no established treatment for retinal pigment epithelium (RPE) impairment disease, transplantation of induced pluripotent stem cell (iPSC)-derived RPE can be a curative treatment. Transplanting RPE as cell sheets is reliable but highly invasive, while cell suspension transplantation is less invasive, but cell leakage is inevitable, and it is difficult to control the transplantation site. We established a minimally invasive and reliable transplantation method by aggregating RPE into strip form and conducted a clinical study.

Methods: Allogenic iPSC-derived RPE was aggregated into thin strips and transplanted under the retina of three patients with advanced RPE impairment disease using a 31G cannula. The primary endpoint was the reduction of RPE abnormal area, and the secondary endpoints included efficacy and safety. The patients were observed for one year postoperatively.

Results: One patient of dry age-related macular degeneration and two of retinitis pigmentosa with MERTK mutation underwent 25G vitrectomy, and one or two RPE strips were implanted under the retina with a 25G/31G cannula. One year after transplantation, the primary endpoint of abnormal RPE area reduction was achieved in all patients, and the quality of vision was improved in one patient. No serious adverse events occurred, but one patient developed an epiretinal membrane not thought to be derived from the transplanted cells.

Conclusions: Allogenic iPSC-derived RPE was successfully transplanted subretinally in advanced RPE-impaired cases in a minimally invasive procedure by aggregating iPSC-derived RPE into strip form, and the safety and efficacy were confirmed one year after transplantation.

Apr 05, 2025 (Sat) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Metabolic Changes in Aqueous Humor and Prognostic Implications in Diabetic Retinopathy Patients Undergoing Cataract Surgery With Intravitreal Anti-VEGF Therapy

First Author: Yumeng SHI
Co-Author(s): Yi LU, Jin YANG

Purpose: This study aims to explore the changes in aqueous humor (AH) metabolites and their relationship with prognosis in patients with diabetic retinopathy complicated by cataracts undergoing simultaneous intravitreal injection of anti-VEGF agents during cataract surgery (CS).

Methods: A randomized controlled trial was conducted, with a double-blind design. Forty-eight eyes were included, divided into the experimental group (CS with intravitreal Conbercept) and control group (CS alone). AH samples were collected intraoperatively and one week postoperatively. Ophthalmic examinations, including BCVA, intraocular pressure, and OCT, were performed at one week, one month, two months, and three months postoperatively.

Results: There was no significant difference in the overall changes of AH metabolites pre- and postoperatively in the control group. However, significant changes were observed in the experimental group, with alpha-ketoglutaric acid, acetylcarnitine, glutamate, and hydroxybenzoic acid showing the most significant changes. Pathway enrichment analysis using the SMPDB revealed that differential metabolites were mainly associated with the Malate-Aspartate Shuttle, Glucose-Alanine Cycle, and Alanine Metabolism. Samples were categorized into good or poor prognosis groups based on BCVA and central subfield thickness as outcome indicators. Random forest, support vector machine, and Boruta analysis were employed to assess the predictive ability of metabolites for prognosis. Results indicated that 4-Hydroxybenzoic acid, Aminocaproic acid, and xylose exhibited the highest predictive capability.

Conclusions: AH metabolite levels remain relatively stable after cataract surgery, while intraoperative anti-VEGF injection alters the aqueous humor

metabolic profile. Changes in metabolite levels are associated with prognosis, highlighting the feasibility and necessity of personalized preventive measures for potential PCME in patients.

Apr 05, 2025 (Sat) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Progress in Building a Clinically Relevant In Vivo Model for Diabetic Retinopathy

First Author: Shyam CHAURASIA
Co-Author(s): Utkarsh ADDI, Thomas CONNOR, Scholastica GO, Rayne LIM

Purpose: This study evaluated the retinal imaging, function, and pathological changes in the Ossabaw mini pig retina and its suitability as a clinical model for diabetic retinopathy (DR).

Methods: Ossabaw mini pigs were exposed to a Western diet consisting of high-kilocalorie/high-fat/high-fructose corn syrup food of up to 7500 kcal/day for one year. Pigs underwent clinical retinal imaging for fundus photography, fluorescein angiography (FA), optical coherence tomography (OCT), and electroretinogram (ERG). Blood samples and eye tissue were obtained after euthanization for blood profiling and cellular and biochemical assessment of DR pathology. Retinal whole mount and immunohistochemistry (IHC) were performed to assess the retina's acellular capillaries, microvascular, and structural integrity.

Results: Ossabaw minipigs depicted metabolic syndrome (MetS) and showed clinical retinal changes in the fundus/FA and aberrant ERG during the Western diet for a year. Obese minipigs also showed progressive degenerative and pathological changes in the retina. The retinal whole mount displayed loss in vessel percentages, total vessel length, and lacunarity.

Conclusions: Ossabaw minipigs fed on a Western diet displayed cellular and biochemical alterations attributing to DR progression in the retina, suggesting its clinical relevance.

Apr 05, 2025 (Sat) 09:45 - 11:15
Venue: Suryamukhee Hall 401

Seeing Into Wellness: DI-Based Retinal Age for Top 32 Diseases Stratification in GBD Rankings

First Author: Riqian LIU
Co-Author(s): Wenyong HUANG, Ruilin XIONG

Purpose: To evaluate the associations of Retinal Age Acceleration (RAA), PhenoAge Acceleration (PAA), and KDM-BA Acceleration (KAA) across 32 major non-communicable disease groups from the 2019 Global Burden of Disease and Injury Study.

Methods: The study evaluated UK Biobank participants enrolled between 2006 and 2010. A deep learning network was applied to retinal fundus images from more than 40,000 individuals to predict individual retinal age. PhenoAge and KDM-BA assessments were calculated based on methodologies delineated in previous studies. 39,647 participants with complete data were included in the final analysis. Student t-test was used to test the age acceleration (AA) difference between disease groups and the healthy control group.

Results: The study findings indicate that Retinal Age Acceleration, PhenoAge Acceleration (PAA), and KDM-BA Acceleration (KAA) exhibit efficacy in disease screening, revealed significant deviations compared to healthy controls across 18, 25, and 14 of the 32 investigated diseases, respectively. The analysis revealed that RAA, PAA, and KAA capture differential information across various systemic diseases, with RAA mainly screening for sense organ and endocrine diseases, PAA for cardiovascular conditions, and KAA for mental and endocrine disorders.

Conclusions: Our study highlighted the significance of retinal age as an affordable, universally available, and non-invasive biomarker for identifying diseases, acting as a specialized adjunct to conventional biological age metrics. The potential of retinal age in facilitating widespread, early detection of numerous diseases among broader populations holds promise for substantially reducing the strains on global healthcare systems.

Apr 05, 2025 (Sat) 09:45 - 11:15
Venue: Suryamukhee Hall 401

The Human Induced Pluripotent Stem Cell (hiPSC)-Derived Corneal Endothelial Progenitor-Like Cell (iHCEPLC) Recovers the Rabbit Model of Corneal Endothelial Dystrophy

First Author: Fang Chi HSIAO
Co-Author(s): Hung-chi CHEN, Yi-jen HSUEH, David Hui-kang MA, Yaa-jyuhn james MEIR

Purpose: Corneal endothelial dysfunction results in corneal edema and affects visual quality. Corneal transplantation is the current treatment. Due to the scarcity of donated corneas, this unmet medical need requires a novel therapeutic modality.

Methods: The customized induced iHCEPLC was obtained through cell fate conversions starting from peripheral blood mononuclear cell, hiPSC, and human neural crest cell, finally reaching the iHCEPLC state via a series of inductions. Several molecular diagnoses were applied to depict its progenitor state, including RNAseq, FlowCytometer, immunostainings, and rtPCR. Significantly, it can be induced to gain differentiation maturity through contact inhibition. In addition, a BAK-mediated rabbit model of corneal endothelial dysfunction was established in this study to test the therapeutic effectiveness of the iHCEPLC.

Results: After cell fate conversion, the specific human corneal endothelial cells (HCEC) markers were detected by rtPCR and immunostaining in iHCEPLC. Further, RNAseq was applied to distinguish its progenitor-like cell fate from primary HCEC. FlowCytometry profiled the heterogeneity subpopulation, consistently displaying a subtle difference from primary HCEC. Terminal differentiation can be induced in iHCEPLC, addressing its progenitor-like fate. iHCEPLC can restore the BAK-based rabbit model of corneal endothelial dysfunction. Immunohistochemistry verified that such acuity restoration of the BAK-treated cornea is due to the introduced iHCEPLC, and such therapeutic effectiveness is observed in the long term.

Conclusions: Here, we demonstrated that customized iHCEPLC has long-term therapeutic efficacy for corneal edema. As a progenitor cell, our iHCEPLC has a restricted cell lineage nature and can proliferate in vitro, supporting sufficient therapeutic candidate cells.

Apr 05, 2025 (Sat) 09:45 - 11:15
Venue: Suryamukhee Hall 401

The Intricate Mechanisms of Subretinal Fibrosis in Neovascular Age-Related Macular Degeneration

First Author: Jingfa ZHANG

Purpose: Subretinal fibrosis is the end-stage sequelae of nAMD, causing severe vision impairment, and currently, there is no effective treatment. This study aims to explore the intricate mechanisms causing subretinal fibrosis, thus providing potential therapeutic targets for the treatment of nAMD.

Methods: Laser-induced CNV mouse model was employed to study subretinal fibrosis and the molecular changes. In vitro, the primary choroidal pericytes or RPE cells were treated with TGF- β to detect the transdifferentiation ability of cells, extracellular matrix secretion, and cell function, including cell migration, cell scratch test, gel contraction, to detect the changes of fibrosis-related pathway molecules, and to explore the anti-fibrotic ability and mechanism of related inhibitors.

Results: In the laser-induced CNV mouse model, mesenchymal transition, including pericyte-myofibroblast transition (PMT) and RPE-myofibroblast transition (EMT), was involved in the occurrence and development of subretinal fibrosis. In vitro experiments have also confirmed that TGF- β can induce PMT and EMT, promote cell proliferation and migration, and participate in subretinal fibrosis. Mechanistically, multiple pathways are activated in subretinal fibrosis, such as Smad2/3, Akt/mTOR, Notch pathway, YAP, and nonclassical Wnt pathway Wnt5a/ β -catenin, participate in the pathogenesis of subretinal fibrosis. Inhibition of the above-mentioned signaling pathways has a certain anti-fibrotic effect.

Conclusions: The pathogenesis of subretinal fibrosis is complex, with multiple pathways involved. Inhibition of signaling pathways such as Smad2/3, Akt/mTOR, Notch, YAP, Wnt5a, and β -catenin could provide a potential direction for targeting pericytes and RPE cells in the treatment of subretinal fibrosis.

Visual Sciences

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Champa Hall 304

Elucidating the Pathogenesis of Retinopathy in a Zebrafish Model of Carnitine Palmitoyltransferase I Deficiency

First Author: Zulvikar ULHAQ

Purpose: Fatty acid oxidation disorders (FAODs) are a group of rare genetic metabolic disorders caused by mutations in genes responsible for transporting and metabolizing fatty acids in the mitochondria. One crucial enzyme involved in this process is carnitine palmitoyltransferase I (CPT1), which transports long-chain fatty acids to the mitochondrial matrix for beta-oxidation. Defects in beta-oxidation enzymes often lead to pigmentary retinopathy; however, the underlying mechanisms are not entirely understood. Therefore, our study investigates the impact of fatty acid oxidation disorders (FAODs) on retinal health.

Methods: To study FAOD and its impact on the retina, we employed zebrafish as a model organism. Specifically, we used antisense-mediated knockdown strategies to target the *cpt1a* gene and examined the resulting retinal phenotypes.

Results: We demonstrated that the *cpt1a* MO-injected fish significantly reduced the length of connecting cilia and severely affected photoreceptor cell development. Moreover, our findings highlight that the loss of functional *cpt1a* disrupted energy homeostasis in the retina, leading to lipid droplet deposition and promoting ferroptosis, which is likely attributed to the photoreceptor degeneration and visual impairments observed in the *cpt1a* morphants.

Conclusions: In conclusion, our data implicate that *cpt1a* regulates metabolic programs within the retina and advances to a committed neuroretina fate. Altogether, the above complex mechanisms may be implicated in the development of retinopathy in FAOD.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Champa Hall 304

Patient-Specific Perceptual Visual Stimulation Improves Vision and Contrast Sensitivity in Crosslinked Stable Keratoconus: Results of Randomized Controlled Study

First Author: Lionel Raj DANIEL RAJ PONNIAH

Purpose: To evaluate computer-based perceptual visual therapy (PL) regime using Gabor patches for improving best-corrected vision (BCVA) & contrast sensitivity function (CSF) in crosslinked stable keratoconus (KC).

Methods: A prospective, controlled randomized, open-label study. Cross-linked keratoconus (KC), stable over 1 year with BCVA worse than 20/40 were randomized in 2:1 into treatment (G1) in which computer-based perceptual therapy using Gabor patches amidst co-linear flankers was employed, and control (G2) arms. The study consists of 2 phases (screening + therapy periods (PL)). Post 20 and 40 training sessions were evaluated for improvements in BCVA distance and near (ETDRS) and CSF at spatial frequencies of 3, 6, 12, 18 CPD.

Results: Thirty cases were randomized. Baseline BCVA was 68.20+/-8.11 & 67.40+/-7.09 in G1, G2 (p=0.793). BCVA of Perceptual therapy arm PL(G1) improved to 73.30+/-7.47 & 79.10+/-8.46 post 20 & 40 sessions (over 2.5 LogMAR lines equivalent, p<0.0001) & not in controls(G2). Contrast sensitivity functions (CSF) at 3, 6, 12, 18 CPD analyzed using Friedman repeated measure tests showed significant improvements in the PL group (G1, p<0.0001), and not in controls.

Conclusions: Sequential, patient-specific, perceptual therapy improved vision & contrast (CSF) in crosslinked keratoconus with visual deficiencies & acts as proof of concept of improving neural connections at cortical levels. Keratorefractive surgeons could consider it as post-operative therapeutic adjuvant, in crosslinked stable KC with visual deficiencies.

2

FREE PAPERS

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Champa Hall 304

Study on the Correlation Between Chinese Adults' Asthenopia and Target Displacement During Eye Movements

First Author: Jianqing LAN

Purpose: To investigate the link between asthenopia in Chinese adults and target displacement during eye movements, identifying potential risk factors for asthenopia to improve its diagnosis and severity assessment.

Methods: A cross-sectional study involving 107 participants used the Tobii eye-tracking system to record fixation positions in fixational and saccadic tasks. Target displacement (TD) quantified horizontal and vertical fixational displacement. Correlation coefficients and logistic regression were applied to analyze relationships and risk factors.

Results: Significant differences were noted in gender, asthenopia scale scores, and eye movement parameters between control and asthenopia groups (all $P < 0.05$). Lens thickness showed a weak correlation with average TD in the fixational task. Binary logistic regression identified asthenopia scale score and average TD in fixational and saccadic tasks as independent risk factors. Receiver Operator Characteristic (ROC) curves determined predictive thresholds (Model 1, incorporating gender, total scale score, and average TD in the fixational task, achieving an AUC of 0.748. Model 2, including similar parameters for the saccadic task, showed an AUC of 0.806. The most effective model had an AUC of 0.822, indicating higher diagnostic accuracy for asthenopia).

Conclusions: Conclusions: Target displacement in saccadic tasks was sensitive for predicting asthenopia, offering an objective and quantifiable diagnostic approach.

Apr 06, 2025 (Sun) 11:30 - 13:00
Venue: Champa Hall 304

The Effect of Knockout of Non-Coding RNA (E1/2) in miR-183 Cluster on Retinal Structure and Function and Its Mechanism

First Author: Chang-jun ZHANG

Co-Author(s): Zi-bing JIN, Guang-wen LI, Min LI, Hao MOU, Dan-dan SHI

Purpose: The miR-183 cluster (miR-183C, including miR-182/183/96) is highly expressed in various terminally differentiated sensory neurons, especially retinal photoreceptor cells. Our research shows that double knockout (DKO) of miR-183 and miR-96 significantly impairs cone maturation in mice (PNAS 2017). However, single knockout (SKO) of either miR-182 or miR-183 does not notably affect retinal structure induced by photoreceptors (IOVS 2019, 2020). Given that miR-96 is almost absent in photoreceptor cells, the defects observed in DKO likely result from the loss of non-coding RNAs E1 and E2 within the miR-183C cluster. To explore the role of these non-coding RNAs in retinal structure and function in vivo, we used CRISPR/Cas9 gene editing to create three mouse models with different non-coding RNA knockouts: Exon1 single knockout (E1KO), Exon2 single knockout (E2KO), and Exon1–Exon2 double knockout (E1/E2 DKO).

Methods: Retinal phenotypic data of E1KO, E2KO, and E1/E2 DKO mice were evaluated using fundus photography, SD-OCT imaging, electroretinogram (ERG), and immunofluorescence staining. High-throughput sequencing analyzed retinal samples, with subsequent validation of identified targets conducted in vitro and in vivo using advanced molecular biology techniques.

Results: We examined the regulatory effects of non-coding RNAs on retinal structure and function, elucidating the synergistic relationship within the miR-183C cluster and identifying pivotal non-coding RNAs responsible for regulating this genomic region.

Conclusions: These findings provide insights into miRNA cluster regulatory networks, offering a foundation for early diagnosis and treatment strategies for retinal degenerative diseases.



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POSTERS

AI, Digital Innovation and Virtual Health

Poster No.: FP2660

Evaluating AI-Based iPad Visual Acuity Testing in Clinical Practice

First Author: Cheryl KHANNA

Co-Author(s): Jay ADUSUMALLI, Sepideh JAMALI, Sunil KHANNA, Michael MAHR

Purpose: Visual acuity assessment is a fundamental aspect of ophthalmic care. Tablet-based visual acuity tests offer potential advantages over traditional methods, including portability, versatility, and accessibility. This study aims to evaluate the efficacy and feasibility of tablet-based visual acuity testing, which can be self-administered in four languages with auto-adjustment of font size based on the distance between the iPad and the patient. This prospective study will compare iPad visual acuity to ETDRS visual acuity.

Methods: Smart Eye Chart, an iPad OS application, was developed for multi-language visual acuity testing. The software incorporates an Artificial Intelligence model to adjust optotype size dynamically, ensuring accurate testing at any distance. Patients from injection and glaucoma clinics were prospectively enrolled for comparative analysis between tablet and ETDRS assessments. Demographic information, visual acuity measurements, and satisfaction scores were collected and analyzed.

Results: 40 patients were enrolled. Statistical analysis revealed no significant difference between tablet and ETDRS assessments ($p=0.97$, 95% CI: -0.6 – 0.6), with a mean difference of one logMARline. Age and sex did not show significant correlations with visual acuity ($p=0.36$, $p=0.38$). Patient satisfaction scores were significantly better with tablet-based assessments ($p<0.001$).

Conclusions: Tablet-based visual acuity assessments demonstrate comparable visual acuity to traditional methods. There was significantly better patient satisfaction with the iPad compared to the ETDRS method for visual acuity. This study demonstrates the potential of accurate and accessible visual assessments with iPads in clinical practice.

Academia, Research, Teaching and Education in Ophthalmology

Poster No.: FP2661

Communication in Hospitals Using a Smartphone-Based Portable Slit-Lamp Microscope With Image Filing Capability

First Author: Hiroki NISHIMURA

Co-Author(s): Kazuki ASAI, Rohan KHEMLANI, Shintaro NAKAYAMA, Eisuke SHIMIZU, Ryota YOKOIWA

Purpose: Intra-hospital communication inefficiency can lead to an overall decrease in diagnosis and treatment efficiency. We propose that the communication between ophthalmologists and other healthcare professionals will be improved by the Smart Eye Camera, a smartphone-based portable slit-lamp microscope with image filing capability.

Methods: This case report explores the effect on intra-hospital communication using the Smart Eye Camera. In cases of allergic conjunctivitis and epidemic keratoconjunctivitis, detailed ocular images were captured using the device and promptly shared between certified orthoptists and ophthalmologists.

Results: We observed significant improvements in intra-hospital communication and patient care. In cases of allergic conjunctivitis and epidemic keratoconjunctivitis, prompt capture and sharing of detailed ocular images enabled rapid diagnosis. Real-time image sharing allowed immediate consultations, speeding decision-making and treatment initiation. The need for physical patient transfers between departments was minimized, significantly reducing the risk of hospital-acquired infections. Additionally, the portable slit-lamp microscope expedited the examination process, allowing more patients to be

seen in a shorter period, due to its pocket-sized dimensions and portability. The captured images also served as valuable educational resources.

Conclusions: The introduction of the Smart Eye Camera, a portable slit-lamp microscope with image filing capability, has led to significant improvements in intra-hospital communication and patient care. Specifically, these improvements include enhanced diagnostic accuracy and speed, reduction in nosocomial infections, and increased operational efficiency. Furthermore, its use aids in the training of medical personnel.

Poster No.: FP2662

Profile of Patients at the National Tertiary Referral Hospital Ophthalmology Clinic

First Author: Julia Rosalina Cesar MAGNO

Purpose: This paper presents a profile of patients attending the ophthalmology clinic at the national tertiary referral hospital in the capital city.

Methods: In 2019 the clinic introduced an eye health electronic medical record. Patient diagnosis and demographic data (age, gender, occupation, and residence) were extracted from the database for patients who attended the clinic from 2020 to May 2024, and were analyzed using descriptive statistics.

Results: Annual attendance reached 15,788 in 2020, dropped to 9,347 in 2021 during the COVID-19 pandemic, then increased to 11,920 in 2022 and 12,680 in 2023. The number of review patients consistently exceeded the number of new patients. In 2023, the most common outpatient diagnosis was 'Disorder of Lens' (30%), followed by 'Refractive Error' (18%) and 'Disorder of Conjunctiva and Ocular Surface' (17%). Overall, there were slightly more females (53%) than males (47%). Most patients fell into the age group 16–30 years (27%), followed by 31–45 years (22%) and 46–60 years (22%). People from the capital city were vastly over-represented, accounting for 60% of clinic patients but only 24% of the total population. The occupation field had substantial missing data.

Conclusions: Analysis of clinic utilisation data (who seeks our help) can support service development by revealing trends over time and health inequalities. Referral systems need to be strengthened and

community awareness improved to ensure people living in rural municipalities have access to specialist eye care. Within the clinic, data completeness can be improved.

Poster No.: FP2663

Research Progress of Macrophages in Fundus Diseases

First Author: Peiyu WANG

Purpose: Macrophages are an important cell population of the mononuclear phagocyte system, with powerful functions of phagocytosis, chemotactic-4 directed motility, and involvement in cytokine secretion. Under the action of microenvironmental signals, macrophages can be polarised into classically activated macrophages (CAMs or M1) and alternatively activated macrophages (AAMs or M2). Macrophage polarisation status and corresponding function affect the onset, progression, and regression of fundus diseases, and macrophage polarisation and inflammatory factor-mediated immune responses are important mechanisms in the development of fundus disease.

Methods: This article provides a review of the different polarisation phenotypes of macrophages and the modulation of macrophage polarisation as a therapeutic target in age-related macular degeneration (AMD), diabetic retinopathy (DR), proliferative vitreoretinopathy (PVR), retinal vein occlusion (RVO), epiretinal membrane (ERM).

Results: This article reviews the impact of macrophage polarization status and functional phenotype on the development of AMD, DR, PVR, RVO, and ERM, and describes potential therapeutic strategies.

Conclusions: Abnormal activation of macrophages mediates the retinal inflammatory response and promotes neovascularization and fibrosis. However, due to the complexity of the mechanisms and pathways involved, most of the current therapeutic explorations are still in their infancy, and need to be explored in depth from multiple perspectives, such as functional phenotype and cellular metabolism, in order to achieve the goal of utilizing macrophages for the treatment of retinal diseases.

Poster No.: FP2664

Role of Professional Association

First Author: Dr. Tejsu Singh MALLA
Co-Author(s): Sabin SAHU

Purpose: To assess the perception of its members, and experience towards its organization, and to prepare a framework for the future to strengthen its organization with happy members.

Methods: An email containing an invitation and a link to an online survey was sent to Nepalese ophthalmologists and residents. Up to three reminder emails were sent to non-respondents. Only anonymized data was analyzed to protect the privacy of the respondents. This is a descriptive cross-sectional study.

Results: A large majority of the respondents were young ophthalmologists aged 40 years old and below (60.1%), and 54% of the total participants were females. The majority were members of the professional Society, out of which 33.7% had been members for less than 5 years. Only 29.7% of residents were associate members, and 91% of the respondents felt that professional development was the primary role of society, followed by an important role in advocacy and public awareness. 80.6% of the respondents had voted in the election. A larger majority (76.7%) of the respondents felt that misuse of a doctor's title is a burning issue out of which the majority were aged between 31-40. 63.5% were interested in joining the LDP program. The majority, 79%, were satisfied with being a member.

Conclusions: The professional society should continue to play an active role in professional development and resolve the misuse of doctor titles through press releases and creating public awareness, it should initiate a leadership development program and create a platform for easy access to professional liability insurance. Furthermore, they should encourage members to join, as membership is crucial for membership-based associations.

Poster No.: FP2665

Surgical Outcomes of Pars Plana Vitrectomy and Lensectomy Using the Fragmatome by a Trainee Ophthalmologist

First Author: Surantha DE SILVA

Purpose: To evaluate the surgical outcomes of pars plana vitrectomy (PPV) and lensectomy, performed with fragmatome-assisted fragmentation by an ophthalmology fellow not specializing in vitreoretinal surgery, for the management of subluxed and dislocated crystalline lenses.

Methods: This descriptive study retrospectively analyzed consecutive patient records of 15 individuals who underwent pars plana vitrectomy and lensectomy for subluxed or dislocated crystalline lenses. The surgeries were performed by a non-vitreo-retinal specialty ophthalmology fellow under the direct supervision of a consultant ophthalmologist. Data collected included patient demographics, preoperative comorbidities, and intraoperative and postoperative complications.

Results: The cohort comprised 10 males and 5 females. The most common indication for surgery was lens dislocation following trauma (46%), followed by lens drop due to complicated cataract surgery (27%). One patient each had lens subluxation attributed to pseudoexfoliation syndrome and high myopia. All patients underwent 23G 3-port pars plana vitrectomy followed by lensectomy using the fragmatome. Secondary sulcus intraocular lens placement was performed in four patients, and one patient received endolaser treatment. Intraoperatively, only one patient developed a hyphaema, with no other significant complications observed. Postoperatively, there were no major complications such as retinal detachment or vitreous hemorrhage. Two patients experienced a self-limiting episode of hypotony, while the most common postoperative complication was subconjunctival hemorrhage, occurring in 93% of cases.

Conclusions: The findings suggest that PPV and lensectomy, when performed by a trainee ophthalmologist under supervision, can be a safe and effective procedure and support the potential for skilled supervision to enable safe surgical practice among trainees in complex ophthalmic procedures.

Cataract

Poster No.: FP2666

Acuity Reserve for English and Chinese Text With Multifocal Intraocular Lenses

First Author: Viswanathan RAMASUBRAMANIAN
Co-Author(s): Jessie LEMP-HULL, Rajaraman SURYAKUMAR

Purpose: The visual demand to read Chinese optotypes may be different from that of English letters. The goal was to calculate and compare acuity reserve for English and Chinese newsprints in subjects with monofocal and multifocal intraocular lenses (IOL).

Methods: Post-hoc analysis of binocular defocus curve data from two parallel-group clinical studies (study 1: diffractive trifocal IOL (TFNT00, N=127) vs a monofocal IOL (SN60AT, N=111); study 2: two diffractive trifocal IOLs (TFNT00, N=93 and 839MP, N=86) and six prospective single-arm multicenter studies of TFNT00 (N= 502) were performed. Acuity demand curves for the smallest and median print sizes in English (20/32 and 20/40) and Chinese newspapers (20/66 and 20/72) at 40 cm were calculated. Acuity reserve (AR) was calculated as the vertical difference between the subject's defocus curve and the acuity demand curves at 40 cm.

Results: The median AR (logMAR) for the smallest English print (20/32) was TFNT00: 0.17, 839MP: 0.14, and SN60AT: -0.22, which increased to TFNT00: 0.27, 839MP: 0.24, and SN60AT: -0.12 for the median English print (20/40). Median ARs for the smallest Chinese print (20/66) were: TFNT00: 0.49, 839MP: 0.46 and SN60AT: 0.10 and for the median Chinese print (20/72) were TFNT00: 0.53, 839MP: 0.50 and SN60AT: 0.14. The smallest and median Chinese prints had, on average, larger ARs (0.31 and 0.26) than English prints across all IOL groups.

Conclusions: The TFNT00 had the best AR compared to the SN60AT and 839MP. The Chinese newsprint had, on average, large ARs (>0.50), and this may allow fluent reading with multifocal IOLs.

Poster No.: FP2667

Assessment of Changes in Corneal Parameters After Key Hole Technique of Phacoemulsification

First Author: Irum RAZA

Purpose: To assess changes in corneal parameters after key-hole technique of phacoemulsification.

Methods: A hundred cases of age-related cataracts were selected for surgery after the approval of the study from the institutional ethical review board. Inclusion criteria were cataracts with normal corneal parameters and no prior intraocular surgery. The exclusion criteria were mature/hyper-mature cataracts, nuclear sclerosis (NS) > grade 3, and only eyed patients. Preoperative study-related specific ocular assessment parameters (SOAP) included visual acuity (VA), astigmatism, central corneal thickness (CCT), and endothelial cell count besides routine examination. A single limbal incision without any side port was created at 12 o'clock. All the surgical steps, including hydrodissection, phacoemulsification with high vacuum and adequate power, and intraocular lens implantation, were done through this single port. SOAP was repeated on 1st postoperative day, 1st postoperative week, 1st and 3rd postoperative months and compared to calculate results.

Results: Out of 100, 45 were cortical cataracts, 32 were NS grade 2, and the remaining were NS grade 3. VA was 6/6 to 6/9 in 83% of cases and 6/12 to 6/18 in the rest of the cases. Astigmatism turned out to be <-1.00 diopter in 72% of cases and > -1.00 diopter in the rest of the patients. Increased CCT was noted in 11 corneas on the first postoperative day, which regressed with time, and remained increased in only four corneas on the last visit, which was statistically non-significant (p-value=0.06). Percentile decrease for endothelial cell count (19%) was also non-significant (p-value=0.5).

Conclusions: Key-hole phacoemulsification induces minimal trauma to the cornea and little astigmatism, leading to excellent visual outcomes.

Poster No.: FP2668

Challenges and Optimization Strategies in Phacoemulsification for Patients With Difficulty in Positioning During Surgery

First Author: Surantha DE SILVA

Purpose: This study aims to describe two cases of cataract surgery done in patients with structural spinal abnormalities that prevented them from lying flat on the surgical bed.

Methods: Two patients unable to lie flat supine underwent phacoemulsification of their cataractous lenses under topical anesthesia, performed by a senior fellow. Case 1: A 65-year-old woman with severe kyphoscoliosis since childhood presented for routine phacoemulsification of her right eye. Her abnormal spinal curvature caused her to lean towards her right side, with a prominent left scapula when standing, preventing her from lying supine. To accommodate her condition, we simulated her usual sleeping position in the operating theatre in addition to placing her in the reverse-Trendelenburg position to maintain a neutral iris plane for the procedure. Case 2: A 78-year-old woman scheduled for phacoemulsification of her left eye had severe age-related kyphosis and osteoarthritis of the spine, complicating her ability to position for surgery. Additionally, she had pseudoexfoliation, a poorly dilating pupil, and a dense white cataract. Proper positioning was achieved with the use of pillows and sandbags to support her abnormal spinal curvature.

Results: Both surgeries were performed without complications, resulting in successful visual rehabilitation.

Conclusions: Individualized strategies are essential when performing cataract surgeries on patients with positioning challenges. These tailored approaches not only ensure optimal visual outcomes but also maintain the comfort and ergonomics of the surgical team.

Poster No.: FP2669

Evaluation of Visual Outcome in Cataract Patients With Eye Axis >24.5mm and Implanted With PanOptix: A Prospective, Cohort Study

First Author: Yuanhong LI

Co-Author(s): Xuemin LI

Purpose: This study aims to evaluate visual outcomes after PanOptix implantation in cataract patients with long eye axis.

Methods: The study was conducted starting in April 2023 in the clinic at Beijing University Third Hospital. As of April 2024, data on binocular cataract surgery implantation PanOptix long axis (axis > 24.5mm) in 40 patients, excluding 6 patients after 3 months, were collected. Among the remaining 34 patients, postoperative 1,3 near vision, focus curve, obviously optometry results, and removal rate (visual results are logMAR visual results) were collected.

Results: Uncorrected distance visual acuity at 3 months after surgery (0.111) was better than that at 1 month after surgery (0.170) (P=0.020). Vision in the open hole at 3 months (0.150), the open hole near vision (0.230), correcting far vision (0.087), correction in sight (0.146), near vision in January (0.200), and postoperative vision in open hole (0.164), the open hole near vision (0.219), correcting far vision (0.127), correcting the vision (0.169) and corrected near visual acuity (0.217) had no significant difference. In addition, there was a significant difference between uncorrected distance visual acuity and corrected distance visual acuity at 1 month after surgery (P=0.026), and there was no significant difference between uncorrected intermediate and near visual acuity and corrected visual acuity. March postoperatively in patients with open hole far vision and correcting far vision have significant difference (P = 0.008), in the open hole and near vision corrected visual acuity compared with no significant difference.

Conclusions: For patients with senile cataract with long eye axis, better visual quality can meet the needs for lens removal.

Poster No.: FP2670

MF15 Optic – the One and Only EDOF Optic

*First Author: Lena BECKERS
Co-Author(s): David BECKERS, Detlev BREYER,
Florian KRETZ*

Purpose: The purpose of this poster is to elucidate the American Academy of Ophthalmology (AAO) criteria for Extended Depth of Focus (EDOF) intraocular lenses (IOLs) and to demonstrate how rotational asymmetric EDOF IOLs uniquely meet these stringent standards. The focus is on how these lenses enhance visual acuity across various distances while minimizing visual disturbances such as halos and glare.

Methods: We reviewed the AAO's definition and requirements for EDOF IOLs, which include providing seamless vision from far to near distances, reducing halos and glare, and maintaining high contrast sensitivity. We then examined clinical evaluations, technical specifications, and patient feedback for rotational asymmetric EDOF IOLs. Data on visual acuity, optical aberrations, and patient satisfaction were analyzed to compare these lenses against the AAO standards.

Results: Rotational asymmetric EDOF IOLs meet the AAO's stringent criteria by offering superior visual acuity at multiple distances, significantly reducing visual disturbances, and maintaining high contrast sensitivity. Clinical evaluations show that these lenses provide a seamless range of vision over a range of 1.5 D. Patients report high satisfaction levels, with stable and consistent visual performance due to the optimal distribution of light and better adaptation to the eye's natural optical axis.

Conclusions: Rotational asymmetric EDOF IOLs uniquely fulfill the AAO's definition of EDOF IOLs, making them the preferred choice for enhancing visual outcomes in cataract and refractive surgery. These lenses offer a balanced visual experience with minimal reliance on corrective eyewear and significantly reduce the risk of halos and glare, thereby improving overall patient satisfaction and quality of life.

Poster No.: FP2671

Prevalence and Associated Factors of Cataract and Cataract-Related Blindness in the Ural Eye and Medical Study

*First Author: Mukharram BIKBOV
Co-Author(s): Leisan GILEMZIANOVA, Ellina IAKUPOVA,
Aigul NIZAMUTDINOVA, Irina RAKHMATOVA*

Purpose: To assess the prevalence of cataract and cataract surgery in a population from Russia.

Methods: We conducted the population-based Ural Eye and Medical Study with 5899 participants (80.5% out of 7328 eligible individuals), with an age of 40 + years as the eligibility criterion.

Results: In the phakic population, the prevalence of nuclear, cortical, subcapsular cataract and any cataract was 38.0% [95% confidence interval (CI) 36.6, 39.3], 14.5% (95% CI 13.5, 15.5), 0.6% (95% CI 0.4, 0.8) and 44.6% (95% CI 43.2, 46.0), respectively. A higher prevalence of nuclear cataract was associated with older age [odds ratio (OR) 1.10; 95% CI 1.10, 1.11], the female sex (OR 1.27; 95% CI 1.08, 1.50), urban region (OR 2.00; 95% CI 1.71, 2.33), a low educational level (OR 0.93; 95% CI 0.88, 0.98), high diastolic blood pressure (OR 1.01; 95% CI 1.001, 1.02), short axial length (OR 0.93; 95% CI 0.86, 0.99), and low prevalence of age-related macular degeneration (OR 0.72; 95% CI 0.57, 0.92). The prevalence of previous cataract surgery conducted in 354/5885 individuals (6.0%; 95% CI 5.4, 6.6) increased from 0.4% (95% CI 0.0, 1.0) in the age group of 40-45 years to 37.6% (95% CI 30.9, 44.4) in the age group of 80 + years.

Conclusions: Cataract was the cause of moderate-to-severe vision impairment in 109 (1.8%) individuals and of blindness in three (0.05%) individuals. The prevalence of cataract and cataract-related MSVI and blindness was relatively high; subsequently, the prevalence of previous cataract surgery was relatively low in this population from Russia.

Poster No.: FP2672

Prospective Study of Cataract Surgery Outcomes January – December 2023 in Timor-Leste

First Author: Irene CARVALHO

Purpose: To evaluate outcomes of cataract surgery.

Methods: Prospective study by collecting data from January until December 2023. Vision acuity with a pinhole was taken by eyecare staff from the National Hospital, who used the slit lamp to evaluate the anterior segment, mainly the intraocular lens implanted.

Results: A total of 76 cases of cataract surgery were reported from January to December 2023; common causes related to cataracts were commonly by age and other idiopathic. Common cataract types were nuclear sclerosis grade 3, posterior subcapsular cataract, and hypermature cataract. Almost all of them got pre-op vision 6/60 to Light perception. From these cases, there were 74 (97%) cases of implanted PCIOL and 2 (3%) cases of implanted ACIOL. Visual acuity after 1 month, there were 70 (92%) cases of 6/6-6/19, 2 cases with VA CF, 2 cases with VA 6/60, and 2 cases with 6/30.

Conclusions: Cataract is the most common eye disease that affects almost all of the population of Timor-Leste. Cataract surgery was done with good results. In the total cases studied, there were 2 cases with complications happening during the cataract surgery. It was only a posterior capsule rupture but was handled by the main surgeon.

Poster No.: FP2673

Rotational Asymmetry and Its Benefits

First Author: Lena BECKERS

Co-Author(s): David BECKERS, Detlev BREYER,
Florian KRETZ

Purpose: The purpose of this discussion is to explore the benefits of asymmetric refractive segmental Extended Depth of Focus (EDOF) Intraocular Lenses (IOLs) in cataract surgery and presbyopia correction. We aim to demonstrate how these lenses improve visual performance, reduce dependency on glasses, and enhance patient satisfaction compared to traditional symmetric designs.

Methods: We reviewed current literature, clinical studies, and patient-reported outcomes to compare the visual performance of asymmetric EDOF IOLs with traditional symmetric EDOF IOLs. This included analyses of intermediate vision, visual disturbances, contrast sensitivity, and overall patient satisfaction. Expert opinions and case studies were also incorporated to provide real-world insights.

Results: The review indicates that asymmetric EDOF IOLs offer significantly enhanced intermediate vision and improved contrast sensitivity, particularly in low-light conditions. Patients experience fewer visual disturbances such as halos and glare due to the segmental design. Clinical case studies and patient feedback highlight higher satisfaction rates, with reduced dependency on glasses and fewer postoperative complications compared to symmetric EDOF IOLs.

Conclusions: Asymmetric refractive segmental EDOF IOLs provide a superior visual experience, aligning better with the eye's natural optical axis and offering more stable, consistent vision. The reduced incidence of visual disturbances and improved contrast sensitivity contribute to higher patient satisfaction and quality of life. These lenses represent a significant advancement in cataract surgery and presbyopia correction, leading to better visual outcomes and enhanced patient well-being.

Poster No.: FP2674

Static and Dynamic Visual Observation of Senile Cataract Patients After Bilateral Implantation of PanOptix

First Author: Yuanhong LI

Co-Author(s): Xuemin LI

Purpose: Evaluate the eyes into PanOptix of static and dynamic vision of cataract patients.

Methods: This study was conducted from October 2023 to April 2024. Fourteen patients with age-related cataract who underwent bilateral cataract surgery and implanted PanOptix at Peking University Third Hospital were included. One patient was excluded due to failure to complete the 3-month postoperative follow-up. The dynamic visual acuity, near, intermediate, and distant uncorrected

and corrected visual acuity, aberration curve, and manifest refraction results were measured preoperatively, postoperatively 1 month, and postoperatively 3 months for the remaining 14 patients. (Visual acuity results were all displayed in logMAR visual acuity.)

Results: The patients' dynamic vision at a distance of 4 meters (4m) and different speeds (20dps, 40dps, 80dps) was significantly better than before the operation ($P=0.003$, $P=0.008$, $P<0.001$) after 3 months of surgery. However, when tested at a near distance of 60cm, the dynamic vision at medium and low speeds (40, 20dps) was significantly better than before the operation ($P=0.027$, $P=0.005$) after 3 months of surgery, but there was no significant difference in the dynamic vision at high speed after 3 months of surgery compared to before the operation ($P=0.12$). Additionally, patients' uncorrected distant, intermediate, and near vision were significantly better than before the operation after 1 month and 3 months of surgery ($P<0.001$ for all), and the defocus curve was higher and more gradual after 3 months of surgery.

Conclusions: For eyes into PanOptix senile cataract patients, and can obtain good dynamic vision after a static visual function.

Poster No.: FP2675

Stereoacuity in a Blended Vision Model With the Lentis Comfort

First Author: David BECKERS

Co-Author(s): Lena BECKERS, Detlev BREYER, Florian KRETZ

Purpose: The purpose of this study was to assess the preservation of stereo acuity following bilateral implantation of the Lentis Comfort Intraocular Lens (IOL) using the Düsseldorf formula. This blended vision model targets emmetropia in the dominant eye and -1.5 diopters in the near-dominant eye, aiming to maintain depth perception and overall visual quality.

Methods: The study involved bilateral implantation of Lentis Comfort IOLs in patients, with the Düsseldorf formula applied to achieve the desired refractive targets. Stereo acuity, a key measure of depth perception, was evaluated postoperatively. The

outcomes were compared to the stereo acuity levels of phakic eyes, which serve as the benchmark for normal vision.

Results: Postoperative results demonstrated that patients maintained high levels of stereo acuity, comparable to those observed in phakic eyes. The Düsseldorf formula effectively utilized the extended depth of focus provided by the Lentis Comfort IOLs, enabling a seamless range of clear vision. Patients reported high satisfaction and performed daily activities without the need for additional visual aids, indicating a successful visual outcome.

Conclusions: The study concludes that the Düsseldorf formula, when combined with Lentis Comfort IOLs, offers a robust solution for preserving stereo acuity after cataract surgery. This approach provides patients with a continuous range of clear vision and high levels of satisfaction, making it an effective option for those seeking optimal visual outcomes post-surgery.

Cornea, Dry Eyes, External Eye Diseases and Eye Banking

Poster No.: FP2676

A Prospective, Qualitative Assessment of Access Barriers Leading to Inequity for Māori With Keratoconus in Auckland, New Zealand

First Author: Micah RAPATA

Co-Author(s): Akilesh GOKUL, Charles MCGHEE, Jamie-lee RAHIRI

Purpose: Māori have disproportionately high rates of keratoconus and low rates of attendance to first-scheduled appointments, procedures, and follow-up appointments in the Auckland region. This presentation will provide a qualitative review of crosslinking services in the Auckland region through an Indigenous Kaupapa Māori lens to explore reasons for the high rates of non-attendance by Māori to this service.

Methods: Semi-structured face-to-face, phone, and teleconferencing recorded interviews were conducted with 12 Māori keratoconic patients and their whānau (families) currently living in the

Auckland region. The interviews explored systemic enablers and barriers to accessing the crosslinking service. Once transcribed, the interviews were evaluated using NVIVO14 software. A reflexive thematic analysis was then undertaken to identify and analyse pertinent and recurring themes.

Results: The datasets and codes demonstrated several important and recurring barriers, including travel appointment costs, assistance required from family to attend, and short notification of clinic appointments. Significant enablers identified included the presence of whānau to support the patient in navigating the eye clinic, financial assistance to travel to the appointment, and frequent interactions with Māori clinicians.

Conclusions: Māori continue to suffer inequitable visual outcomes from keratoconus in the Auckland region due to the disproportionately low uptake of cross-linking. Increased accessibility to crosslinking services within the Auckland region for Māori patients could be achieved through the review of recommendations from patients currently within the service.

Poster No.: FP2677

Adalimumab in Managing Advanced Peripheral Ulcerative Keratitis in a Patient With Rheumatoid Arthritis

*First Author: Zcho Huey LEE
Co-Author(s): Rohanah ALIAS, Adeline LOW, Nor Fadhilah MOHAMAD*

Purpose: To report a case of refractory unilateral peripheral ulcerative keratitis (PUK) associated with rheumatoid arthritis, which was eventually successfully controlled with subcutaneous Adalimumab after multiple penetrating keratoplasties.

Methods: Case report.

Results: A 43-year-old woman with underlying rheumatoid arthritis-related PUK was referred from a private centre with active PUK and micro-perforations in the right eye. Her PUK had been uncontrolled for three years, necessitating five corneal grafts within 18 months, despite being on systemic corticosteroids,

methotrexate, and sulfasalazine. Three cycles of intravenous cyclophosphamide, along with multiple cornea gluing and amniotic membrane transplants, were attempted without success. Her arthritis remained inactive during this period. Subsequently, subcutaneous Adalimumab was administered every two weeks, stabilizing her eye condition and enabling a triple procedure nine months later. Two months post-procedure, she developed viral endotheliitis, leading to a temporary suspension of Adalimumab due to the infection, and she was treated with oral and topical Acyclovir. One week later, the patient suffered a worsening of her condition with a perforated cornea. Intravenous and oral corticosteroids were administered, and subcutaneous Adalimumab was restarted, stabilizing the corneal melting. Unfortunately, the graft failed, requiring a seventh penetrating keratoplasty three months later. Post-operatively, the cornea graft has remained clear till date with Adalimumab, Methotrexate, tapering dose of systemic corticosteroids, and maintenance dose of systemic Acyclovir.

Conclusions: This case highlights the effectiveness of Adalimumab in controlling extremely refractory PUK associated with rheumatoid arthritis, unresponsive to other systemic immunosuppressive therapies. The use of Adalimumab, alongside a multidisciplinary approach, provided a viable solution in stabilizing the condition and maintaining corneal clarity post-transplant.

Poster No.: FP2678

CVS-Omics: Using Texture Features of the Deforming Cornea and Machine Learning for Early Detection of Forme Fruste Keratoconus

*First Author: Shenglong LUO
Co-Author(s): Xuefei LI, Kuangching LIN, Fan LU, Junjie WANG*

Purpose: This study aims to use texture features extracted from Corvis ST (CVS) images with machine learning models to distinguish Forme Fruste Keratoconus (FFKC) from normal eyes.

Methods: We collected data from 445 individuals, encompassing 445 eyes, with 139 eyes diagnosed as FFKC and 306 as normal. Three raw CVS images captured at initial state, first applanation, and

maximum deformation were included for each eye. Texture features were extracted from these images for analysis. Random Forest (RF) and C5.0 models were trained on a training set of 364 eyes and evaluated on a test set of 91 eyes using receiver operating characteristic (ROC) curves. Additionally, we analyzed eight CVS parameters, including SSI, SSI2, SP-A1, A1T, ARTh, DARatio2, CBI, and cCBI, assessing their diagnostic performance with ROC curves.

Results: The RF and C5.0 classifiers showed strong capability in distinguishing FFKC from normal eyes. The RF model achieved an AUC of 0.98, demonstrating excellent performance with a sensitivity of 0.80 and specificity of 0.97. The C5.0 model, with an AUC of 0.86, also performed well but was slightly less effective than the RF model. Among individual CVS parameters, SP-A1 (AUC = 0.79), CBI (AUC = 0.76), and cCBI (AUC = 0.73) were the most effective in identifying FFKC.

Conclusions: The CVS-omics approach, which involves training models using texture features extracted from CVS images at three moments during dynamic corneal deformation, demonstrated superior performance in distinguishing FFKC from normal eyes. The model's robust performance and clinical correlation highlight its utility as a new non-invasive tool for early diagnosis.

Poster No.: FP2679

Corneal Biopsy as a Primary Diagnostic Tool in Microbial Keratitis Patients on Poly-Antimicrobials

First Author: *Prafulla MAHARANA*

Purpose: To evaluate the role of corneal biopsy in non-healing keratitis patients on multiple antimicrobials as a primary diagnostic tool.

Methods: An RCT was conducted, and 44 cases of non-healing keratitis were included. Inclusion criteria were patients on ≥ 2 antimicrobials belonging to 2 different classes for ≥ 1 week with no signs of healing and with a corneal ulcer size of ≥ 4 mm. Cases were randomized into 2 groups. Group 1 underwent corneal scraping after a drug holiday period of 24 hr. Group 2 underwent corneal biopsy. The primary outcome was a culture positivity rate.

Results: The overall culture positivity rate was 59.09% and 77.77% in groups 1 and 2, respectively. Culture positivity rates in bacterial keratitis were similar in the two groups. ($p=0.34$) The culture positivity rate of biopsy was significantly better in cases of fungal keratitis (18.2%, group 1 vs. 54.5%, group 2, $p=0.02$). The sensitivity and specificity of the Gram stain of the corneal scraping sample were found to be 55.56% and 92.31%, respectively. The sensitivity and specificity of the KOH stain of the corneal scraping sample were found to be 50% and 94.4%, respectively. No complications were noted in either group.

Conclusions: In suspected cases of fungal keratitis, corneal biopsy is useful without waiting for a drug holiday period of 24-48 hours. Samples obtained from corneal biopsy can be sent for histopathological analysis, which yields results faster than fungal culture and identifies fungal pathogens that could be missed in fungal culture.

Poster No.: FP2680

Effect of Propylene Glycol-Hydroxypropyl-Guar Nanoemulsion Lubricant Eye Drops on Visual Acuity and Meibomian Glands Function in Indian Patients With Dry Eye: Results From a Phase IV Clinical Trial

First Author: Parth RANA

Co-Author(s): Rajesh PAREKH, Deborah AWISI-GYUA

Purpose: To evaluate the effect of propylene glycol-hydroxypropyl-guar (PG-HPG) nanoemulsion lubricant eye drops on best-corrected distance visual acuity (BCDVA) and meibomian gland (MG) function among Indian patients with dry eye disease (DED).

Methods: A phase 4 (NCT01311609), one-month, prospective, single-arm, open-label, non-interventional, multicenter study was conducted across 11 centers in India. Patients aged ≥ 18 years with dry eye questionnaire-5 score, ≥ 6 ; and tear break-up time, >5 – <10 seconds in OU (both eyes) were included. Patients instilled 1-2 drops in each eye ≥ 4 times daily for 30 days. BCDVA and MG function (grade 0: no secretion, 1: inspissated, 2: cloudy, and 3: clear liquid) were assessed from baseline to Day 30.

Results: Of 400 patients enrolled, 398 received the study product; the mean \pm SD age was 36.8 \pm 14.87

years; 55.3% were females. The proportion of patients with 6/6 BCDVA increased from baseline to Day 30 for OU [OD (right eye): 81.7% to 84.2%; OS (left eye): 81.4% to 83.7%]. There was an increase of ≥ 2 grades in the quality of MG secretion in OD of 5.3% patients (n=10 each from grade 1 to 3 and grade 0 to 3; n=1: from grade 0 to 2) and in OS of 5.5% patients (n=12: from grade 1 to 3; n=10: from grade 0 to 3) and an increase in the proportion of patients with grade 3 secretion (OD: 10.3% to 18.1%; OS: 11.1% to 18.3%) from baseline to Day 30.

Conclusions: PG-HPG nanoemulsion lubricant eye drop effectively improved BCDVA and MG function in Indian patients with DED.

Poster No.: FP2681

Efficacy and Safety of NOV03 in the Treatment of Dry Eye Disease: A Systematic Review and Meta/Trial Sequential Analysis

First Author: Amr ELROSASY
Co-Author(s): Eslam AFIFI, Mohammad AL DIAB AL AZZAWI, Sara CHIKH AISSA, Alina GHAZOU, Ahmed NAZAR

Purpose: The aim of this meta-analysis is to evaluate the safety and efficacy of the recently developed eye drop perfluorohexyloctane (NOV03) in the management of dry eye disease (DED) compared to placebo.

Methods: We conducted this meta-analysis following the 2020 PRISMA guidelines. We systematically searched throughout the online databases. The screening was done on Rayyan, evaluating the eligibility of the title and abstract first, and then we screened the whole text of the potentially eligible trials. Two independent reviewers extracted the data and then analyzed the mean differences (MD) and their 95% confidence intervals (CI) using RevMan 5.4 software.

Results: This meta-analysis included a total of five trials (RCTs) consisting of 1913 patients. NOV03 proved to be superior to placebo in reducing total corneal staining score (tCSF), Eye dryness score VAS, and Central Corneal Fluorescein Staining with (MD = -1.04, 95% CI [-1.29 to -0.80], $P > 0.00001$), (MD = -7.98, 95% CI [-12.07 to -3.89], $P = 0.0001$) and

(MD = -0.28, 95% CI [-0.37 to -0.19], $P > 0.00001$) respectively. Most adverse events did not show any statistical difference between NOV03 and the placebo. Trial Sequential Analysis considering Type 1 error control and sequential boundaries, supports a robust and statistically significant effect of perfluorohexyloctane in treating dry eye disease.

Conclusions: This study indicates that NOV03 could be a reliable and safe drug for the management of DED. However, RCTs for longer durations are needed to establish the long-term efficacy and safety of this drug.

Poster No.: FP2682

Infectious Keratitis With Concurrent Acute Hydrops After Corneal Crosslinking in Keratoconus With Atopic Dermatitis: Three Case Series

First Author: Mai GOTO
Co-Author(s): Akinori BABA, Seika DEN, Naoko KATO, Tadashi NAKANO, Ikuko TODA

Purpose: Acute hydrops (AH) is a rare but vision-threatening complication of progressive keratoconus. This report presents three cases of infectious keratitis with concurrent AH following corneal cross-linking (CXL) in keratoconus patients with atopic dermatitis.

Methods: Three patients (two males, one female) with a mean age of 22.4 ± 7.3 years, underwent epi-off accelerated CXL without intraoperative complications. Preoperative mean Kmax was 74.5 ± 22.7 diopters, the mean thinnest corneal thickness (TCT) was 404.7 ± 53.9 micrometers, and the mean best spectacle visual acuity (BSVA) was 0.2.

Results: All cases were unremarkable one-day post-surgery but developed severe eye pain, corneal infiltration, and partial epithelial defects on day 2. On day 3 or 4, a rupture of Descemet's membrane and massive stromal edema closely resembling AH suddenly emerged, as confirmed by anterior segment OCT. Frequent administration of antibiotic eye drops was tailored to each patient's condition. AH and stromal scar formation resolved in a mean of 43.3 ± 23.2 days. At the final visit (mean follow-up 9.5 ± 5.0 months), the mean Kmax was 42.6 ± 47.9 diopters, the mean TCT was 430.3 ± 85.2 micrometers, and the mean BSVA was 0.125.

Conclusions: This is the first report of simultaneous acute hydrops following infectious keratitis post-CXL. Although the exact mechanism is unclear, we hypothesize that stromal thinning from corneal ulcers may cause protrusion and rupture of Descemet's membrane. Eye rubbing due to atopic blepharitis may also be a trigger. Meticulous postoperative management is crucial for keratoconus patients with AD undergoing CXL.

Poster No.: FP2683

Jellyfish Sting Injury to the Cornea

First Author: Prashaantini NAMASIVAYAM
Co-Author(s): Lee HONG NIEN, Sieng Teng SEOW

Purpose: To report a case of right eye keratitis post jellyfish tentacle sting treated with hypertonic saline eyedrop.

Methods: Case report.

Results: A 55-year-old Malay man presented to our eye clinic with a complaint of alleged jellyfish tentacles hitting his right eye while fishing, sustaining a generalized red eye, blurring of vision, and eye pain in his right eye. Blurring of vision was sudden onset with a pain score of 10 initially. Pain score gradually improved to 6 upon clinic review. Otherwise, the patient has no other ocular complaint. Visual acuity in the right eye was 6/24, and the left eye was 6/18. There was no relative afferent pupillary defect. Anterior segment examination of the right eye shows injected conjunctiva with chemosis nasally. Multiple round corneal epithelial and anterior stromal lesions were seen with no foreign body or corneal epithelial defects. The anterior chamber was deep, with no cells seen. The lens was cataractous with nuclear sclerosis. The posterior segment of the right eye and left eye examination were not remarkable. Intraocular pressure of the right eye was 12, and the left eye was 10, respectively. The patient was then started on 3% hypertonic saline eyedrop four hourly for the right eye, resulting in improvement of corneal lesions as described above.

Conclusions: Topical ocular hypertonic saline is an effective treatment in the acute phase of jellyfish tentacle sting on the cornea, resulting in improvement of corneal injury.

Poster No.: FP2684

Keratometric Stability After Pterygium Excision Surgery in a Tertiary Hospital in the Philippines

First Author: Anselme ANG
Co-Author(s): Lilette Marie CANILAO, Maria Fe NAVARRETE

Purpose: To identify the time to achieve keratometric stability after pterygium excision surgeries and to identify the factors associated.

Methods: This was an observational retrospective cohort study. Data were abstracted from electronic medical records. The Kaplan-Meier method and a log-rank test were used to analyze the time to keratometric stability. Cox proportional hazards regression analysis was used to identify the associated factors.

Results: A total of 58 eyes who underwent pterygium excision from January 2022 to December 2023 were enrolled. There were no statistically significant differences in terms of age, sex, laterality, polarity, and surgical technique among the patients. There was a statistically significant difference in the grade of the pterygium (p-value of 0.003), with 72.42% of patients having a grade of G2T2. Forty-five percent have statistically significant visual acuity improvement. Higher pterygium grade prior to surgery had a longer time to achieve keratometric stability (hazard ratio of 0.64). Ninety-one percent (n=53) demonstrated keratometric stability 3 months after pterygium excision, with all eyes reaching keratometric stability by the post-operative six-month period. The median time to reach keratometric stability was 4 weeks (1 month), and the maximum time was 6 months.

Conclusions: Ninety-one percent of patients achieved keratometric stability within the 3 months postoperative period. By 6 months, all patients have reached keratometric stability. The grade of pterygium positively affects the time to keratometric stability. As the grade of pterygium increases, the time to stability also increases.

Poster No.: FP2685

Management of Severe Iatrogenic Damage to Descemet's Membrane Secondary to Nd:YAG Laser: A Case Series

First Author: Githea Philline MARTINEZ

Co-Author(s): Reginald Robert TAN

Purpose: To describe the presentation and management of three eyes following severe iatrogenic Nd:YAG laser damage to the cornea after attempted Nd:YAG laser capsulotomy.

Methods: A retrospective chart review was conducted for two patients with corneal edema and scarring secondary to Nd:YAG laser treatment.

Results: Two eyes of a 60-year-old female (case 1) and one eye of an 83-year-old female (case 2) exhibited significant central corneal edema with posterior stromal scarring due to disrupted corneal stroma and Descemet's membrane. Case 1 had a visual acuity (VA) of 20/60 in the right eye and 20/150 in the left. Both eyes were managed with topical steroids (1% prednisolone acetate) administered four times daily for seven months by the primary ophthalmologist before the referral. After consultation, the left eye underwent an intracameral injection of 20% SF6 gas but did not show significant clinical improvement. Case 2 had unilateral involvement with a VA of 20/100 and successfully underwent descemet's membrane endothelial keratoplasty (DMEK) with a 7.0 mm graft. Three months postoperatively, a successful Nd:YAG laser capsulotomy was performed, resulting in an improved VA of 20/50 and a central corneal thickness (CCT) of 484 µm.

Conclusions: In cases of severe posterior cornea damage secondary to Nd:YAG laser treatment, DMEK may be a feasible option. Medical treatment with topical steroids and intracameral injection of 20% SF6 were not effective.

Poster No.: FP2686

Nonsurgical Treatment for Dysthyroid Eyelid Retraction: A Network Meta-Analysis, 2023

First Author: Khaled MOGHIB

Purpose: To investigate the efficacy of 20mg triamcinolone injections and/or botulinum toxin type A (BTX-A) as a non-surgical treatment for moderate to severe DER after 6 months in terms of correcting the clinical active score (CAS) and the marginal reflex difference (MRD).

Methods: The research included 273 patients from 6 studies out of 991 that fulfilled the selection criteria with 5 databases (PubMed, Scopus, Web of Science, Cochrane, and Embase) up to August 20, 2023.

Results: Regarding correcting the CAS of DER, the overall mean difference favouring placebo over triamcinolone among the heterogeneous pooled four studies was (MD 0.42 mm, 95% CI 0.16 to 0.68, $p = 0.002$). After resolving the heterogeneity in the pairwise meta-analysis model, it was [MD 0.29mm, 95% CI 0.20 to 0.38, $p < 0.00001$]. Regarding the MRD, the pairwise meta-analysis estimates that BTX-A was more favourable than placebo at MD (95% CI) to be -1.18 [-4.13 to 0.34]; placebo was more favourable than triamcinolone at MD (95% CI) to be 1.18 [-2.40; 0.04]. In the NMA, BTX-A was ranked first, followed by placebo, then triamcinolone. BTX-A was favourable for triamcinolone at MD (95% CI) to be -1.35 [-3.09; 0.40].

Conclusions: Out of the three studied nonsurgical treatments on the MRD for DER, BTX-A was not significantly ranked first, suggesting that it might have the most favourable effect, followed by the placebo and finally the triamcinolone. The pairwise meta-analysis found that placebo had a favourable effect over triamcinolone in correcting upper eyelid retraction.

Poster No.: FP2687

Ocular Cicatricial Pemphigoid in an Elderly Filipino Man: A Case Report and Literature Review

First Author: Jose Christopher TESORERO
Co-Author(s): Ruben LIM BON SIONG,
George Michael SOSUAN

Purpose: To report the first direct immunofluorescence assay proven Ocular Cicatricial Pemphigoid in a Filipino healthy elderly male.

Methods: Case report.

Results: A 68-year-old male presented with bilateral corneal conjunctivalization, symblepharon, ectropion, and conjunctival hyperemia, testing positive with conjunctival biopsy direct immunofluorescence for the left eye while turning out negative for the right eye. Ocular ultrasound proved to be unremarkable. The patient is diagnosed as a case of ocular cicatricial pemphigoid (Stage IV, OD; Stage III, OS) with mucous membrane pemphigoid, systematically managed with dapson treatment with subsequent topical steroids and antibiotics.

Conclusions: Ocular Cicatricial Pemphigoid is a rare autoimmune disease with devastating and sight-threatening complications if not recognized, diagnosed, and treated accordingly. Definitive diagnosis includes a positive direct immunofluorescence in a patient with clinical signs and symptoms of chronic cicatrizing conjunctivitis. However, late-stage disease may turn out negative with direct immunofluorescence due to concurrent quiescence of the disease, disease burnout, or total loss of conjunctival basement membrane. Early diagnosis and timely treatment can prevent permanent, unfavorable outcomes which may affect vision and the general quality of life.

Poster No.: FP2688

Optimizing Corneal Ulcer Treatment: Drape Technique Supersedes Corneal Button - a Case Report

First Author: Basitali LAKHANI

Purpose: This case report details a unique scenario of a patient with a 3.5 mm corneal perforation in

a secondary medical facility with scarce access to corneal buttons.

Methods: In response to this challenge, we opted for an emergency intervention: a drape bandage contact lens (BCL). Our report provides insights into the clinical presentation, diagnostics, the rationale behind choosing drape BCL, procedural details, and post-operative care. This case highlights the significance of drape BCL as a cost-effective alternative in resource-limited settings where procuring corneal buttons is a formidable task.

Results: By sharing this experience, we aim to inspire confidence in this approach and encourage its widespread adoption in similar scenarios, offering hope to patients while reducing the burden on healthcare systems.

Conclusions: By sharing this experience, we aim to encourage the adoption of this approach in similar clinical scenarios, offering hope to patients.

Poster No.: FP2689

Progress of Application of SPMs in Ocular Surface Inflammatory Diseases

First Author: Ying PING

Purpose: It is proven that lipids have good anti-inflammatory, repairing allergic damage, and analgesic effects.

Methods: The mice were then modeled for corneal epithelial injury, and the biological preservative saline was diluted to different concentrations, 0.001, 0.005, 0.01, 0.05, 0.1, 1, and Benzalkonium chloride to 0.01. Then, the solution was prepared by cell culture medium in multiple of 1:100. The eyes were dosed 0.5ul each time for 6 times, stained with sodium fluorescein, and photographed. To stop eye drops, dilute 10ml of coenzyme Q10 (provided by Huons) with normal saline, dissolve with heat on an alcohol lamp, and point the eyes, 0.5ul frequently 30 times each time. Six points in total. At the same time, the mice were fed red ginseng solution. During this period, the mice were given large concentrations and multiple doses of sodium bromofenac to drop eyes twice, staining, and photography. Compare and analyze the difference before and after.

Results: Coq10 is important for dealing with immune suppression caused by aging and improving sperm quality, enhanced ocular surface immunity is associated. Therefore, it has a positive promoting effect on the repair of corneal epithelial injury.

Conclusions: Whether in patients with dry eyes or other eye surface diseases, water and oil are the most basic and the basic principles of the whole treatment. However, correct eye hygiene and moderate relaxation are more conducive to eye health. In other words, improving brain function is more conducive to physical and mental health.

Poster No.: FP2690

Simple Oral Mucosal Epithelial Transplantation for Limbal Stem Cell Deficiency: Simple Technique With Promising Results

First Author: Lily PUTRI

Co-Author(s): Faraby MARTHA, Florentina PRISCILIA, Diannisa SUSANTONO

Purpose: A 19-year-old male patient presented with bilateral limbal stem cell deficiency (LSCD) following Stevens-Johnson Syndrome (SJS) triggered by ampicillin-sulbactam. The Cultivated Oral Mucosal Epithelial Transplantation (COMET) is complicated by the need for cell cultivation. This evidence-based case report aims to explore the efficacy and safety of Simple Oral Mucosal Epithelial Transplantation (SOMET) as an alternative treatment for LSCD.

Methods: A search was conducted on PubMed, Embase, ProQuest, Scopus, and Cochrane Library for case reports, case series, observational studies, or clinical trials evaluating SOMET in patients with LSCD published up to 2023. Data extraction focused on the postoperative outcomes, primarily efficacy and safety/complications.

Results: Five articles were selected, including three case reports and two retrospective case series involving 60 eyes from 58 patients. All articles showed improvement in visual acuity following SOMET. Two studies reporting corneal transparency showed improvement in 59.18% and 85.7% of cases, respectively. Epithelialization is typically completed within 3 to 6 weeks and remains stable during follow-up. Only one instance of recurrent epithelial

defect requiring reoperation was reported as a postoperative complication. **Conclusions:** SOMET shows promise in treating LSCD, showing improved epithelialization, enhanced visual acuity, and reduced inflammation. It is a simpler alternative to COMET, with a lower risk of rejection compared to kerato-limbal allograft (KLAL) and allogenic simple limbal epithelial transplantation (SLET). Additionally, SOMET does not require cell culture or systemic immunosuppression. However, the current evidence is limited to case reports and case series, indicating the need for further research to optimize SOMET in clinical practice.

Poster No.: FP2691

The Epidemiology of Common Respiratory Viruses in Acute Conjunctivitis in Hong Kong

First Author: Phoebe LAM

Co-Author(s): Allie LEE

Purpose: This study aims to determine the epidemiology of common respiratory viruses in acute conjunctivitis (AC) in Hong Kong (HK), and to identify potential risk factors for the prevalence and distribution of adenoviral AC.

Methods: Patients clinically diagnosed with acute viral conjunctivitis and who were aged ≥ 18 years were recruited from three eye centres in different geographic locations in Hong Kong. Conjunctival swabs were obtained from the more severely affected eye of each patient for bioaerosol sampling and analysis with multiplex polymerase chain reaction (PCR) assay to detect common respiratory viral targets (xTag Respiratory Viral Panel). Those confirmed with adenoviral conjunctivitis were further analysed using quantitative PCR to determine the viral load.

Results: Out of 105 patients, 21 (20.6%) tested positive for adenovirus. Although the clinical presentation was similar, the adeno-positive patients had a significantly lower mean age (40, 49, $p=0.02$) and significantly higher male: female ratio ($p=0.0175$) than adeno-negative patients. Among adeno-positive patients, 8 (38.1%) measured a positive viral load in both eyes, while 13 (61.9%) only in one eye. The male: female ratio was notably higher in patients with bilateral involvement (7:1) than with unilateral

involvement (7:6) ($p=0.11$). There were weak positive correlations between the log of viral load and the thickness of conjunctival discharge ($R=0.1189$) and severity of discharge ($R=0.2725$), but a negative correlation between the log of viral load and the degree of conjunctival injection ($R=-0.0558$).

Conclusions: Adenovirus accounts for 20% of acute viral conjunctivitis in HK, with a preponderance for young males, who are more likely to be affected bilaterally.

Poster No.: FP2692

The Varied Clinical Manifestations of Ocular Sporotrichosis

First Author: Izzati FADZIL

Co-Author(s): Abdullah Ashraf RAFIQUE ALI

Purpose: To describe two cases of patients with ocular sporotrichosis presented with different spectrums of clinical manifestations.

Methods: Two case reports.

Results: An elderly woman presented with persistent right eye pain, eye redness, and mucopurulent discharge for two weeks. Initial treatment for bacterial conjunctivitis, including topical and oral antibiotics and topical steroids, proved ineffective. Ocular examination revealed multiple yellowish nodules on the bulbar conjunctiva. Conjunctival tissue cultures, however, did not isolate any organisms. A young woman presented with dacryocystitis and purulent discharge for two weeks, showing no signs of regression despite completing two courses of oral antibiotics. Multiple culture swabs taken, however, revealed no organisms. A course of intravenous antibiotics was initiated, but clinical improvement was not observed. Further detailed history revealed that both patients had an antecedent history of zoonotic and vegetative contact, strongly suggesting a sporotrichosis infection. Both patients were treated empirically with oral Itraconazole, resulting in excellent outcomes.

Conclusions: Sporotrichosis, caused by the fungus *Sporothrix schenckii*, is a rare infection that most commonly manifests as subcutaneous lesions. However, ocular involvement is being observed more frequently and often mimics common ocular

conditions such as conjunctivitis, uveitis, and scleritis, leading to frequent misdiagnosis and treatment delays. Understanding the diverse presentations of ocular sporotrichosis, coupled with a thorough patient history, is crucial for prompt diagnosis and timely initiation of antifungal therapy.

Poster No.: FP2693

Topical Voriconazole as a Primary Treatment in Acanthamoeba Keratitis: A Case Series

First Author: Pallavi DHAWAN

Purpose: To assess the efficacy of topical voriconazole as a primary treatment modality in acanthamoeba keratitis cases.

Methods: Eight cases, out of which 7 were contact lens wearers, presented with redness, pain, watering, and blurred vision. All patients were suspected clinically of acanthamoeba keratitis on slit lamp examination. Corneal scraping for smear and culture was done for all. On smear examination, patients were found to be positive for acanthamoeba. All were started with topical voriconazole 1 percent due to the unavailability of chlorhexidine and PHMB (lack of compounding pharmacy). Systemic ketoconazole was also added for 4 patients. All patients were followed up closely. Systemic ketoconazole was stopped after 2 weeks, and topical voriconazole after 12 weeks.

Results: All patients healed with good scars. None of the patients progressed and had recurrence once healed. No patient showed any side effects due to voriconazole.

Conclusions: Topical voriconazole is safe and efficacious as a primary drug therapy for acanthamoeba keratitis. We need further studies on a larger scale to strengthen the hypothesis.

Poster No.: FP2694

Translation and Validation of the Thai Version of the 5-Item Dry Eye Questionnaire (DEQ-5)

First Author: Jeraporn MEBUNTA

Purpose: To translate the 5-Item Dry Eye Questionnaire (DEQ-5) from English to Thai and to evaluate the reliability and validity of the Thai version.

Methods: This study followed the MAPI Institute guidelines and consisted of three phases: 1) Forward and backward translation by a linguistic committee, 2) Reliability testing with 30 ophthalmology residents at two time points, 2-3 weeks apart, and 3) Assessment of sensitivity and specificity of the Thai DEQ-5. A cross-sectional study was conducted with 200 patients at the Eye Clinic. Each patient completed the Thai versions of both the OSDI and DEQ-5 questionnaires and underwent dry eye assessments, including TBUT, fluorescein staining, and Schirmer's test.

Results: The Thai DEQ-5 questionnaire demonstrated good internal consistency with a Cronbach's alpha of 0.81. The intraclass correlation coefficient (ICC) was 0.933 (95% CI: 0.86–0.97), indicating high test-retest reliability. Validity testing in 200 patients showed a sensitivity of 78.8% (95% CI: 68.6-86.9) and a specificity of 68.7% (95% CI: 59.4-77) for detecting dry eye disease (DED).

Conclusions: The Thai DEQ-5 is a reliable and valid tool for screening DED, with good sensitivity and moderate specificity. While it effectively identifies patients with dry eye symptoms, combining it with objective dry eye assessments is recommended for a definitive diagnosis.

Glaucoma

Poster No.: FP2695

A Rare Case of Choroidal Melanoma Presenting As Acute Angle Closure Glaucoma

First Author: Ariunzaya BAYARSAIKHAN
Co-Author(s): Indira PAUDYAL, Purnima RAJKARNIKAR
STHAPIT

Purpose: To report a case of a life-threatening choroidal melanoma presenting as acute angle closure glaucoma in an older adult.

Methods: A 72-year-old male patient came to the Emergency department with chief complaints of left ocular pain, nausea, and headache. Symptoms started suddenly 3 days ago with progressive loss of vision. Examination of the left eye revealed a vision of no light perception, elevated intraocular pressures

of 40 mmHg, diffuse conjunctival injection, corneal edema, very shallow anterior chamber, a mid-dilated non-reactive pupil, and age-related nuclear cataract. The fundus was not visible due to corneal edema. Despite maximum medical and laser treatment, IOP was still high. B scan results showed an intravitreal hyperechogenic mushroom-shaped, solid lesion with low to moderate internal reflectivity and regular internal structure suggestive of choroidal melanoma.

Results: MRI brain and orbit showed an 11.7 mm size polypoidal lesion arising from the upper quadrant of the choroid and protruding into vitreous space. Mass displays a low signal in T1 & FLAIR, and high signal intensity in T1 weighted images features highly suspicious of choroidal melanoma. As the left eye was blind and painful, an enucleation was performed, with mass sent to a pathologist for assessment. Histopathologic examination revealed a type A spindle cell melanoma with no scleral, or optic nerve infiltration.

Conclusions: Identifying the etiology of angle closure is essential. It is critical for further imaging to rule out secondary causes of acute angle closure glaucoma in the absence of fundal view to allow timely detection of any life-threatening ocular malignancy.

Poster No.: FP2696

Central Corneal Thickness Among Filipino Patients in an Ambulatory Eye Surgery Center Using Anterior Segment Optical Coherence Tomography

First Author: George Michael SOSUAN
Co-Author(s): Maria Imelda YAP-VELOSO

Purpose: The purpose of the study was to determine the central corneal thickness (CCT) among Filipino patients that may contribute to different glaucoma diagnoses using the anterior segment optical coherence tomography in an ambulatory eye surgery center.

Methods: A single-center retrospective, cross-sectional study design, including 1,232 eyes of 641 patients of an ambulatory eye surgery center who had their CCT measured with Visante anterior segment optical coherence tomography (AS-OCT). CCT was correlated with age, sex, presence of diabetes and/or hypertension, and glaucoma diagnosis.

Results: Among 641 patients who had their CCT measured by Visante AS-OCT, 723 eyes of 369 patients were included. Nearly half of the study population were normal or glaucoma suspects. The mean CCT among Filipino patients was $535.59 \pm 34.06 \mu\text{m}$. Ocular hypertensive patients had the thickest CCT, while normal tension glaucoma patients had the thinnest CCT. After adjusting for multiple variables, CCT had a direct relationship with the presence of diabetes, IOP level, and the diagnosis of ocular hypertension, and an inverse relationship with age. Most of the patients presenting with angle-closure glaucoma were females aged 60 and above.

Conclusions: Visante AS-OCT is a non-contact and non-aerosol generating instrument allaying the fear of disease transmission from contact or aerosolization of tears. Our study confirms similar relationships of CCT with age, presence of diabetes, IOP level, and diagnosis of ocular hypertension or normal tension glaucoma among Filipino patients with the available literature from other ethnicities.

Poster No.: FP2697

Effect of First-Line and Second-Line Selective Laser Trabeculoplasty on Corneal Hysteresis in Patients With Normal Tension Glaucoma: A Multicenter Cohort Study

First Author: Keigo TAKAGI

Purpose: The First-line or Second-line Selective Laser Trabeculoplasty (FSS) study is a 26-center participated observational study to explore the effectiveness and safety of SLT in patients with normal tension glaucoma (NTG). Corneal hysteresis (CH), the mechanical properties of the cornea, can be a risk indicator of visual field progression in glaucoma. The current study investigated the effect of SLT on CH by using the data obtained in the FSS study.

Methods: Among the FSS study participants, 93 participants who completed the CH measurements by Ocular Response Analyzer (Reichert) before and 12/24 months after SLT were included. Other than CH, Goldmann-correlated intraocular pressure (IOPg) and corneal-compensated IOP (IOPcc) were analyzed using a mixed-effects regression model.

Results: IOPg decreased from 16.5 ± 3.2 mmHg before treatment to 14.4 ± 3.2 ($p=0.003$) mmHg at 12 months and 14.2 ± 3.2 ($p=0.001$) mmHg at 24 months. IOPcc decreased from 17.5 ± 4.2 mmHg before treatment to 14.9 ± 2.7 ($p=0.003$) mmHg at 12 months and 15.0 ± 2.8 ($p=0.02$) mmHg at 24 months. CH significantly increased from 10.1 ± 1.3 mmHg before treatment to 10.6 ± 1.2 ($p=0.01$) at 12 months, but returned to 10.3 ± 1.4 ($p=0.58$) mmHg at 24 months. In the subgroup analyses, this transient increase of CH at 12 months was statistically significant only in the first-line SLT group.

Conclusions: In NTG patients, CH can transiently increase after SLT, especially when the procedure was performed in eyes not using any anti-glaucoma medication.

Poster No.: FP2698

Efficacy and Safety of Surgical Peripheral Iridectomy, Goniosynechialysis, and Goniotomy for Advanced Primary Angle-Closure Glaucoma Without Cataract: One-Year Results of a Multicenter Study

First Author: Zige FANG

Co-Author(s): Weirong CHEN, Lin FENGBING, Ningli WANG, Song YUNHE, Xiulan ZHANG

Purpose: To evaluate the efficacy and safety of surgical peripheral iridectomy (SPI), goniosynechialysis (GSL), and goniotomy (GT) in advanced primary angle-closure glaucoma (PACG) eyes without cataract.

Methods: A prospective multicenter observational study was performed for patients who underwent combined SPI, GSL, and GT for advanced PACG without cataract. Patients were assessed before and after the operation. Complete success was defined as achieving intraocular pressure (IOP) between 6-18 mmHg with at least a 20% reduction compared to baseline, without the use of ocular hypotensive medications or reoperation. Qualified success adopted the same criteria but allowed medication use. Factors associated with surgical success were analyzed using logistic regression.

Results: A total of 61 eyes of 50 advanced PACG were included. All participants completed 12 months of follow-up. Thirty-six eyes (59.0%) achieved

complete success, and 56 eyes (91.8%) achieved qualified success. Preoperative and postsurgical at 12 months mean IOPs were 29.7 ± 7.7 and 16.1 ± 4.8 mmHg, respectively. The average number of ocular hypotensive medications decreased from 1.9 to 0.9 over 12 months. The primary complications included IOP spike (n=9), hyphema (n=7), and shallow anterior chamber (n=3). Regression analysis indicated that older age (odds ratio [OR]=1.09; P=0.043) was positively associated with complete success, while a mixed angle closure mechanism (OR=0.17; P=0.036) reduced success rate.

Conclusions: The combination of SPI, GSL, and GT is a safe and effective surgical approach for advanced PACG without cataract. It has great potential as a first-line treatment option for these patients.

Poster No.: FP2699

Efficacy of the iStent Infinite Trabecular Micro-Bypass for Open-Angle Glaucoma in a Chinese Population

First Author: Claire PETERSON

Co-Author(s): Shamira PERERA, Yamon SYN

Purpose: To evaluate the efficacy and safety of the iStent infinite (3 istent inject W stents) Trabecular Micro-Bypass system in a cohort of Chinese patients with primary or secondary open-angle glaucoma (OAG).

Methods: Retrospective study of the iStent infinite inserted by Glaucoma consultants at the Singapore National Eye Centre. This was performed as a stand-alone procedure or in combination with phacoemulsification, with the surgeon sitting temporally. Baseline pinhole visual acuity (VA), Goldmann intraocular pressure (IOP), Humphrey visual field (HVF), and postoperative outcomes from Day 1, Month 1 (POM1), and Month 6 (POM6) were recorded.

Results: We included 25 eyes from 23 Chinese patients (mean 65.4 ± 14.5 years) with OAG. Patients had an average pre-operative IOP of 16.2 ± 3.9 mmHg on 2.7 ± 1.2 drops, maximum-ever recorded IOP of 27.2 ± 7.9 mmHg, and HVF mean deviation of -11.1 ± 7.1 dB. The iStent infinite was inserted in combination with phacoemulsification

in 16 eyes. None had peripheral anterior synechiae requiring goniosynechiolysis, and no intraoperative complications were recorded. Four patients had micro-hyphema on Day 2 had cornea oedema on post-operative Day 1, which was resolved by POM1. Overall, we found a significant average reduction of 2.3 ± 1.0 drops at POM1 and 1.7 ± 1.3 drops at POM6 (p<0.001). Pre- and post-operative IOP was similar as all patients were on medications pre-operatively. However, there was a significant average decrease of 11.6 ± 9.5 mmHg (p<0.001) in IOP at POM1 compared with the maximum recorded IOP. The improvement in VA at POM1 (p=0.001) was unsurprising as the majority had phacoemulsification.

Conclusions: Placing 3 trabecular- micro-bypass stents alone or in combination with phacoemulsification surgery is safe and provides a significant reduction in IOP-lowering drops in our Chinese population of patients with primary and secondary OAG.

Poster No.: FP2700

Five Years Outcome of Ahmed Glaucoma Valve Surgery in Refractory Glaucoma

First Author: Maryam YADGARI

Co-Author(s): Sara KAVOUSNEZHAD, Nader NASSIRI, Kouros SHEIBANI

Purpose: The aim of this study was to evaluate the success rate and complications of Ahmed Glaucoma Valve (AGV) insertion during a follow-up of at least 5 years.

Methods: In this retrospective case series study, patients with 5 years of follow-up after AGV insertion were enrolled. Success was defined as intraocular pressure (IOP) < 21 mmHg (criterion A) and IOP < 16 mmHg (criterion B), with at least a 20% reduction in IOP, either with no medication (complete success) or with no more than preoperative medication (qualified success). Cumulative success was defined as the sum of qualified and complete success.

Results: This study included 40 eyes of 40 patients with a mean age of 40.63 ± 22.91 years (range 1 to 88). Cumulative survival success rates were 90% and 73% at 1 and 5 years after surgery, according to criterion A, and 42% and 25%, based on criterion B,

with median survival times of 60 months and 22.36 months, respectively. Complications were observed in 4 eyes of 4 patients (10%) and included wound dehiscence, choroidal detachment, encapsulated bleb, and lid retraction. There were no early complications, such as hypotonia or hyphema.

Conclusions: The present study was one of the largest series that reported the long-term outcome of AGV implantation in Asian patients with refractory glaucoma and showed a wide difference in success rates between criteria A and B.

Poster No.: FP2701

Juvenile Open-Angle Glaucoma: My Dealing Experience

First Author: Shams NOMAN

Purpose: For the documentation and describe clinical manifestations management and outcome of management of the patients diagnosed as JOAG at the BSMMU, Dhaka, Bangladesh.

Methods: This is a hospital-based prospective observational case series review. Twenty patients who were diagnosed with JOAG from November 2010 to December 2011 were included. Ophthalmic examinations and management given were documented. Similar relevant details were recorded for different follow-up periods.

Results: Forty eyes of 20 patients were included in this study. There were 16 males and 4 females. All cases were bilateral. Pretreatment average IOP in both eyes was 32+/-3mmHg, which was 15+/-1mmhg after treatment. 24 of 40 eyes were presented with advance field defects. 85% (17 patients) had myopic refractive error. In 18 eyes pre-treatment, presenting visual acuity was <6/60 and >6/60 in the rest of the eyes. Visual acuity was improved after treatment. In 21 patients (53%), IOP was controlled with 2-3 medications. In 19 eyes (48%), IOP was controlled with filtration surgery.

Conclusions: As juvenile open-angle glaucoma presents with high IOP and advance field defects, early diagnosis, appropriate investigations, and medical or surgical management are mandatory to stabilize IOP and to prevent field defects.

Poster No.: FP2702

Pathological Manifestations of the Iris in Primary Chronic Open-Angle Glaucoma

First Author: Nader NASSIRI

Co-Author(s): Sara KAVOUSNEZHAD, Kourosh SHEIBANI, Maryam YADGARI

Purpose: This study aims to assess the histopathological changes in the iris of patients diagnosed with primary chronic open-angle glaucoma (PCOAG) undergoing trabeculectomy surgery.

Methods: Conducted at the Imam Hossein Medical Center in Tehran, Iran, this study included 25 patients diagnosed with PCOAG scheduled for trabeculectomy. Exclusion criteria included patients with diabetes mellitus, systemic hypertension, uveitis, vascular lesions, central retinal vein occlusion, pseudoexfoliation, iris neovascularization, and previous prostaglandin usage. Following peripheral iridectomy, iris specimens were fixed in 10% formalin, processed, and stained with hematoxylin and eosin for histopathological examination. The evaluation focused on vascular hyalinization, anterior border layer (ABL) thickness, stromal pigmentation, and pigmented epithelium characteristics.

Results: Twenty-five patients (mean age 64.4 ± 8.8 years) participated in the study. Notable findings included vascular hyalinization in 72% of patients, ABL thickening in 48%, severe stromal pigmentation in 40%, and vacuolated or depigmented epithelium in 32% and 4% of patients, respectively. Intranuclear inclusions and nuclear invaginations were noted in 88% of cases. The average number of glaucoma medications used per patient was 1.3 ± 1.1.

Conclusions: The present study results underscore the significant histopathological alterations in the iris in PCOAG patients. These changes are likely influenced by factors such as aging, patient ethnicity, and increased intraocular pressure. Gaining a deeper understanding of these changes is vital for advancing PCOAG management and treatment methodologies.

Poster No.: FP2703

Phacomatosis Pigmentovascularis: A Case Series

First Author: Shams NOMAN

Purpose: To observe and describe a rare disease, phacomatosis pigmentovascularis, as a case series.

Methods: Detailed history taking and examination were done in the glaucoma clinic of Chittagong Eye Infirmary and Training Complex for the diagnosis of those suspected cases. Detailed systemic examinations of skin, cardiac, and the nervous system were done. Ocular examinations included visual acuity, intraocular pressure, Gonioscopy (while possible), torch light and slit-lamp examination and fundus evaluation were done.

Results: A total of 8 cases were included. Five males and three females. The average age group was 4 +/-2 years. All of them had hemangiomas in the hand and feet, and 5 of them had hemangioma on both sides of the face. Five cases had bilateral, and two had unilateral naevus of ota in the eye. Three cases had bilateral and the rest of the five cases had unilateral mild buphthalmos and raised intraocular pressure (IOP). There was a history of convulsion in two cases, and CT brain revealed calcification in the brain. All cases needed trabeculectomy surgery to reduce IOP. Two cases needed an Ahmed valve implant.

Conclusions: Phacomatosis pigmentovascularis is a rare entity. Early diagnosis and appropriate measurement can save their vision as well as life.

Poster No.: FP2704

Predicting Preference for Surgical Intervention Versus Medical Therapy Among Cambodian Adult Populations With Advanced Glaucoma

First Author: Channdarith KITH
Co-Author(s): Amarin MAR, Saly SAINT

Purpose: To identify the factors influencing patients' preferences for surgical intervention over continued medical therapy for advanced glaucoma in Cambodian adults, using the Health Belief Model.

Methods: This is a mid-term report of the cross-sectional study of 487 adult glaucoma patients

in Cambodia. The study involved face-to-face interviews covering socio-demographic data, patients' knowledge and beliefs about glaucoma, and treatment preferences based on the Health Belief Model.

Results: Only 28.13% of the patients preferred surgical intervention. Patients generally had less knowledge about glaucoma; however, those who preferred surgery had notably higher knowledge scores than those who preferred medical therapy (Percentage Mean Score: PMS = 58.03% versus 54.09%, respectively). Patients favoring surgery expressed higher scores for perceived susceptibility and severity of long-term medical therapy (93.84% vs. 38.13% and 93.59% vs. 35.56%, respectively), as well as higher scores for self-efficacy (88.73% vs. 45.27%, respectively). Furthermore, they obtained higher scores for perceived benefits (92.21% vs. 51.33%, respectively) and lower scores for perceived barriers to surgical intervention (19.01% vs. 88.23%, respectively). According to multivariate analysis, gender, number of drugs, and level of knowledge did not significantly impact the patient's treatment choices.

Conclusions: The patient's understanding and beliefs about their health significantly influence their willingness to undergo surgery. Factors such as perceived benefits, barriers, severity, and self-efficacy all play a crucial role in the patient's decision. To enhance patient involvement in decision-making and improve treatment outcomes, it is important to emphasize the surgery's benefits, address patient concerns and barriers, and raise awareness about the disease's seriousness while boosting patient confidence.

Poster No.: FP2705

SUMOylation of USP5 in Microglia Exacerbates Retinal Ganglion Cell Damage in Glaucoma via NLRP3 Inflammasome Activation

First Author: Yanlin FENG
Co-Author(s): Jingjing HUANG, Yue XU, Chenyang HU

Purpose: The activation of the NLRP3 inflammasome in microglia contributes to retinal ganglion cell (RGC) damage in glaucoma. SUMOylation, a post-translational modification, has not been explored

in glaucoma. This study investigates the role of SUMOylation in microglia on RGC damage and its underlying mechanisms.

Methods: Retinal specimens from glaucoma patients and controls were analyzed for SUMO-related proteins using immunohistochemistry. Microglia-specific SENP1 conditional knockout (SENP1-CKO) mice were used to establish acute ocular hypertension (AOH) models. Primary and BV2 microglial cells were subjected to oxygen-glucose deprivation/reoxygenation (OGDR). Retinal structure and function were assessed via HE staining, optical coherence tomography, and electroretinography. SUMOylation, NLRP3 inflammasome activation, and RGC survival were analyzed using immunoblotting, co-immunoprecipitation, and immunofluorescence. Proteomics and SUMO proteomics were performed on OGDR-stimulated control and SENP1 knockout BV2 cells. Point mutation and cycloheximide chase assays assessed the effect of USP5 SUMOylation on NLRP3 inflammasome activation.

Results: Glaucoma patients showed reduced SENP1 and elevated SUMO1 expression in retinal microglia. AOH retinas showed increased microglial SUMOylation, further enhanced in SENP1-CKO mice. SENP1-CKO exacerbated AOH-induced retinal structural and functional damage. Proteomics revealed that SENP1 knockout induced NLRP3 inflammasome activation in microglia. SUMO proteomics indicated increased SUMOylation at the USP5 K360 site following SENP1 knockout. Mechanistically, SUMOylation at USP5 K360 promoted its ubiquitination and degradation, inhibiting autophagic degradation of NLRP3 and promoting NLRP3 inflammasome activation.

Conclusions: USP5 SUMOylation in microglia may exacerbate AOH-induced RGC damage by promoting NLRP3 inflammasome activation.

Poster No.: FP2706

Surgical Management of Glaucoma in Fuchs Uveitis Syndrome: Trabeculectomy or Ahmed Glaucoma Valve

First Author: Nader NASSIRI

Co-Author(s): Sara KAVOUSNEZHAD, Kourosh SHEIBANI, Maryam YADGARI

Purpose: To evaluate the outcome of trabeculectomy versus Ahmed glaucoma valve (AGV) surgery in patients with Fuchs uveitis Syndrome (FUS).

Methods: Twenty-eight eyes with uncontrolled glaucoma and at least 6 months of follow-up were enrolled. In 16 eyes, trabeculectomy and in 12 eyes, AGV implants were performed. The primary outcome measure was surgical success defined as $5 < \text{intraocular pressure (IOP)} \leq 21$ mmHg (criterion A) and $5 < \text{IOP} \leq 16$ mmHg (criterion B), with at least 20% reduction in IOP, either with no medication (complete success) or with no more than preoperative medications (qualified success). The sum of complete and qualified success was defined as cumulative success.

Results: In the AGV group, the mean IOP was 31.41 ± 6.76 at baseline, which changed to 22.41 ± 5.09 at the last visit ($P = 0.005$). According to criterion A, cumulative success rates were 100% and 91% at 6 months and 76% and 9% at 36 months in the trabeculectomy and the AGV group, respectively. Cumulative success rates at 6 months were 93% and 58%, and 65% and 7% at 36 months, according to criterion B in the trabeculectomy and the AGV group, respectively. Kaplan-Meier survival analysis revealed a significant association between surgical method and cumulative success rate over 36 months (based on criteria A: $P = 0.02$, and based on criteria B: $P = 0.007$).

Conclusions: The success rate of trabeculectomy was higher than AGV in the surgical management of glaucoma in FUS during a medium-term follow-up.

Intraocular Inflammation, Uveitis and Scleritis

Poster No.: FP2766

Acute Central Serous Chorioretinopathy as a Complication of Corticosteroid Treatment for Ocular Toxoplasmosis

First Author: Xavier Daryl MARTINEZ
 Co-Author(s): Cheryl Myla ARCINUE,
 Erika Thenese FLORO

Purpose: To highlight the detection and management of a treatment-induced complication versus a worsening inflammatory condition.

Methods: Case Report.

Results: Background: Ocular Toxoplasmosis presents as posterior uveitis with chorioretinal lesions and vitritis. Treatment includes a 4- to 6-week antimicrobial and steroid regimen. Patients treated with corticosteroids have an increased risk of developing Central Serous Chorioretinopathy (CSC). Case description: M.C., a 40-year-old male, presented with an acute, unilateral blurring of vision. The patient is a known hypertensive and domestic feline owner. Visual acuity (VA) for the right was hand movement with good light projection and 20/25 on the left. Fundus of the right eye revealed the typical “headlight in a fog” vitritis and chorioretinal lesions on the left eye. Serology testing showed positive Toxoplasma IgM and IgG. Oral Trimethoprim/Sulfamethoxazole and Prednisone treatment was started. On the third week of treatment, VA on the right eye improved to 20/200. However, the left eye worsened to 20/63, and posterior examination revealed CSC. Fast tapering of Prednisone was done, with the initiation of topical ketorolac and oral spironolactone. On subsequent visits, gradual improvement of vision and posterior findings were noted.

Conclusions: CSC induced by corticosteroids has been reported to occur in a wide variety of ocular inflammatory conditions, including Toxoplasmosis. This causes a challenging diagnosis as it might be misinterpreted as a worsening of the primary

inflammatory condition. CSC and inflammation from uveitis create a management dilemma wherein the worsening visual acuity should be treated paradoxically with a reduction in corticosteroid dosage; thereby, early recognition is consequential.

Poster No.: FP2707

Bilateral Angle Closure in a Patient With Relapsing Polychondritis

First Author: Vipin RANA
 Co-Author(s): Sandeepan BANDOPADHYAY,
 Vijay SHARMA

Purpose: To report a rare case of bilateral angle closure in a patient with relapsing polychondritis.

Methods: A 56-year-old male with a history of membranous nephropathy presented with redness, pain, lid edema in both eyes and fever. Ocular examination revealed decreased vision and bilateral angle closure with an IOP of 30 mm Hg in both eyes. Fundus examination showed choroidal detachment in the left eye, and UBM revealed supraciliary effusion in both eyes. The patient also experienced decreased hearing in the left ear. Differential diagnoses included VKH syndrome, drug-induced causes, and dengue fever. Investigations such as ICG and FFA were normal, with no significant drug history. The patient was treated with oral steroids, and further consultation with specialists was conducted.

Results: On tapering steroids, the patient experienced a recurrence of bilateral angle closure along with Descemet folds in the right eye. Subsequent development of left ear perichondritis, sparing the ear lobe, along with ocular symptoms, sensorineural hearing loss, hoarseness, and recurrent fever, led to the diagnosis of relapsing polychondritis.

Conclusions: Relapsing polychondritis is a rare condition, and bilateral angle closure as a manifestation is particularly rare. This case underscores the need to consider relapsing polychondritis in patients with atypical ocular and systemic symptoms.

Poster No.: FP2708

Clinical Manifestations and Management of Patients With Genetically Confirmed Blau Syndrome in a North Indian Cohort

First Author: Nawazish SHAIKH

Co-Author(s): Narendra BAGRI, Rohan CHAWLA

Purpose: To identify the common clinical manifestations of patients with genetically confirmed Blau syndrome and their subsequent management in a North Indian Cohort.

Methods: In this retrospective study, we aimed to study the ocular manifestations and outcomes of children with Blau syndrome with proven NOD-2 mutation. The inclusion criteria included children with clinical features consistent with Blau syndrome such as boggy synovial swelling and dermatitis with ocular features and pathogenic or likely pathogenic variants in the NOD 2 gene determined using the next generation sequencing. Comprehensive ocular examination along with ancillary investigations such as anterior segment photo, fundus photo, and OCT were done when required.

Results: In our series, twelve eyes of six children had ocular involvement in the form of panuveitis (n=8 eyes) and anterior uveitis (n=4 eyes). Four eyes of two children had no ocular involvement. Features of uveitis were seen in 50% of patients before the age of 5 years, with the average age of onset of uveitis in these patients being 45.5 months (range 30-51 months). 2 patients in our series had no ocular manifestations, while 2 other patients had onset of uveitis at 8 years and 14 years respectively.

Conclusions: Uveitis in Blau syndrome is usually chronic, relapsing, and refractory in nature to the available therapeutic options. However, in our cases, patients were well-maintained on IMT/biologicals with no relapses during the follow-up period.

Poster No.: FP2709

M1 Microglia-Derived Exosomes Promote Activation of Resting Microglia and Amplifies Proangiogenic Effects Through Irf1/miR-155-5p/Socs1 Axis in the Retina

First Author: Xi CHEN

Purpose: Activation of microglia plays a key role in the development of neovascular retinal diseases. Therefore, it is essential to reveal its pathophysiological and molecular mechanisms to interfere with disease progression.

Methods: In this study, multiple high-throughput sequencing (retinal single-cell transcriptome sequencing, exosome miRNA sequencing, cellular Bulk transcriptome sequencing) and bioinformatics analysis techniques were combined with a variety of molecular biology and experimental zoology technical methods.

Results: Here a publicly available single-cell RNA sequencing dataset is used to identify that intercellular communications from M1 microglia toward M0 microglia are increased in the retinal angiogenesis model via exosomes. Moreover, the results, both in vitro and in vivo, demonstrate that M1 microglia-derived exosomes promote the activation and enhance the proangiogenic ability of resting microglia. Based on miRNA sequencing of exosomes combined with gene interference, further results show that activated microglia-derived exosomes promoted microglial activation by transmitting polarized signals to M0 microglia via miR-155-5p. Subsequently, miR-155-5p suppresses Socs1 and activates the NFκB pathway, which ultimately causes the inflammatory cascade and amplifies the proangiogenic effect. In addition, upregulated Irf1 drives the expression of miR-155-5p in activated microglia, thus leading to an increase in the tendency of miR-155-5p to be encapsulated by exosomes.

Conclusions: This study elucidates the critical role of intercellular communication among various types of microglia in the complex retinal microenvironment during angiogenesis, and contributes to the novel, targeted, and potential therapeutic strategies for clinical retinal neovascularization.

Poster No.: FP2710

Panuveitis in a Patient With Ulcerative Colitis Undergoing Infliximab Treatment

First Author: Yoshikazu ITO

Purpose: To report a case of panuveitis in a patient with ulcerative colitis undergoing infliximab treatment.

Methods: An observational case report.

Results: A 42-year-old female with ulcerative colitis developed blurred vision in her right eye in August, five months after being switched from oral steroids to infliximab treatment. She presented to the ophthalmology department on August 25, and her best-corrected visual acuity (BCVA) was 20/20 in both eyes. Examination revealed ocular inflammation and retinal vasculitis in both eyes and macular edema in the right eye. She was diagnosed with panuveitis. Treatment was initiated with topical corticosteroids and sub-tenon triamcinolone acetonide injection. However, inflammation was not improved. The patient was referred to our hospital for treatment on October 23. BCVA was 20/25 in the right eye and 20/50 in the left eye. Examination showed macular edema worsening in both eyes at the initial visit. A paradoxical immune reaction due to infliximab was suspected. After being switched to upadacitinib and mesalazine, BCVA improved to 20/20 in both eyes, and inflammation subsided by January 29.

Conclusions: The cases with ocular adverse events associated with tumor necrosis factor-alpha inhibitors have been reported. In this case, panuveitis might be caused by a paradoxical immune reaction due to infliximab. Paradoxical side effects should be considered as a differential diagnosis in uveitis patients undergoing biologic therapy.

Poster No.: FP2711

Surgical and Medical Management Dilemma in a Patient With TB Posterior Uveitis, Choroidal Detachment and Glaucoma

*First Author: Jose Timothy Martin CHUA
Co-Author(s): Daniel Jose MENDOZA,
Timothy TANG LEE SAY*

Purpose: This case presentation focuses on a unique case of a Filipino patient who suffered from posterior uveitis secondary to tuberculosis. The patient had to be treated systemically and topically with steroids. Due to the ensuing complications, the patient needed retina and glaucoma surgical intervention. However, each management brought about another complication or restarted a prior complication, such as choroidal detachment.

Methods: This is a case report poster that will highlight the salient points of the patient's case. The management will be divided into the medical versus surgical dilemma presented by the complex case. Surgical management will be discussed in detail such as the pars plana vitrectomy, removal of silicone oil, and glaucoma drainage device insertion to mitigate the complications seen in this case.

Results: The patient underwent systemic treatment first for tuberculosis with topical and oral steroids used to address the anterior and posterior uveitis and choroidal effusion seen. Once the patient was deemed inactive, he underwent pars plana vitrectomy with membrane peeling and silicone oil tamponade. Once the patient was deemed fit for silicone oil removal, the first complication of choroidal detachment was seen as a relatively low intraocular pressure state was induced. Oral steroids were tapered as necessary. However, it was seen that glaucoma developed, which surprisingly aided in decreasing choroidal detachment. The team handled this case with numerous strategies and algorithms, which will be shared in the poster and presentation. **Conclusions:** This case report highlights the challenges when dealing with a complex tuberculosis-induced uveitis, retina, and glaucoma case co-management by a multi-specialty team.

Poster No.: FP2712

Unilateral Severe Posterior Uveitis With Exudative Retinal Detachment and Ischemic Occlusive Vasculitis Secondary to Flare of Severe Systemic Lupus Erythematosus (SLE)

*First Author: Law NGEE LING
Co-Author(s): Yong MENG HSIEN,
Siti NUR AMIRA ABU KASSIM*

Purpose: To report a case of unilateral severe posterior uveitis with exudative retinal detachment and ischemic occlusive vasculitis secondary to flare of severe systemic lupus erythematosus (SLE).

Methods: Case report.

Results: A 32-year-old female with SLE complicated with pulmonary hypertension, lupus nephritis, and vasculitic rashes presented with worsening right eye vision for two weeks. Along with corticosteroids, she also received second-line agents as her disease was challenging to manage. This current onset of vision issues occurred after a reduction in the oral prednisolone dosage. Examination revealed right eye visual acuity limited to hand movements with a relative afferent pupillary and 6/9 in the left eye. Fundus examination showed 360-degree peripapillary swelling, extensive macular edema, tortuous retinal veins, attenuated retinal arteries, ghost vessels, cotton wool spots, dot blot hemorrhages, and neovascularization, indicating ischemic occlusive vasculitis. Optical Coherence Tomography (OCT) of the macula revealed significant subretinal fluid and exudative retinal detachment affecting the fovea. In contrast, the left eye shows normal findings. Other investigations showed raised inflammatory markers in her blood, but her infective workups were negative, including tuberculosis. Along with rheumatologists, a lower dose of intravenous methylprednisolone (500mg/day for three days) followed by oral prednisolone of 0.5mg/kg/day was meticulously given as the patient was at risk for co-infection. Pan-retinal photocoagulation was also performed. Upon follow-up, the subretinal fluids and retinal detachment improved.

Conclusions: Immunosuppressive medications are the mainstay of treatment for SLE disease affecting the eyes. However, the case also underscores the crucial role of interdisciplinary management in treating them.

Myopia

Poster No.: FP2713

Atropine for the Treatment of Myopia Progression in Chinese Children (ATOM-CN): A Randomized Phase III Trial

*First Author: Jun JIANG
Co-Author(s): Zhishu BAO, Yunyun CHEN, Jia QU,
Feifu WANG*

Purpose: This study aimed to evaluate the efficacy and safety of 0.01% atropine eye drops for myopia progression in Chinese children.

Methods: In this randomized controlled trial (CTR20200084), participants were children aged between 6 to 12 years, having a spherical equivalent (SE) ranging from -1.00D to -4.00D and astigmatism of $\leq 1.50D$. They were randomized to 0.01% atropine group (n=305) or placebo group (n=101) once nightly to both eyes. The primary endpoint was the SE changes after 48 weeks.

Results: At the end of 48 weeks, both the average SE changes and axial length increase were smaller with atropine than placebo ($-0.65 \pm 0.03D$ vs. $-0.81 \pm 0.05D$, $P=0.005$; $0.31mm$ vs. $0.39mm$, $P=0.002$). The percentage of SE progression $\leq 0.75D$ with the atropine group was higher than the placebo group (66.3% vs. 48.9%, $P=0.003$). Analysis of specific subgroups revealed that children aged 6-10 years with myopia ranging from -1.00 to -2.00D showed a trend towards greater improvement. The most frequently adverse events were eye pain (9.6%) and photophobia (5.6%), mostly transient, without systemic drug exposure and accumulation.

Conclusions: The 0.01% atropine eye drops reduced myopia progression with favorable safety profile. Possible benefit was observed from its early use in Chinese children.

Poster No.: FP2714

Efficacy in Myopia Control: An Omnibus Model

*First Author: Monica JONG
Co-Author(s): Noel BRENNAN, Mark BULLIMORE,
Xu CHENG*

Purpose: Accurate prediction and monitoring of axial elongation and refractive progression are important for managing myopia. Here, we provide an update on the evidence-based interpretation of these features.

Methods: We synthesized an omnibus model from a range of observations, including the following:
•Axial length is the preferred metric for monitoring progression during treatment. •Efficacy follows a pattern of absolute rather than percentage reduction in progression. •3-year efficacy is reliably double 1-year efficacy. •There is a 15% reduction per annum in axial elongation in untreated myopes. •There is also a 15% reduction per annum in axial elongation in treated myopes after the first year of treatment, during which there is an initial ‘boost’ of efficacy
•Refractive progression is approximately 2 D for each millimeter of axial elongation.

Results: Comparison to axial elongation charts provides the most sensitive means of monitoring progression. While 3-year efficacy is double that at 1-year, we estimate efficacy to reach three and four times 1-year efficacy at 6 and 12 years, respectively. Of current myopia control treatments, the best performing is predicted to reduce refraction at age 18, if treatment is started at age 7, by a little over one and a half diopters. Prediction intervals for projected progression are wide, given the variation in underlying progression among individuals.

Conclusions: This omnibus model provides projections and reference data for the efficacy of myopia control interventions based on 1-year data. The challenges of following untreated control groups for long periods are likely to impede further model refinement.

Poster No.: FP2715

Forecasting Myopic Maculopathy Risk Over a Decade: Development and Validation of an Interpretable Machine Learning Algorithm

*First Author: Yanping CHEN
Co-Author(s): Mingguang HE, Wei WANG,
Ruilin XIONG*

Purpose: To develop and validate a prediction model for myopic macular degeneration (MMD) progression in patients with high myopia.

Methods: The Zhongshan High Myopia Cohort for model development included 660 patients aged 7-70 years with a bilateral sphere of $\leq -6.00D$. 212 participants with an axial length (AL) $\geq 25.5mm$ from the Chinese Ocular Imaging Project were used for external validation. Thirty-four clinical variables, including demographics, lifestyle, myopia history, and swept-source optical coherence tomography data, were analyzed. Sequential forward selection was employed for predictor selection, and binary classification models were created using five machine learning algorithms to forecast the risk of MMD progression over 10 years.

Results: Over a median follow-up of 10.9 years, 133 patients (20.2%) showed MMD progression in the development cohort. Among them, 69 (51.9%) developed newly-onset MMD, 11 (8.3%) developed patchy atrophy from diffuse atrophy, 54 (40.6%) showed an enlargement of lesions, and 9 (6.8%) developed plus signs. The top six predictors for MMD progression included thinner subfoveal choroidal thickness, longer AL, worse best-corrected visual acuity, older age, female gender, and shallower anterior chamber depth. The eXtreme Gradient Boosting algorithm yielded the best discriminative performance (AUROC=0.87 \pm 0.02) with good calibration in the training cohort. In a less myopic external validation group (median -5.38D), 48 patients (22.6%) developed MMD progression over four years, with the model’s AUROC validated at 0.80 \pm 0.008.

Conclusions: Machine learning model effectively predicts MMD progression a decade ahead using clinical and imaging indicators. This tool shows promise for identifying “at-risk” high myopes for timely intervention and vision protection.

Poster No.: FP2716

Observation on the Clinical Efficacy of Visual Function Training Combined With Low-Concentration Atropine in Controlling Recessive Exotropia With Low Myopia

First Author: Yunyun WANG
Co-Author(s): Ling AI, Duo XU

Purpose: To observe the clinical efficacy of visual function training combined with low-concentration atropine in controlling the clinical effect of recessive exotropia with myopia.

Methods: Two hundred children with small-angle exophoria combined with low myopia were selected as the research objects in the past 1 year. Every group has 100 people. The control group was treated with low-concentration atropine eye drops, while the observation group was treated with visual function training combined with low-concentration atropine eye drops. The myopia of patients in both groups was lower than -0.75D, so glasses were not the first choice for routine use.

Results: At 1 month and 2 months before treatment, the naked eye visual acuity of the observation group was (0.75±0.05) and (0.81±0.04), respectively, which was significantly higher than that of the control group (P<0.05). The improvement of diopter was significantly better than that in the control group (P<0.05). Positive relative adjustment test results were (-1.98±0.07) and (-2.51±0.24); the difference was statistically significant (P<0.05). The visual fatigue survey showed that the scores of the observation group were significantly lower than those of the control group (P<0.05). Six months after treatment, both the naked eye visual acuity and optometric visual acuity of the control group decreased and increased (0.25±0.05d), and the angle of inclination was different from that of the control group (P<0.05).

Conclusions: Low-concentration atropine can inhibit the progression of monocular optical vision. However, it is necessary to combine visual function training or wear glasses to control the risk of potential myopia progression.

Poster No.: FP2717

Real-World Safety and Performance of a Novel Soft Contact Lens for Myopia Management in Chinese Children

First Author: Monica JONG
Co-Author(s): Xu CHENG, Hongzhi GUO, Alex NIXON, Vanessa OCHS, Lan Wei ZHONG

Purpose: The safety and performance of a soft contact lens with RingBoost™ technology (RB) in Chinese children were evaluated at an Eye Hospital in Hainan, China. Here we report outcomes after participants completed 6 months of lens wear.

Methods: This is a single-site, prospective, single-arm, open-label, real-world evidence study. Eligible participants were followed at 1-week, 1-month, 3-month, and 6-month for evaluation of potential adverse events, vision performance, lens fit, and lens wear compliance. Further, myopia progression was evaluated every 6 months by measuring changes in cycloplegic autorefractometry (Topcon KR-1) and axial length [AL] (IOLMaster 700).

Results: A total of 70 subjects aged 7-12 years with a mean baseline myopia of -2.21 D (SD: 0.97) were fitted with the RB lens, and 67 participants completed the 6-month follow-up. After 6 months of wearing the RB lens, mean (SD) changes from baseline in AL and spherical equivalent cycloplegic autorefractometry were 0.03 (0.12)mm and -0.09 (0.30)D. Monocular distance visual acuity with the RB lens was 0.00 (0.05) and -0.03 (0.05) logMAR at the initial lens fitting and 6-month follow-up. Of the 67 subjects who completed the 6-month follow-up, 98.5% had cumulative lens wear time meeting or exceeding the criterion for compliance. No significant adverse events were reported to date.

Conclusions: The 6-month outcomes demonstrated excellent safety, vision, and fit performance of the RB lens. Minimal myopia progression was observed within the initial 6 months of treatment. Further investigation regarding the safety and effectiveness of the RB lens in slowing myopia progression will continue as participants complete the 12-month follow-up.

Poster No.: FP2718

Stabilization of Comfort and Visual Quality After the Insertion of Soft Contact Lenses in Chinese Population

First Author: Xiaoyu ZHANG

Co-Author(s): Liu LIU, Xingtao ZHOU

Purpose: To evaluate comfort and visual quality after the insertion of Verofilcon A silicone hydrogel contact lenses (CL) in the Chinese population.

Methods: Habitual CL wearers with wearing history of Etafilcon A (hydrogel, J&J ACUVUE Moist, Basic Curve 8.5mm) contact lenses for at least 2 months were included in this prospective, non-comparative clinical study. Alcon PRECISION1 Sphere daily disposable contact lenses (PRECISION1, Verofilcon A, Basic Curve 8.3mm) were applied with daily wear for 2 weeks in participants. Thirty-four healthy participants (26.71 ± 3.82 years) were evaluated. Comfort Visual Analogue Scale (VAS, 0-100), Vision VAS (0~100), wear time/ comfortable wear time, and 8-item Contact Lens Dry Eye Questionnaire (CLDEQ-8) ratings were completed after PRECISION1 wearing.

Results: As for comfort VAS, three participants (8.82%) scored 100 points after Moist wearing. Twenty-four participants (70.59%) scored 80 or above 80 for comfort VAS. Comfort VAS scores after Moist wearing were 75.88 ± 11.84. As for comfort VAS, eleven participants (32.35%) scored 100 points after PRECISION1 wearing. Twenty-four participants (70.59%) scored 80 or above 80 for comfort VAS. Comfort VAS scores after PRECISION1 wearing was 80.59 ± 15.94. Vision VAS scores after PRECISION1 wearing was 78.82 ± 17.71. The overall CLDEQ-8 scores by opinion status were 10.15 ± 4.21.

Conclusions: Comfort and vision of PRECISION1 were reported satisfactory results by satisfied Moist wearers in Chinese subjects.

Poster No.: FP2719

The Spatial Profile of Macular Pigment in Subjects With High Myopia

First Author: Neelam BHASKAR

Co-Author(s): Esther HO LIRONG, Scott READ, Chalani UBEYNARAYANA

Purpose: To evaluate macular pigment (MP) optical density and spatial profile in subjects with high myopia and compare it with control subjects.

Methods: The following details were collected in 197 healthy subjects (controls = 108, high myopes, spherical equivalent ≤ -5.0 diopter = 89) in a cross-sectional study: socio-demographics; lifestyle information; medical history (face-to-face interview); comprehensive ophthalmic examination including best corrected visual acuity, autorefractometry, axial length, slit-lamp biomicroscopy; color fundus photograph. MP optical density and spatial profile were measured using the Macular Metrics Densitometer (Macular Metrics Corp., Rehoboth, MA, USA) that utilizes the principle of customized heterochromatic flicker photometry.

Results: The mean (±SD) age of the study population was 60.94 ± 9.88 years, with high myopes significantly younger than controls (high myopes = 58.54, controls = 62.92, p = 0.002). No significant difference in mean MP optical density was observed between high myopes and controls (MP: high myopes = 0.51 ± 0.19, controls = 0.53 ± 0.21, p = 0.456). High myopes demonstrated significantly more atypical MP spatial profile when compared to controls (atypical profile: high myopes = 31.5%, controls = 13.9%, p = 0.005). In logistic regression analysis, the odds of having an atypical MP spatial profile in high myopes was 2.72 times that of a typical MP spatial profile (OR = 2.72, 95% CI 1.31-5.83, p = 0.008).

Conclusions: The atypical spatial profile of MP was more commonly observed in high myopes. Future studies with larger populations are required to validate our findings and to search for the underlying causative factors.

Neuro-Ophthalmology

Poster No.: FP2720

Infiltrative Optic Neuropathy as a Rare Presentation of Spinal Ependymoma

First Author: Cheng-yung LEE

Co-Author(s): Bo-da HUANG, Chao-wen LIN

Purpose: To report a case of progressive blurred vision and optic neuropathy secondary to spinal ependymoma and to highlight the diagnostic and therapeutic challenges associated with this condition.

Methods: A 61-year-old male with a history of spinal ependymoma (WHO grade 2) treated by L1-2 laminoplasty and tumor excision presented with progressive blurred vision in both eyes, more severe in the right eye, one month post-surgery. Ophthalmologic and neurologic evaluations, including fundus examination, MRI, optical coherence tomography (OCT), and cerebrospinal fluid (CSF) analysis, were performed.

Results: Initial ophthalmologic examination showed clear media and mild disc margin blurring with no hemorrhage. MRI indicated possible spinal tumor recurrence and hyperintensity with mild enhancement over bilateral optic nerves. Lumbar puncture revealed a positive CSF oligoclonal band without malignant cells. Aquaporin 4 and myelin oligodendrocyte glycoprotein were both negative. The patient's vision continuously deteriorated to no light perception in the right eye and 20/400 in the left eye, even after three days of pulse steroid therapy. There was a gradual improvement in vision following the resumption of steroid therapy and radiotherapy. The patient's vision improved to counting fingers in the right eye and 20/20 in the left eye one month later.

Conclusions: Infiltrative optic neuropathy can be a rare but serious complication of spinal ependymoma. This case underscores the importance of comprehensive diagnostic evaluations and a multimodal treatment approach, including steroids and radiotherapy, to manage and improve visual outcomes in affected patients. Further research is warranted to better understand the pathophysiology and optimize treatment protocols for this condition.

Ocular Imaging

Poster No.: FP2721

Comparison of Retinal Nerve Fiber Layer and Macular Retinal Ganglion Cell Layer Thickness in Cyanotic Heart Patients Versus Normal

First Author: Sumolkarn EUSWAS

Co-Author(s): Tawai NGERNSRITRAKUL, Purit PETPIROON, Wasu SUPAKONTANASAN, Yanin SUWAN, Tarinee TANGCHAROEN

Purpose: This cross-sectional study aimed to assess the peripapillary retinal nerve fiber layer (RNFL) and ganglion cell layer–inner plexiform layer (GCL-IPL) thickness in patients with cyanotic congenital heart disease (cCHD) utilizing spectral domain-OCT (SD-OCT).

Methods: Fifteen patients diagnosed with cCHD (5 males; mean age 36.07±13.25 years) and 15 healthy controls (6 males; mean age 35.67±13.86 years) underwent refraction, biometry, visual field testing, and SD-OCT.

Results: The average RNFL thickness was comparable between cCHD patients and healthy controls (101.08 μm vs 99.29 μm, respectively), as was GCL-IPL thickness (82.65 μm vs 83.41 μm, respectively). There were no significant differences observed in the thickness of all quadrants of RNFL and GCL-IPL between the study groups. Multivariate linear mixed effect regression analysis unveiled a negative association between oxygen saturation (SpO₂) and both inferior ($\beta = -1.148$, 95% CI: -2.196 to -0.101, $p = 0.032$) and temporal RNFL thickness ($\beta = -0.976$, 95% CI: -1.747 to -0.205, $p = 0.013$). Additionally, hematocrit (Hct) levels exhibited a negative association with temporal RNFL thickness ($\beta = -0.795$, 95% CI: -1.404 to -0.186, $p = 0.010$). Central corneal thickness (CCT) in patients with cCHD was considerably less than in the control group (p -value = 0.021).

Conclusions: No significant discrepancies were noted in RNFL and GCL-IPL thickness between cCHD patients and controls. Negative associations were observed between SpO₂, Hct, and temporal RNFL thickness, alongside a negative association between SpO₂ and inferior RNFL thickness. Reduced CCT in cCHD patients should be considered when interpreting IOP measurements with applanation tonometry.

Ocular Oncology and Pathology

Poster No.: FP2722

A Clinicopathological Features and Treatment of Lacrimal Gland Tumors at a Tertiary Eye Hospital in Nepal

First Author: Jamuna GURUNG

Purpose: To evaluate the clinico-demographic profile, histopathological findings, and treatment of patients with lacrimal gland tumors.

Methods: This is a retrospective study of patients with lacrimal gland tumors diagnosed and managed at a tertiary eye hospital's Oculoplastic and Ocular Oncology department. Twenty-four patients with biopsy-proven lacrimal gland tumors between January 2017 and December 2021 were included for analysis. The clinical characteristics, histopathologic diagnosis, and management were evaluated.

Results: The mean age of patients was 41.67±13.7 (range 17 to 60 years). There was a female preponderance (54.2%). The left eye (50%) was affected more than the right eye (45.8%). The majority of the patients presented with protrusion of the eyeball (62.5%), palpable mass in the periorbital region (29.1%), followed by ocular and periorbital pain (25%) and displaced globe (20.8%). The mean duration of symptoms was 10.8 months. The diagnosis was initially clinical and radiological confirmed by histopathology. Surgical excision of the tumor was done in 87.5%, followed by incision biopsy (8.3%) and exenteration (4.2%). Histopathology showed pleomorphic adenoma (45.8%) as the most common lacrimal gland tumors, followed by adenoid cystic carcinoma (29.2%), adenocarcinoma (12.5%), lymphoma (8.3%) and carcinoma ex pleomorphic adenoma (4.2%). Malignant tumors were treated by wide surgical excision followed by adjuvant treatment.

Conclusions: The most common benign lacrimal gland tumor was pleomorphic adenoma, and malignant was adenoid cystic carcinoma. The histopathological features are important for the definitive diagnosis and to plan for managing lacrimal gland tumors.

Poster No.: FP2723

An Atypical and Unique Presentation of Orbital Lymphoma Masquerading as a Vascular Anomaly

First Author: Richard Dean Clod DELA CRUZ

Co-Author(s): Yvette SANTIAGO, Michael SIBULO

Purpose: To describe an atypical presentation of a patient diagnosed with peribulbar orbital lymphoma.

Methods: This is a case report of a 33-year-old male with orbital lymphoma, presenting with waxing and waning yellow chemosis of the right lateral bulbar conjunctiva, associated with lid swelling and proptosis.

Results: A 33-year-old male presented with a 1-year history of lid swelling and waxing and waning yellow chemosis on the lateral bulbar conjunctiva. The lid swelling started on the right upper lid and persisted throughout the day. The yellow chemosis was more prominent in the morning and faded throughout the day. His ophthalmic history was otherwise unremarkable. Multiple ophthalmologists assessed him, noting proptosis, and an orbital magnetic resonance imaging (MRI) with contrast revealed a 4.1cm x 1.7cm x 2.2cm right intraconal mass abutting the medial rectus muscle and encapsulating the optic nerve. Initially considered as an orbital venous anomaly, an anterior orbitotomy with mass debulking was performed, revealing a recurrence of the yellow chemosis and pupillary dilation during manipulation. Dissection of the peribulbar mass was challenging due to its vascular nature. Histopathology and immunohistochemistry identified a mature B-cell lymphoproliferative disorder, favoring extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (MALToma). Post-operatively, the yellow chemosis was less prominent. The patient was referred for radiotherapy.

Conclusions: This is a unique presentation of MALT Lymphoma. The mass's vascular nature in imaging and the presence of a yellow chemosis are atypical for retrobulbar orbital lymphoma. These should be considered as possible findings in future cases.

Poster No.: FP2724

Clinical Patterns and Outcomes of Retinoblastoma in a Tertiary Care Centre of a Developing Country

First Author: Tayyaba MALIK

Purpose: To assess the disease pattern and response of treatment using all types of treatment options available in a tertiary care centre. There is special reference to the results of treatment using IAC, IVM, and IVT.

Methods: This was a descriptive observation study. Data included the city in which the patients reside, age at first presentation, presenting complaints, gender, laterality, family history, stage of tumour, tumour status after treatment, complications of treatment, and duration of follow-up. Patients with incomplete data were excluded. Examination under anaesthesia was performed for diagnosis and staging of the disease. MRI was performed in all the cases to check the spread of tumour. RetCam was used to record the images of tumour for later reference and to document the response to treatment. Different treatment modalities were used, including laser photocoagulation, cryotherapy, enucleation, exenteration, local and systemic chemotherapy.

Results: The study included 47 patients (22 females). The mean age of presentation was 26.5±15 months. Records of 84 eyes were examined. Family history was positive in only (n=3) 6.3% of cases. Leucocoria was the commonest presentation, seen in 72 (85.7%) eyes, proptosis in 8 (9.5%), and huge fungating mass in 2 (2.4%), while the tumour was diagnosed because of screening in 2 (2.4%) patients. Posttreatment complications included cataract in two patients, Ischaemic chorioretinal toxicity, transient macular oedema, orbital oedema, and transient intra-cranial oedema in one patient each. Two patients had metastasis and underwent systemic chemotherapy.

Conclusions: Patients with retinoblastoma can achieve better results if diagnosed early and treated with newer treatment options.

Poster No.: FP2725

Fighting for Sight: Retinoblastoma Treatment Outcomes in Three Pakistani Families

First Author: Iqra KHALID

Co-Author(s): Tayyaba MALIK

Purpose: To describe three families with retinoblastoma and the outcomes of different treatment modalities.

Methods: This paper describes three families spanning two generations affected by retinoblastoma. Various treatment options were administered, including intra-arterial chemotherapy, systemic chemotherapy, intravitreal Melphalan, and laser photocoagulation. The outcomes of these treatments are detailed. We will present follow-up Retcam images taken up to the last week before the conference.

Results: All three families are still under follow-up. The final results will be presented at the conference.

Conclusions: Retinoblastoma is relatively common in Pakistani families, and with diligent efforts, regular follow-ups, and proper screening, lives and eyes can be saved.

Poster No.: FP2726

Hospital-Based Incidence of Intraocular Tumors From a Tertiary Medical Center, Bangkok, Thailand

First Author: Arucha PRASANWAN

Co-Author(s): Ratima CHOKCHAITANASIN, Duangnate ROJANAPORN

Purpose: To investigate the incidence of hospital-based intraocular tumors, trends, and clinical characteristics in Ramathibodi Hospital, Thailand.

Methods: A retrospective review of Microsoft Excel-based unified electronic medical records enrolled patients diagnosed with intraocular tumors, including benign and malignant, between January 1, 2013, and December 31, 2022. Data collection was confirmed by clinical diagnosis and the presence of a pathology report, if available, including demographics, type of tumors, and clinical outcome. The incidence rate of all intraocular tumors was calculated per million person-years who got service in the ophthalmology

unit-years as a new out-patient. Poisson regression analysis was used to assess changes in incidence over time.

Results: There were 439 patients with intraocular tumors, giving an age-adjusted and sex-adjusted incidence rate of 1,533.4 per million person-years (95% CI:1,366.5 to 1,700.30). Most tumors (268 patients, 61.1%) were malignant due to the referral setting. The malignant tumors, amelanotic lesions were the majority (182 patients, 41.5%) with an adjusted incidence rate of 497.5 (95% CI: 415.4 to 595.9) for retinoblastoma and 205.2 (95% CI: 147.4 to 263.1) for metastasis tumor. Melanotic lesions were relatively rare, with an adjusted incidence rate of 335.0 (95% CI: 259.9 to 410.1) for choroidal melanoma and 12.7 (95% CI: 4.1 to 39.2) for iris or ciliary body melanoma.

Conclusions: In hospital-based population settings, the majority of intraocular tumors were malignant. The predominant characteristic was amelanotic lesions. The most common tumor was retinoblastoma, followed by choroidal melanoma in the second place. Early detection and treatment can prevent irreversible visual loss and decrease mortality.

Poster No.: FP2727

Management Outcomes of Ocular Surface Squamous Neoplasia With Interferon Alpha 2b

*First Author: Pranita SAHAY
Co-Author(s): Rinky AGARWAL, Subhash DADEYA,
Vaishali TOMAR, Saumya YADAV*

Purpose: To assess the clinical outcomes of Ocular Surface Squamous Neoplasia (OSSN) with topical Interferon alpha 2b (INF) combined with a loading dose of sub-conjunctival interferon alpha 2b.

Methods: A prospective interventional study was conducted on patients with OSSN. Cases with metastasis were excluded from the study. The detailed ophthalmic evaluation included visual acuity, the extent of OSSN, Anterior segment OCT (for extent), and impression cytology, which was performed at baseline. All cases were treated with topical INF 1 million IU/ml QID till 3 months post-resolution of OSSN. Subconjunctival INF was given at

baseline and at a 4-week follow-up as an induction therapy. All patients were followed up every 4 weeks till clinical resolution of OSSN, following which impression cytology was done every 3 months for 6 months. The primary outcome was the success rate for clinical resolution. The secondary outcome was the time to resolution and adverse events.

Results: A total of 7 cases of OSSN were treated with the described regimen. The median age of patients was 65 years, and the male-female ratio was 5:2. The median limbal involvement was 6 clock hours (range 2 - 9). Corneal involvement was observed in 42.8% of cases (n=3/7). Complete resolution was observed in all cases with a median duration of resolution being 5 months. Sub-conjunctival haemorrhage was observed in 2 cases after injection. No major adverse effects were noted.

Conclusions: Topical Interferon alpha 2b (INF) combined with a loading dose of sub-conjunctival interferon alpha 2b is an effective and safe method in the management of OSSN.

Poster No.: FP2767

Massive Retinal Gliosis: A Rare Benign Condition Masquerading as a Malignant Intraocular Tumor in an Adult Filipino Male

*First Author: Xavier Daryl MARTINEZ
Co-Author(s): Charisse Ann TANLAPCO*

Purpose: To feature such an unusual tumor plausibly misdiagnosed as a malignant neoplasm and highlight its course and histopathological findings as it is currently challenging to clinically differentiate from other intraocular tumors. To single out factors that could determine MRG or other benign tumors from a malignant tumor.

Methods: Case report.

Results: Background: Massive Retinal Gliosis (MRG) is a rare benign intraocular condition resulting from reactive glial cells undergoing an exaggerated repair phenomenon. This is the first reported case of MRG in the Philippines as of date. Case Description: A 52-year-old Filipino male presented with a 6-year onset, gradually enlarging mass in the right eye, associated with progressive vision loss

and worsening proptosis. He reported a history of trauma to that eye secondary to a vehicular crash one year prior. MRI revealed an intraocular lesion with calcifications, raising the possibility of a malignant tumor. Enucleation of the right globe was performed, and histopathologic examination revealed the entire vitreous cavity and retina replaced by glial cells arranged in interlacing bundles and whorls with foci of calcifications - highly suspicious of MRG. This was further confirmed immunohistochemically by a positive, diffuse, and robust cytoplasmic expression of Glial Fibrillary Protein (GFAP). The disease is known to have favorable outcomes as no complications were observed from the patient during subsequent visits. Distinction of MRG from other intraocular neoplasms is clinically challenging, hence biopsy was necessary.

Conclusions: MRG is another manifestation of trauma-induced vision loss. Accurate diagnostic work-up is mandatory to not potentially misidentify such as a malignant tumor.

Poster No.: FP2728

Ocular Adnexal Involvement in Rosai Dorfman Disease: A Case Report

*First Author: Sudha RANABHAT
Co-Author(s): Kshamata SUBEDI*

Purpose: Rosai-Dorfman disease (RSD) is a rare sinus histiocytosis with massive lymphadenopathy where ophthalmic involvement is observed in only 8-10%. We report a case of ocular RSD with eyelid involvement.

Methods: A four-year-old female child presented with a complaint of swelling of the right eye (RE) upper and lower eyelids for three days. On examination, non-tender, boggy, non-pitting edema of the RE upper and lower eyelid was observed. The remaining anterior and posterior segment findings were within normal limits. On systemic examination, the patient had bilateral cervical, submandibular, subclavian, and inguinal lymphadenopathy. Erythematous plaque over the right side of the face, forehead, and cheek. Multiple erythematous to hyperpigmented plaques were observed over the trunk, associated with slight scaling. Multiple papular lesions with scales were seen over the bilateral dorsal surface of the hand, forearm, and

inter-pharyngeal joint with flexion deformity. Similar lesions were observed in the bilateral leg and foot. Contracture of the bilateral fingers was observed. The patient was diagnosed with cutaneous Rosai Dorfman disease after a punch biopsy which revealed histiocytes showing intracytoplasmic intact lymphocytes suggestive features of "emperipolesis". Ultrasonography of the abdomen and pelvis revealed enlarged inguinal lymph nodes. Fine needle aspiration cytology of the enlarged right cervical and inguinal lymph nodes showed reactive paracortical hyperplasia.

Results: The patient was treated with oral steroid one mg/kg for one week, then tapered subsequently for a month, which improved eyelid swelling.

Conclusions: RSD could have multiple ocular findings which should be treated deliberately to prevent other conditions, such as amblyopia in the child

Poster No.: FP2729

Primary Central Nervous System Lymphoma With Intraocular Involvement – a Case of Uveitis Masquerade Syndrome

*First Author: Prashaantini NAMASIVAYAM
Co-Author(s): Lee HONG NIEN*

Purpose: To report a case of uveitis masquerade syndrome as a manifestation of intraocular lymphoma

Methods: Case report.

Results: A 64-year-old Malay lady with underlying hypertension and bronchial asthma with a history of treated left eye non-granulomatous anterior uveitis a year prior presented with left eye painless blurring of vision for one week. There was no associated traumatic history or infectious or constitutional symptoms. On examination, the visual acuity of the right eye was 6/9, and the left eye was counting the fingers. Right eye anterior segment examination revealed pigmented keratic precipitate with cells of 1+ in the anterior chamber. Fundus examination of the right eye was normal. Whereas a left eye examination revealed dense pigmented keratic precipitate on the cornea with a hazy fundus view of the left eye revealing multiple scattered round hypopigmented lesions with vitritis. A B-scan was

done, revealing dense vitritis with a flat retina. Systemic examinations were unremarkable. She was treated with topical steroids, which showed minimal improvement in her symptoms. Uveitic, tuberculosis, and tumour workup taken were negative. The patient then underwent emergency magnetic resonance imaging (MRI) of the brain, revealing a well-defined right basal ganglia lesion with an extension highly suspicious of lymphoma and multiple left frontal cortical lesions suspicious of metastasis. She was referred to the neurosurgical team and planned for brain biopsy and vitreous sampling as well; however, the patient defaulted to follow-up.

Conclusions: A thorough evaluation of recurrent uveitis is essential. High suspicions of malignancy are needed, especially for patients with recurrences and poor response to treatment.

Poster No.: FP2730

Recurrent Pleomorphic Adenoma of Lacrimal Gland in a Young Patient: A Case Report

First Author: Dikshya BISTA

Co-Author(s): Sushant ADIGA, Malita AMATYA, Hom Bahadur GURUNG, Purnima RAJKARNIKAR STHAPIT, Rohit SAIJU

Purpose: To report a case of recurrent pleomorphic adenoma in a young patient. Incomplete removal and violation of the pseudo capsule during surgery can lead to the recurrence of pleomorphic adenoma of the lacrimal gland. Post-operative cases should be closely followed and monitored.

Methods: A 20-year-old male presented with swelling and protrusion of the right eye for 4 months. He had a history of right eye pleomorphic adenoma diagnosed 4 years earlier, for which he underwent lateral orbitotomy with bone work. The tumor was reportedly completely resected with a macroscopically intact pseudo capsule. The histopathology report confirmed the mass as a pleomorphic adenoma but did not comment on the integrity of the pseudo capsule. The patient did not follow up after surgery for 4 years and was symptom-free until 4 months before presentation.

Results: He underwent lateral orbitotomy with bone work, and a diffuse mass was excised. The swelling

persisted 1 month post-surgery. A repeat CT scan indicated a residual mass, which was removed through another lateral orbitotomy. Following this procedure, the swelling subsided, and a subsequent CT scan showed a significant reduction in the mass compared to the previous scan. The patient is now on close follow-up.

Conclusions: Despite the macroscopically intact removal of the tumor, histological attenuation of the pseudo capsule can occur. Recurrent cases may require further surgeries, posing significant morbidity risks, and there is a possibility of malignant transformation in recurrent lacrimal gland pleomorphic adenoma. Therefore, all cases should be closely followed and monitored.

Poster No.: FP2731

Second Primary Tumor or Distant Metastatic Bone Tumor in Retinoblastoma? Dual Oncological Challenges

First Author: Nathania SUTANDI

Purpose: The presence of tumors in distant organs following treatment in advanced retinoblastoma (RB) poses significant challenges in differentiating the definite diagnosis. We present a case of unilateral retinoblastoma in a 4-year-old boy with orbital recurrence and lower limb metastasis.

Methods: This is a case report.

Results: A 4-year-old boy presented to the clinic in June 2024 with an enlarged mass and pain in the left pelvis since 1 month ago. The patient was diagnosed with unilateral RB when he was 2 years old and had undergone primary enucleation in September 2022. The patient was advised to adjuvant chemotherapy. However, the parents refused the treatment. Six months later, the patient returned to the eye clinic with recurrent orbital mass and mass on the left femur. The patient was then given high-dose chemotherapy with Vincristine, Etoposide, and Carboplatin (VEC) for 8 cycles. Following chemotherapy, an MRI evaluation of the orbit and femur showed significant improvement. However, the patient returned to the clinic 3 months after the completion of the chemotherapy with a malignant mass of the left pelvis, proven by the MRI. A core

biopsy from the pelvic was unable to prove the evidence of metastasis RB cells. Thus, the possibility of a second primary tumor was still considered. On the other hand, the bone marrow puncture result suggested the possibility of bone marrow metastasis due to RB.

Conclusions: Differentiating second primary tumor and distant metastasis in Retinoblastoma cases following chemotherapy remain significant challenges. Specific histopathological examination combined with other modalities might be helpful in establishing a definite diagnosis.

Poster No.: FP2732

The Schrödinger's Cyst

First Author: Renuka KUKREJA

Purpose: Medulloepithelioma of the orbit is an uncommon embryonal neuroectodermal tumor arising from the non-pigmented ciliary epithelium and usually presents in the first decade. Here, we discuss an unusual presentation of a case of retinal detachment, which, on further evaluation, was diagnosed to be a medulloepithelioma, and we further dive into investigations and management options for the same.

Methods: We present a case of a 21-year-old male patient who presented with chief complaints of gradual, painless blurring of vision in the left eye over a period of one year. BCVA in LE was noted to be 20/250. On anterior segment examination, LE showed the presence of an anterior sub-capsular cataract. On fundus examination, LE revealed an inferior RRD with sub-retinal bands. The patient underwent PPV+PPL+EL+SOI and SOI+PFCL sandwich one month later as the retina was not attached under oil. On two months' review, extensive emulsification of silicon oil was noted, and the patient was now taken up for Silicon oil removal.

Results: As anterior chamber wash was done, numerous clear anterior chamber cysts were visualised with iris neovascularization. These cysts were sent for histopathology examination and IHC, and a diagnosis of medulloepithelioma was made. On the basis of clinical and IHC features, LE Enucleation + Implant was done. The enucleated

specimen was subjected to histopathological examination, and a diagnosis of malignant medulloepithelioma was made. **Conclusions:** Clinical features, histopathological features, red flag signs, and management options of Medulloepithelioma are important to be discussed, as 88% of these cases are misdiagnosed initially.

Poster No.: FP2733

When the Eye Signals Leukemia: Unilateral Proptosis in Acute Myeloid Leukemia: A Case Report

First Author: Wan Nur Farra Ain ABDUL RASHID
Co-Author(s): Nurul Najieha AMIR, Nor Fadhilah MOHAMAD, Mimiwati ZAHARI

Purpose: To report a rare case of acute myeloid leukemia (AML) in an adult, uniquely manifesting as unilateral proptosis.

Methods: Case report.

Results: A previously healthy 49-year-old woman presented to the emergency department with painless left eye proptosis and temporal swelling that had progressively worsened over the past month. She also experienced bilateral blurring of vision, diplopia, significant constitutional symptoms, and general unwellness. There was no history of trauma or symptoms suggestive of infection. On examination, her visual acuity was 6/36. Optic nerve function was compromised in both eyes, with the left eye showing exophthalmos and restricted extraocular movements in all directions. Fundus examination revealed bilateral eye optic disc swelling with yellowish exudates, peripapillary hemorrhages, and tortuous vessels. The anterior segment and intraocular pressure were normal. Her blood counts showed pancytopenia, and imaging revealed bilateral homogenous intraorbital masses arising from extraconal spaces and indenting onto intraconal structures, with the left mass being larger than the right. Additionally, there was diffuse enlargement of the left temporalis muscle. An urgent bone marrow aspiration and trephine biopsy indicated AML. She underwent induction chemotherapy of Daunorubicin and Cytarabine. Unfortunately, her vision deteriorated to no perception of light despite the regression of intraorbital masses and resolution of optic disc swelling.

Conclusions: Orbital chloroma, a rare malignant solid tumor, represents an extramedullary manifestation of AML. While more commonly seen in childhood, we present a rare case of orbital tumor in an adult as the initial presentation, preceding the diagnosis of AML. Orbital involvement by AML carries a very poor prognosis, even with treatment.

Ophthalmic Epidemiology and Prevention of Blindness

Poster No.: FP2734

Frequency of Anterior and Extraocular Complications Resulting From IMRT for Head and Neck Cancer: Comparison in Primary Sites

First Author: Mutsumi KOYAMA
Co-Author(s): Akinori BABA, Seika DEN, Natsuki HIGA, Tadashi NAKANO

Purpose: This study investigated anterior ocular complications following radiotherapy for nasopharyngeal carcinoma and nasal sinus cancer, addressing the lack of detailed information on complication incidence rates by cancer site.

Methods: A retrospective review was conducted on 116 patients who underwent intensity-modulated radiotherapy for nasopharyngeal and nasal sinus cancer. Medical records were examined for external and anterior ocular complications in patients who visited the ophthalmology department post-irradiation.

Results: The study included 75 males and 41 females (mean age 57.8 years) with nasopharyngeal cancer (19 cases), maxillary sinus cancer (31 cases), nasal cancer (58 cases), and other cancers (8 cases). Anterior ocular complications were observed in 5% of nasopharyngeal cancer cases, 52% of maxillary sinus cancer cases, and 22% of nasal cancer cases. Common side effects during treatment included punctate superficial keratopathy (13 cases, 11%), conjunctivitis (9 cases, 8%), corneal erosion, and lacrimation (3 cases, 3% each). Less frequent complications included blepharoptosis, lower ectropion, and blepharitis (2 cases, 2% each). Rare complications (1 case, 1% each) included eyelid contracture, lacrimal duct obstruction, iris rubeosis, lower entropion, and symblepharon.

Conclusions: Radiotherapy for nasopharyngeal carcinoma and paranasal sinus and nasal cavity cancer can lead to external and anterior segment ocular complications. Maxillary sinus cancer patients appear to be at higher risk for severe complications, with over half of these patients experiencing complications. The findings emphasize the importance of initiating ophthalmologic follow-up concurrently with radiotherapy to monitor and manage these potential side effects effectively.

Poster No.: FP2735

Fungal Endophthalmitis: A Clinico-Epidemiological Study

First Author: Karnika SAIGAL
Co-Author(s): Nishat HUSSAIN AHMED, Pradeep VENKATESH, Saurabh VERMA

Purpose: To identify risk factors, clinical characteristics, causative fungi, and treatment outcomes of fungal endophthalmitis in North India.

Methods: Over the study period (January to December 2023), a total of 18 culture-proven cases of fungal endophthalmitis were included. Medical and microbiology records were reviewed for clinico-epidemiological characteristics.

Results: Of 18 culture-proven cases, the predominant fungi noted were dematiaceous fungi (8/18) (*Cla*), followed by hyaline fungi (5/8) (including *Aspergillus flavus*, *Aspergillus fumigatus*, *Aspergillus glaucus*, *Fusarium sp*, and *Acremonium sp*). *Candida sp*-causing endophthalmitis was noted in three cases, while two cases presented co-infection with dematiaceous and hyaline septate fungi. Male preponderance with a mean age of presentation observed was 41.8 years. Ocular trauma associated with accidental inoculation of organic matter was the most common risk factor. Other predisposing factors included post-cataract surgery, post-dengue fever, and severe dry eye syndrome. Sixteen eyes (80%) received intravitreal antifungal agents, with voriconazole being the most common.

Conclusions: Dematiaceous fungi were reported to be the predominant cause of fungal endophthalmitis in North India. Though ocular trauma was the most common predisposing, post-dengue fever fungal endophthalmitis was noted in two of our patients.

Ophthalmic Trauma

Poster No.: FP2736

Challenging Case of Vitreous Hemorrhage With Retinal Detachment Following Pyro Gun Injury

First Author: S NATARAJAN

Purpose: To highlight the mechanisms and implications of ocular injuries caused by pyro guns.

Methods: A 38-year-old female patient sustained a pyro gun injury to her left eye during a party. The injury resulted in scleral perforation with vitreous loss, subluxated lens, retinal detachment, and choroid detachment, as noted on a B-scan. She was referred to us two days post-primary globe repair. At that time, her best-corrected vision was 6/6 in the right eye and a perception of light in the left eye. Fifteen days after the injury, the patient underwent a 25-gauge vitrectomy, placement of a 240 silicone band to support the vitreous base, lensectomy, endolaser around the retinal break, and silicone oil injection to flatten the retina.

Results: One month post-surgery, the left eye's vision improved to 6/60 with an attached retina.

Conclusions: Ocular trauma from pyro guns necessitates careful evaluation and individualized treatment strategies to optimize visual outcomes.

Poster No.: FP2737

Severe Eye and Facial Trauma After Falling Onto Excavator Chain Wheel – Rare Case Report of Oculofacial Trauma in a 4-Year-Old Child in Papua

First Author: Nathaniel TAN
Co-Author(s): Jannes Fritz TAN,
Nyssa Alexandra TEDJONEGORO

Purpose: A rare case of trauma was reported in a 4-year-old due to a fall from a height of 2 meters, hitting the chain wheel of a moving excavator. Left eye visual acuity was difficult to assess, with several non-marginal full-thickness lacerations on the left fronto-palpebra measuring 10 x 12 cm, 5 mm above the superior palpebral margin, and a large laceration in the nasolabial area. The left eye was difficult to assess because covered by multiple lacerations.

Management and reconstructive surgical techniques improve function and cosmetics.

Methods: A case report study of eye and facial trauma, reconstruction, and results. The patient was reviewed for clinical history, clinical examination, and surgical details.

Results: Reconstruction was done together with a plastic surgeon: reconstruction of the superior eyelid with Silk 7-0, 5 mm above the eyelid margin 2 cm wide, and the left frontal area. In the left eye, mild corneal abrasion and Grade III hyphema were found, but the left eyeball was intact. After 2 weeks, the hyphema was fully absorbed, the left eye VA was 20/20, and the wound on the superior eyelid healed. Function and aesthetic appearance are good.

Conclusions: Eye and facial trauma after falling onto an excavator chain wheel is a very rare condition in young children. This is the first case reported in the literature. Oculofacial trauma can cause severe damage to the eyeball and eyelid. But in this case, the eye was intact. Proper handling, as well as restoration of the structure and function of the eyelid, gives good results.

Orbital and Oculoplastic Surgery

Poster No.: FP2738

A Case of Orbital Pilocytic Astrocytoma in the Philippines

First Author: Zyrene Mary Chantal URGEL
Co-Author(s): Andrei MARTIN, Eric VALERA,
Elaine YATCO- OMAÑA

Purpose: This report aims to discuss the clinical, radiologic, and histopathologic features of an optic nerve glioma and its management. To our knowledge, this is the first locally reported case of optic nerve pilocytic astrocytoma.

Methods: A nine-year-old female consulted the outpatient department with a chief complaint of left orbital mass. Ocular examination showed no light perception with a 10 x 6 x 9.5 cm axial, downward, and lateral displacement of the left eye. Birth history, developmental history, and past medical history were all unremarkable, with no signs and symptoms

of neurofibromatosis. Diagnostic tests such as a computed tomography scan of orbits and an incision biopsy were done. Orbital exenteration was performed to remove the painful and cosmetically disfiguring left orbital mass.

Results: Orbital CT Scan revealed a complex hypodense mass and is not associated with any orbital bone defect, erosion or hyperostosis. Incision biopsy revealed reactive lymphoid aggregates indicating a chronic inflammatory process rather than malignancy. Immunohistochemical markers for lymphoproliferative malignancies (CD3, CD20) were also negative. Orbital exenteration was performed with histopathology findings of a Low-Grade Glioma. Immunohistochemical staining of Glial Fibrillary Acidic Protein favors Pilocytic Astrocytoma.

Conclusions: Optic nerve glioma is a rare orbital tumor that poses a diagnostic challenge to ophthalmologists. It presents as a chronically inflamed anteriorly displaced eye due to an enlarging optic nerve tumor. A high level of suspicion is essential when initial biopsies do not match the clinical findings. Radiologic imaging studies render a reliable basis for surgical planning. Histopathologic evaluation provides a definitive diagnosis. Exenteration may be justified in painful, cosmetically disfiguring cases.

Poster No.: FP2739

Body Dysmorphic Disorder Among Oculoplastic Surgery Patients: A Systematic Review

First Author: Muhammad ALFATIH
Co-Author(s): Ida MUTHMAINNAH, Diski SAISA

Purpose: To review the prevalence and characteristics of body dysmorphic disorder (BDD) from a detection program in oculoplastic clinics.

Methods: All aspects of the systematic review and meta-analysis adhered to the Cochrane Handbook. Eligibility criteria include clinical studies that conducted BDD detection in oculoplastic patients. Case reports and case series were excluded as it doesn't tell the prevalence. Three databases (PubMed, Scopus, and CENTRAL) were systematically searched using queries stemming from "body dysmorphic disorder" and "oculoplastic". Synonyms,

Boolean operators, and wildcards were used.

Variations might occur due to databases' scripts. Two independent authors performed titles and abstract screening, study quality assessment, and data collection. If there were any conflicting decisions, the third author would decide.

Results: Through a series of search results assessments, 2 studies were ultimately included. A study across 3 centers in the USA found that the prevalence of BDD-positive patients (using the BDD Questionnaire (BDDQ)) is higher than the number clinically suspected by the surgeon (9.7% vs 4.0%). Surgeons were only able to identify BDD in 4.7% of the BDDQ-positive patients. The odds of patients being BDD positive is higher in cosmetic surgery than in reconstructive (OR=2.1, 95%CI [1.2-3.68]). Another more recent study in the USA found that the majority of these patients used social media (71.43%) and were female (71.43%).

Conclusions: BDD is a prevalent condition among oculoplastic patients, and its detection is often underestimated by surgeons. Several factors might play a role in the incidence of this condition and early detection is encouraged to be incorporated into daily practice.

Poster No.: FP2740

Clinical Manifestations and Management of Free Bone Fragments Impinging on the Globe in Cases of Orbital Fractures

First Author: Renuka KUKREJA

Purpose: To study the clinical manifestations and management of free bone fragments impinging on the globe in blow-in fractures of the orbit.

Methods: In this study, 4 cases of orbital fractures ranging from the age of 15 to 40 years old presented with a history of trauma. For all these cases, detailed clinical and radiological examinations were done, and the cases were managed surgically, and the fragments were bluntly dissected from the soft tissues of the orbit without damaging the vital neurovascular structures.

Results: Blow-in fractures of the orbit may present with free bone fragments embedded in the soft tissue surrounding the globe, and these may cause

various clinical manifestations depending on the site of the fracture and the location of the fragment. Detailed and precise radiological analysis is important in these cases to identify the exact location of these fragments. This is to be followed by wound exploration and dissection of these bony fragments, along with fracture repair.

Conclusions: Blow-in fractures of the orbits in adults are rare, and they may present with free bony fragments on the globe and present with a wide variety of clinical features and may be missed if the radiological scans are not evaluated in detail. The management of these cases can prove to be challenging, depending on the location of the fragment.

Poster No.: FP2741

Ocular Adnexal Diffuse Large B-Cell Lymphoma Associated With Amyloidosis: Case Report and Review of the Literature

*First Author: Piyaphat JARUNIPHAKUL
Co-Author(s): Waruttaporn CHANLALIT,
Nisa MAKRUASRI, Therdkiat TRONGWONGSA*

Purpose: To report a rare case of a patient with diffuse large B-cell lymphoma (DLBCL) associated with amyloid deposition.

Methods: Case report.

Results: A 61-year-old man presented with a three-month history of an enlarging mass on his left lower eyelid, with no orbital pain. The eye examination showed a firm, movable mass measuring 4 x 3 cm. The rest of the exam was unremarkable. An orbital computed tomography scan revealed an ill-defined enhancing bilateral orbit mass and diffuse infiltration of adenoid tissue on both sides. With orbital malignancy as the primary consideration, a biopsy of the eyelid and adenoid mass was performed. A Histopathologic diagnosis of DLBCL was made based on the classic morphology and confirmed with immunohistochemistry. Systemic surveillance found no evidence of metastasis. The patient was treated with chemotherapy, but after completing the treatment, the mass persisted. Subsequently, he underwent debulking surgery. Histopathology showed a salmon pink stain by Congo red staining

with apple-green birefringence under a polarized light microscope. All of these findings corresponded to amyloidosis. A complete systemic evaluation for amyloidosis was normal. To date, the patient has been in complete remission for 2 years with no evidence of recurrent mass.

Conclusions: The association of lymphoma and amyloidosis is rare, of which extranodal marginal zone type of non-Hodgkin lymphoma (NHL) is usually found in the ocular adnexa. In this case report, we present another type of NHL, DLBCL, which is associated with amyloidosis. Furthermore, physicians should be aware of and consider this association when reviewing orbital biopsies.

Poster No.: FP2742

Rectus Muscle Plication Procedure: The Advantages and the Required Intraoperative Precautions for Better Long-Term Outcomes

*First Author: Amar PUJARI
Co-Author(s): Sudarshan KHOKHAR,
Aishwarya RATHOD*

Purpose: To discuss the long-term outcomes of rectus muscle plication with a special emphasis on its advantages and the required intraoperative precautions.

Methods: The clinical data of patients who have undergone rectus muscle plication between January 2021 and January 2024 were reviewed. A single surgeon performed data on rectus muscle plication was analyzed. A total of 208 patients with single rectus muscle plication were included. The intraoperative challenges, post-operative outcomes, and cosmetic changes in the long term (more than 6 months) were analyzed.

Results: The medial rectus muscle (140, 67.30%) was commonly plicated, followed by the lateral rectus (60, 28.84%) and the inferior rectus muscle (8, 3.84%), respectively. The plication ranged from 4 mm to 9 mm. The intraoperative advantages were lesser muscle trauma, bleeding, and predictable maneuvering, whereas the challenges were surgery in deep-set eyes and muscle folding in the presence of bulky rectus muscles. The post-operative advantages were a lesser chance of anterior segment ischemia,

and the concerns were narrowing of the aperture width, persistent muscle bump, and restriction of duction movement in the opposite gaze.

Conclusions: To achieve optimal outcomes with rectus muscle plication in the long term, calculated surgical planning, meticulous intraoperative execution, and a keen post-operative follow up are very essential.

Poster No.: FP2743

The Challenge in Diagnosing and Managing a Rare Case of Acquired Myogenic Blepharoptosis

First Author: Cynthia VIRYAWAN
Co-Author(s): Ni Nengah Rida ARIARINI, Salmarezka DEWIPUTRI, Yunia IRAWATI, Eka SUSANTO

Purpose: To present a challenge in the diagnosis and management of a rare case of acquired myogenic blepharoptosis.

Methods: A 47-year-old male presented with 10 years of worsening drooping eyelid in both eyes. He had ophthalmoplegia without diplopia. Margin reflex distance (MRD) 1 was -2 mm, MRD 2 was 4 mm, levator function only 1 mm, and Bell's phenomenon was negative. He had a chin-up head position and decreased several motoric strength scores.

Results: Humphrey showed superior visual field defect. Macular ocular computed tomography (OCT) and electroretinography (ERG) showed decreased retinal function. Contrast MRI discovered bilateral atrophy in extraocular muscles. Repetitive nerve stimulation (RNS) and single fiber electromyography (EMG) showed abnormality. The pyridostigmine challenge was negative. He had high lactic acid, moderate dysphagia, and infrequent premature ventricular contraction. The patient was assessed with chronic progressive external ophthalmoplegia (CPEO) plus syndrome. After excluding aponeurotic, mechanical, and traumatic blepharoptosis, the differential diagnoses were myasthenia gravis and oculopharyngeal muscular dystrophy (OPMD). We performed a frontalis sling and muscle biopsy.

Conclusions: In acquired blepharoptosis, establishing the exact etiology requires a complete medical history, thorough physical examination, and ancillary

tests, especially if it isn't isolated ptosis. In rare cases of bilateral blepharoptosis with ophthalmoplegia, multidiscipline consultation is needed to further investigate neurogenic and myogenic involvement. Surgical planning needs comprehensive education about post-operative complications and progressiveness.

Poster No.: FP2744

Unwanted Guests: A Case of Extended Sebaceous Gland Carcinoma Infected With Botfly's Larva

First Author: Huy Thien Thanh HA

Purpose: To present a rare case where human botfly's larvae parasitize on the eyelid.

Methods: Cross-sectional description of a case where sebaceous gland carcinoma from the eyelid extended into the orbit and became an infection site for numerous larvae of human botfly (*dermatobia hominis*).

Results: A 72-year-old man of ethnic minority presented with pain in a mass on his upper eyelid that he had had for more than 1 year. On examination, numerous maggots with the size of 1 to 1,5 cm emerged from the surface of the mass. All of these have been collected and sent to a parasitologist. They turned out to be larvae of *Dermatobia hominis*. CT scanner of the orbit reveal a tumour that had altered the structure of the whole upper lid. This mass extended into the medial superior orbit, and the eye could not be preserved. The patient also had an enlarged preauricular lymph node, but he didn't have a severe systemic infection. An exenteration was performed, and histopathology showed sebaceous gland carcinoma. During the surgery, no more larva was detected in the tumour. The patient was then referred to an oncologist for evaluation of distal extension and additional therapy.

Conclusions: Larva of *dermatobia hominis* is reported to parasitize human skin, but this is a rare case where the parasite chose a site of malignancy. Systemic infection, along with distal extension, may affect the patient's general health severely if the condition is not properly managed.

Pediatric Ophthalmology and Strabismus

Poster No.: FP2745

A Case Report of Orbital Osteomyelitis in a Pediatric Patient

First Author: Dikshya BISTA
Co-Author(s): Sushant ADIGA, Malita AMATYA,
Hom Bahadur GURUNG, Ashish KARMACHARYA,
Rohit SAIJU

Purpose: Orbital osteomyelitis in children is an uncommon condition that can progress quickly to a severe outcome. Early diagnosis and timely intervention using a multidisciplinary approach are essential for effective management and for preventing systemic complications.

Methods: This report discusses a case involving a 5-year-old boy who presented with acute, painful swelling in his left eye that had persisted for one week. He had already been treated with intravenous broad-spectrum antibiotics for a week, but the swelling and pain had not improved. Upon examination, he exhibited painful proptosis of the left eye, slight limitations in extraocular movement, and mild fever. A CT scan revealed left maxillary and ethmoidal sinusitis, with poorly defined, heterogeneous soft tissue density located on the medial side of the orbit, affecting both the intraconal and extraconal spaces, with erosion of the medial orbital wall. Considering the differential diagnosis of infection versus malignancy, an anterior orbitotomy was performed. Pus, along with bone fragments and tissue samples, was collected for microbiological and histopathological analysis.

Results: Gram staining revealed the presence of gram-positive cocci, while no yield was obtained from AFB and KOH staining and cultures. Histopathological examination indicated acute and chronic inflammatory cell infiltration, the presence of necrotic bone fragments, and multinucleated giant cells—features characteristic of chronic osteomyelitis. The child was treated with intravenous antibiotics followed by two months of oral antibiotics.

Conclusions: Orbital osteomyelitis secondary to sinusitis is rare but can have serious consequences. Early diagnosis, immediate surgical intervention, and sustained treatment using a multidisciplinary approach are crucial for effective management.

Poster No.: FP2746

A Rare Case Report: Anterior Segment Ischemia Following Two Horizontal Muscle Surgery

First Author: Kabindra BAJRACHARYA

Purpose: To present a rare case of anterior segment ischemia following surgery on two horizontal muscles.

Methods: This case report details a complication following squint surgery. Horizontal muscle surgery on the right eye involved a 9.5 mm recession of the lateral rectus and a 5.5 mm recession of the medial rectus, performed to address intermittent exotropia measuring 55 prism diopters at near and 80 prism diopters at distance.

Results: On the first postoperative day, the Hirschberg test showed orthotropia. On anterior segment examination of the right eye, the conjunctival wound was healthy, and the suture was intact. The cornea exhibited haze with stromal edema, Descemet membrane folds, and 1+ cells and 1+ fibrin in the anterior chamber. The B-scan of the right eye was normal. The patient was diagnosed with anterior segment ischemia in the right eye.

Conclusions: Though rare, even in young patients, undergoing surgery on two horizontal muscles can lead to complications such as anterior segment ischemia. It is advisable to counsel patients about the rare possibility of anterior segment ischemia, even with surgery involving only two horizontal muscles.

Poster No.: FP2747

Bilateral Papilledema: Uncommon Early Manifestation of Acute Lymphoblastic Leukemia (ALL) in a Young Girl

First Author: Nathania SUTANDI

Purpose: Ocular manifestations occur less frequently in acute than in chronic leukemia. We report a rare case of a 5-year-old girl with Acute Lymphoblastic Leukemia (ALL) presented initially with bilateral papilledema

Methods: This is a case report.

Results: A 5-year-old girl came to the clinic with a 5-month history of headache, periocular pain, and transient obscured vision in both eyes. During admission, her visual acuity was 20/30 in the right eye and 20/40 in the left eye. Eye movement and anterior segment were within normal limits. Pupils were isochoric with no relative afferent pupillary defect. Fundus examination revealed bilateral optic disc edema and tortuous vessels, with no signs of exudates and hemorrhage. MRI of the brain and orbit was unremarkable. A complete blood count examination was suggested, showing anemia (Hb 3.4 g/dL), leukocytosis (16150 cells/L), and thrombocytopenia (22000 cells/L). The patient received a blood transfusion. Two weeks following her visit, the patient was admitted to the Emergency Department due to fever, lethargy, and joint pain. The patient was then hospitalized. The lumbar puncture result showed positive blast cells, and the bone marrow biopsy demonstrated increased proliferation of blast cells (67%). The patient was then diagnosed with ALL-L3 and received chemotherapy protocol for the induction phase and systemic corticosteroid. During the follow-up, the ocular signs and symptoms gradually subsided, and her VA improved to 20/20 in both eyes.

Conclusions: The case illustrated that ALL may present with bilateral papilledema without evidence of retinal hemorrhage. ALL should be considered by ophthalmologists as one of the differential diagnoses for pediatric patients exhibiting these uncommon signs.

Poster No.: FP2748

Developing Age-Appropriate Habilitation Services for Children With Blinding ROP

First Author: Suraj SENJAM

Co-Author(s): Parijat CHANDRA

Purpose: Early intervention in the form of habilitation services is critical for children with blinding ROP. Such services involve one-to-one training to enhance their various life cognitive and functional skills. To date, there is a shortage of guidelines for the habilitation among blinding ROP. Aim: To develop age-appropriate habilitation services for children with blinding ROP enrolled in a vision rehabilitation clinic.

Methods: Mixed and inductive methods were used, which consisted of an extensive literature search, real-time observation and video recording of children's activities, and clinic-based interaction with immediate caregivers who were selected purposively. An open-ended questionnaire with a specific habilitation topic guide was employed during the interactive session. Findings were documented and used in developing the guidelines.

Results: Habilitation services were categorized into firstly, essential life skills, and second, instrumental life skills. Further, under essential skills, designed two-parent techniques, and one parent with and without musical toys techniques for mobility. For the independent mobility, we customized a push-walker. Instrumental skills, such as the fingers-over-fingers technique, were developed for object permanence training. These guidelines are being implemented for blinding ROP habilitation.

Conclusions: Observation of children's activities and interactions is critically important in developing habilitation. There is a need to develop other habilitation training components for ROP children and assess their effectiveness in the future.

Poster No.: FP2749

Hypotony Maculopathy Due to Ciliary Body Detachment After Pediatric Strabismus Surgery: A Rare Case Report

First Author: Hiromi ONOUCHI

Co-Author(s): Toshiaki GOSEKI, Takahiro SUZUKI

Purpose: To describe a case of hypotony maculopathy associated with ciliary body detachment following pediatric strabismus surgery, which was treated with ciliary body suturing.

Methods: The patient was a 12-year-old girl. At age 6, she underwent bilateral lateral rectus recession for intermittent exotropia. Subsequently, at age 11, she received a 9 mm right medial rectus resection for residual exotropia of 30 Δ X(T). During surgery, while performing additional sutures on the resected muscle, partial uveal exposure occurred, but the procedure was otherwise completed without major issues. Postoperatively, eye alignment was satisfactory. However, at the 6-month follow-up, best-corrected visual acuity (BCVA) had decreased in the operated eye to 20/40 OD (right eye) compared to 20/20 OS (left eye), with direct astigmatism. Intraocular pressure (IOP) showed a difference between eyes: 8 mmHg OD and 15 mmHg OS, indicating hypotony maculopathy. Optical coherence tomography (OCT) revealed ciliary body detachment.

Results: Ciliary body suturing was performed on the ciliary detachment. The ciliary body detachment was improved, IOP was raised, and the hypotony maculopathy resolved. However, direct astigmatism persisted. **Conclusions:** IOP measurement remains crucial even after pediatric strabismus surgery. Hypotony maculopathy can potentially become irreversible, emphasizing the need to consider early treatment.

Poster No.: FP2750

Retinopathy of Prematurity in Tertiary Eye Centre: Prevalence and Clinical Outcome

First Author: Eli PRADHAN

Co-Author(s): Srijana ADHIKARI, Sanyam BAJIMAYA, Manish POUDEL, Gunjan PRASAIN, Soklinda SOR

Purpose: To find out the prevalence and clinical outcome of retinopathy of prematurity in a tertiary referral eye centre.

Methods: It is the hospital-based retrospective review of premature babies below 1700 gm and less than or 34 weeks of gestation at birth. The data were extracted from electronic medical records with a duration of 4 years from 2019 to 2022. The data were analysed by the latest version of SPSS.

Results: There were a total of 449, and males and females were almost equal. The prevalence was very high (47.4%). There were significant differences in ROP and non-ROP for both birth weight and gestational age, with a p-value less than 0.001. Among the risk factors, NICU stay, oxygen supplementation, blood transfusion, and sepsis were also statistically significant. Out of 449, 133 babies required treatment, AntiVEGF intravitreal injection (39.3%), laser (26.2%), and combined laser and AntiVEGF among 34.4%. 3.8% were in vitro fertilization (IVF) among treated ROP babies.

Conclusions: There is a very high prevalence of ROP, which could be due to the centre being the tertiary referral centre. The risk factors are similar to those from the literature, and the IVF procedures could be recognized as an emerging risk factor. Awareness of ROP and early referral to the Ophthalmologists for early screening are important steps to prevent ROP blindness.

Poster No.: FP2751

Superior Oblique Overaction With Esotropia – Case Report

*First Author: Chih Yu CHEN
 Co-Author(s): Wen-yu HSU*

Purpose: To discuss a patient of superior oblique overaction with a pattern accompanied by esotropia.

Methods: A case report.

Results: We present a case of a 63-year-old female. She had horizontal diplopia for the past three years, and vertical diplopia for two years. She was referred to our ophthalmic outpatient department for evaluation and treatment. Upon initial examination, her best corrected visual acuity was 0.8 in both eyes. Refraction results were right eye (OD) Sphere (Sph): -6.25 diopters (D)/Cylinder (Cyl): -0.25D/Axis (A):80 degrees, left eye (OS) Sph -4.25D/Cyl -1.75D/A: 165 degrees. Lens nuclear sclerosis 2+ in both eyes. However, the examination showed overaction of the right superior oblique muscle, characterized by an A pattern strabismus, and esotropia of 23 prism diopters (PD). Notably, there was also a 10-degree extorsion observed. The extorsion observed in the fundus examination appeared inconsistent with the typical presentation of superior oblique muscle overaction associated with an A pattern. Magnetic resonance imaging (MRI) results indicated no extraocular muscle enlargement or increased fatty attenuation. The surgical procedure was performed by right medial rectus recession of 5.5 mm combined with an upper transposition of half muscle width using an adjustable suture technique. There was a noticeable improvement in the overaction of the superior oblique muscle after the surgery. However, the patient continued to experience residual esotropia with a remaining deviation of 6 PD. Further management may be necessary to fully resolve the remaining esotropia.

Conclusions: A patient of superior oblique overaction with A pattern accompanied by esotropia may be caused by high myopia-related extraocular muscle shift or pulley displacement.

Poster No.: FP2752

Two Cases of Grated Vertical Rectus Tenotomy Are Effective for Martial Arts Fighters With Small-Angle Vertical Strabismus

*First Author: Ayaka NOGUCHI
 Co-Author(s): Toshiaki GOSEKI, Erika MITSUI, Hiromi ONOUCHI*

Purpose: It is common to prescribe prism glasses for patients with small-angle vertical strabismus. However, there are patients with hobbies or occupations that make it difficult to wear glasses. This report presents two cases of grated vertical rectus tenotomy (GVRT) for small-angle vertical strabismus in martial arts fighters.

Methods: Case 1 was a 45-year-old male with diplopia due to head trauma suffered from kickboxing. Best corrected visual acuity (BCVA) was 24/20 in both eyes, 8 ΔX(T)'4 ΔLH(T)' in near, 3 ΔLH(T) in distance, and over elevation adduction and under depression adduction in the right eye. The Bielschowsky head tilt test was positive on the left eye. We diagnosed left trochlear nerve palsy and performed a 60% temporal GVRT on the right inferior rectus muscle. Case 2 was a 28-year-old male with diplopia due to head trauma suffered from kickboxing. BCVA was 24/20 in both eyes, 2 ΔXP' in near, R/L 5 ΔHT in distance, and over elevation adduction and under depression adduction in the right eye. The Bielschowsky head tilt test was positive on the right eye. We diagnosed right trochlear nerve palsy and performed a 60% temporal GVRT on the left inferior rectus muscle.

Results: Diplopia disappeared in both cases.

Conclusions: We performed GVRT for small-angle vertical strabismus of trochlear nerve palsy after trauma from martial arts. GVRT is a treatment option for small-angle vertical strabismus in patients who have difficulty wearing glasses.

Refractive Surgery

Poster No.: FP2753

Analysis of Changes in Refractive Status of Patients Undergoing Reoperation After FS-LASIK/SMILE Laser Surgery

First Author: Duo XU

Co-Author(s): Yunyun WANG, Hong YANG

Purpose: To understand and analyze the changes in ocular refractive status in patients with strabismus after two common refractive surgery.

Methods: A study was used to study the patients who had undergone FS-LASIK or SMILE surgery and underwent horizontal muscle-muscle strabismus correction in a total of 30 adult patients, 15 cases each, with a total of 60 eyes, including 19 cases of exotropia in 38 eyes and 11 cases of acute concomitant esotropia in 22 eyes. Patients were divided into three groups: Group A (external rectus retraction), group B (internal rectus retraction), group C (external rectus retraction combined with internal rectus shortening), and group D (internal rectus retraction combined with external rectus shortening).

Results: Change of refractive status: According to the data of the four groups, the corneal curvature, DK value, and equivalent spherical lens four weeks after surgery increased compared with that before surgery, with statistical significance ($P < 0.05$). Comparison between FS and SMILE groups: There were no statistically significant differences in refractive status and other indicators before and after operation in groups A and B, which only involved rectus migration ($P > 0.05$). Groups C and D, with surgical methods involving rectus shortening, showed statistical differences in refractive status and other indicators before and after surgery ($P < 0.05$).

Conclusions: Because the incision of FSLASIK surgery is larger than that of SMILE surgery, the interference of SMILE surgery is obviously less during strabismus surgery, the incision of SMILE surgery is smaller, so muscle shortening can be performed in strabismus surgery if the incision area can be avoided.

Poster No.: FP2754

Clinical Observation of Bandage Contact Lenses Wearing on Chinese Subjects After Corneal Refractive Surgery: A Prospective Study

First Author: Liu LIU

Co-Author(s): Lin JIANG, Jifang WANG, Xingtao ZHOU

Purpose: To investigate the early effect of applying AirOptic Night & Day Aqua bandage contact lenses (BCLs) on patient comfort after SMILE and FS-LASIK surgery.

Methods: This study enrolled 24 patients who underwent SMILE and 24 patients who underwent FS-LASIK with a mean age of (25.92 ± 6.14) years. Patients were randomly grouped into the BCL-wearing group and the control group (not wearing BCLs) (12 patients for each surgery, respectively). BCLs were applied immediately after the operation in the BCL-wearing group and removed 24 hours after surgery. Subjective ophthalmologic symptoms and objective ocular performances were scored at 2 hours, 4 hours, 8 hours, and 24 hours after surgery.

Results: The total scores of subjective ophthalmologic symptoms in the BCLs-wearing group were lower than those of the control group at 2 and 4 hours postoperatively ($P = 0.014$, $P = 0.001$), whereas at 24 hours, the control group was lower than BCLs-wearing group (1.13 ± 0.85 , 1.96 ± 0.86 , $P = 0.001$). The scores of foreign body sensation, stinging, soreness, swelling, and pain of the BCL-wearing group were lower than those of the control group at 4 hours postoperatively. As for objective ocular performances, the scores of corneal edema in the BCL-wearing group were lower than those of the control group 24 hours after surgery (0.50 ± 0.44 , 0.75 ± 0.39 , $P = 0.044$). At 8 hours postoperatively, there was no statistical significance in the scores of subjective symptoms or ocular signs in both groups, $P > 0.05$.

Conclusions: The application of BCLs can alleviate the discomfort symptoms and shorten the duration of postoperative corneal edema after cornea refractive surgery in the early postoperative period.

Poster No.: FP2755

Evaluating Retinal Sensitivity Changes After Refractive Surgery Using Microperimetry: A 3-Month Follow-Up Study

First Author: Sanjay MISHRA
Co-Author(s): Tejinder Singh AHLUWALIA, Shorya Vardhan AZAD, Suresh Kumar YADAV

Purpose: To assess the effects of different refractive surgeries (LASIK, PRK, SMILE, ICL, etc.) on retinal sensitivity and fixation stability over three months.

Methods: We tested 20 patients before surgery and again at 1 and 3 months after surgery using microperimetry. We measured retinal sensitivity, contrast sensitivity, visual acuity, and fixation stability.

Results: We found that while retinal and contrast sensitivity decreased temporarily, they mostly returned to baseline over time. Visual acuity improved, and fixation stability also showed gradual improvement.

Conclusions: Microperimetry is useful for detecting subtle changes in retinal function after surgery. It provides valuable information for both preoperative assessments and postoperative monitoring. Clinical Implication: Regular use of microperimetry can help tailor surgical techniques and postoperative care, leading to better patient outcomes. Further studies with larger groups and longer follow-up periods are needed.

Poster No.: FP2756

Post-Lasik Masquerader: Epithelium in Distress – Strings of Pearls Pattern

First Author: Yash GALA
Co-Author(s): Nitesh SINGH

Purpose: To report unusual delayed epithelial wound healing in a post-Lasik patient.

Methods: 27Y/F with moderate myopia came for Lasik inquiry. BCVA in RE & LE was 6/9 and 6/6. Anterior Segment examination was normal. Fundus examination revealed lattice degeneration in BE, for which a barrage laser was done. Pre-op Lasik investigations showed the normal study. The patient

underwent SBK (subbowman's keratomileusis) Lasik in BE. Post-operatively, the flap was well opposed with no striae or infiltrates seen and started on topical dexamethasone- moxifloxacin in tapering dose and sodium hyaluronate 1% 6 times/day. On Day 15, the patient came with an accidental nail injury in LE. An examination revealed heaped-up epithelium edges with 2x2mm epithelial defect close to the hinge superonasally.

Results: Heaped epithelial edges debrided and BCL placed in LE and started on topical moxifloxacin 6 times/day with 1 hourly lubricant. Topical steroids stopped. Subsequent f/u epithelium healing well with BCL in situ. On the 24th day, the patient c/o blurring of vision, foreign body sensation, and mild redness. LE revealed a pseudo/atypical epithelial dendritic pattern in strings of pearls pattern arranged vertically along the flap, stain positive. BCL was removed, and the patient restarted on topical steroids with lubricants. On the 25th day, complete resolution of lesions was seen in LE, stain negative with VA of 6/6.

Conclusions: This was a rare appearance, not reported in the literature to the best of our knowledge. Clinical judgment with the type of appearance of lesions, differentiating it from true epithelial dendritic ulcers, and close f/u is the key to management. Delayed epithelium healing response post-Lasik may be the cause of such appearance.

Poster No.: FP2757

Prospective Randomized Study of Transepithelial Photoreactive Keratectomy Compared With Standard Photoreactive Keratectomy

First Author: Robert ANG

Purpose: This prospective, randomized, controlled, single-blind, single-surgeon, single-center, post-market clinical study (NCT04698174) aimed to evaluate the safety and efficacy of transepithelial photoreactive keratectomy (t-PRK) with or without end treatment laser polishing.

Methods: The primary endpoint was non-inferiority on absolute refractive predictability at 3 months post-procedure, with a margin of 0.2D. Secondary endpoints included adverse events (AEs), manifest refraction spherical equivalent (MRSE), intraocular

pressure (IOP), and monocular uncorrected and corrected distance visual acuity (UDVA/CDVA) at 6 months. Thirty-five patients undergoing refractive surgery for correction of ametropia were bilaterally treated with conventional PRK in one eye and t-PRK in the other (16 with end-laser polishing and 19 without).

Results: The mean baseline MRSE was $-4.41D$ (PRK group) and $-4.29D$ (t-PRK group). Mean \pm standard deviation absolute refractive predictability at 3 months was 0.26 ± 0.23 in the PRK group and 0.34 ± 0.32 in the t-PRK group. This was below the $0.2D$ non-inferiority margin and not significantly different ($p=0.2253$). At 6 months, there were no significant differences in MRSE, IOP, UDVA, and CDVA between groups or between t-PRK with or without end-treatment laser polishing, with values demonstrating improved visual acuity in all groups. Two AEs (uveitis [t-PRK group] and COVID-19 infection [PRK group]) were reported; both were deemed unrelated to the procedure.

Conclusions: Non-inferiority in absolute refractive predictability was demonstrated between PRK and t-PRK. Both techniques predictably and effectively improved visual acuity in patients with ametropia, with no procedural-related AEs, up to a mean follow-up of 6 months.

Poster No.: FP2758

Unveiling the Unforeseen: A Rare Case of Delayed EBMD Post Femto Lasik

First Author: Himani CHATTERJEE

Purpose: To the best of our knowledge, only 3 cases of EBMD post-Femto LASIK have been reported worldwide. We present the first case report in the Indian scenario.

Methods: A 29-year-old female patient had undergone Femto LASIK for myopic astigmatism correction OD -2.50 DSPH -1.5 DCYL at 90degree and OS -2.25 DSPH -1 D CYL at 90 degrees. BCVA-20/20 in OU. Uneventful Femtosecond LASIK in both eyes. One month later-blurring, irritation, mild redness, and photophobia in OD. Visual acuity OD 20/40, mild corneal haze at 7 o'clock at the junction of the flap. Prescribed topical steroids 6 times daily OD.

The patient presented next day photophobia and irritation. Corneal Epithelial erosions were noted at 7 o'clock. Topical steroids were stopped, and patching of the eye with lubricating ointment was done for 48 hours. Symptomatically better with healed epithelial defects. Tapering dose of topical steroids and lubricants in the right eye.

Results: The patient is on follow-up BCVA OD 20/20 with no symptoms of pain, photophobia, or blurring of vision.

Conclusions: EBMD post Femto LASIK is a rare occurrence worldwide. Thus, Refractive surgeons should be aware of such complications, and with timely treatment, proper vision can be restored early.

Retina (Medical)

Poster No.: FP2768

AGEs/AGER Induce Apoptosis of Human Retinal Endothelial Cells In Vitro via ROS Generation and JNK Signaling Pathway Activation

First Author: Yan ZONG

Co-Author(s): Guyong HUI, Zhizhe LI, Xiting LU

Purpose: Diabetic retinopathy (DR) is the most frequent complication of diabetes and the main cause of working-age adult-onset blindness. Excessive formation of advanced glycation end-products (AGEs) presents the most important mechanism of metabolic memory that underlies the pathophysiology of diabetic complications. Increasing evidence suggests a critical role for AGEs in cell apoptosis of human retinal endothelial cells (RECs). However, the function of AGEs in the apoptosis of RECs is not well understood. The aim of this study was to analyze the effect of AGEs on the apoptosis of RECs in vitro.

Methods: In this study, RECs were exposed to different concentrations of AGEs. The expression of AGER was measured to investigate the involvement of AGEs/AGER axis. ROS was examined to indicate the level of oxidative stress in RECs. Total JNK and p-JNK were determined by Western blotting. Cell apoptosis was evaluated by flow cytometry.

Results: We found that AGEs improved the expression of AGER in a dose- and time-dependent

manner, respectively. Furthermore, the results also showed that pretreated with AGEs promoted the ROS generation and apoptosis of RECs. When blocking AGER with siRNA, the ROS generation and apoptosis of RECs induced by AGEs were partly recovered. Importantly, pretreated with AGEs activated the JNK signaling pathway, which was closely associated with cell apoptosis and inhibition of proliferation.

Conclusions: This study provides evidence that AGEs induce AGER expression and apoptosis in RECs in vitro via ROS generation and activation of the JNK signaling pathway.

Poster No.: FP2759

Central Retinal Artery Occlusion and Hyperbaric Oxygen Therapy

First Author: Jayanth ADUSUMALLI

Co-Author(s): Cheryl KHANNA, Sunil KHANNA

Purpose: Hyperbaric oxygen therapy (HBOT) is an underutilized modality in patients who present early with central retinal artery occlusion (CRAO). We aim to bring awareness to this treatment option and discuss the current guidelines and our experience in the United States.

Methods: We reviewed the literature and noted multiple studies that were used to establish guidelines for the treatment of CRAO with HBOT. The Undersea and Hyperbaric Medical Society (UHMS), as well as the European Undersea and Baromedical Society (EUBS), recommend the use of HBOT in CRAO.

Results: Multiple studies have shown that HBOT is effective in patients who present early with CRAO. In establishing guidelines, the UHMS noted that there was an improvement in vision in 65% of patients. Treatment is recommended in the first 24 hours of symptoms onset. The pressures used for treatment can vary based on the treatment algorithm, with pressures from 2 ATA all the way to 2.8 ATA.

Conclusions: HBOT is a treatment that should be offered to patients with CRAO who present within 24 hours of symptom onset. It can be pursued in combination with other traditional treatment modalities. The barrier to this treatment modality is the availability of HBOT chambers and a small

number of providers with expertise in HBOT. Increased awareness and a concentrated effort at increasing HBOT chambers, along with appropriately trained staff, can increase the availability of the treatment for CRAO.

Poster No.: FP2760

Coats-Like Fundus in a Filipino Child With Retinitis Pigmentosa

First Author: Zadkiel VELASQUEZ

Co-Author(s): Darby SANTIAGO

Purpose: Only 5% of retinitis pigmentosa cases may present with secondary retinal vasculopathy. Even more rare is that the patient presented during the first decade of life.

Methods: A 12-year-old female presented to the clinic with a loss of vision in the right eye and a blurring of vision in the left eye. The right eye was blind with leukocoria. The fundus of the left eye showed a Coats-like yellow-pinkish peripheral lesion with adjacent telangiectatic vessels and macular edema. Ocular multimodal imaging, ERG, and a CT scan were done.

Results: Visual acuity was NLP OD and 20/55 OS. IOP OD 46; 12 OS. Anterior segment exam of the right showed rubeosis, ectropion uvea, +1 cells and flare, clear lens, and beginning peripheral band keratopathy. The retina abutting the posterior capsule showed some pigment clumps. Ultrasound showed an elongated homogenous fixed retrolental mass and low amplitude homogenous dot echo with good aftermovement in the posterior vitreous. Left eye anterior segment findings were normal, while the retina showed diffuse patches of atrophic RPE, few to several pigment clumps in the mid periphery, and a yellow lesion in the peripheral inferonasal quadrant with adjacent telangiectatic vessels. Macular OCT showed cystoid spaces. Treatment options for the left eye include anti-VEGF injection, PDT, and cryotherapy. The non-painful right eye will be observed.

Conclusions: This rare disease can be misdiagnosed and dismissed. Early detection, recognition, and treatment can preserve vision.

Poster No.: FP2761

Forme Fruste Ocular Sarcoidosis With Vascularised Retinal Granuloma

First Author: Vineet BATWANI
Co-Author(s): Vanaja JAIN, Surabhi SAHAY, Ayushi SINHA

Purpose: Case report of vascularised peripheral retinal granuloma in a case of forme fruste ocular sarcoidosis and its management.

Methods: A 32-year-old lady presented with painless diminution of vision in BE. BCVA was 20/60 and 20/80 in OD and OS, respectively. AS evaluation was unremarkable. Posterior segment OD revealed yellow lesions with ill-defined borders along the vascular arcades with disc edema, OS had macular edema. Exudate along the inferior arcade appeared to have a vascular network, highlighted on the FFA and OCTA. OCT through the exudate appeared as a focal nodule with full-thickness retinal thickening. The S-ACE level of the patient was 55 micrograms/L. The CECT scan of the chest was normal. A presumptive diagnosis of vasculitis with a focal vascularised perivascular retinal granuloma was made, and systemic steroids were started. Significant improvement was noted on OCT, and the vascularisation was also reduced on OCTA, and BCVA improved to 20/20 in both eyes with steroids. As the case did not satisfy the IWOS criteria, we labeled it as forme fruste ocular sarcoidosis.

Results: This highlights a special scenario where the patient did not satisfy the IWOS criteria for diagnosis of Ocular Sarcoidosis but had raised S-ACE levels, so it was labeled as forme fruste ocular sarcoidosis. A commonly encountered finding in ocular sarcoidosis is a choroidal granuloma, while our case had a peripheral granuloma with exclusive retinal involvement.

Conclusions: We can conclude that ocular sarcoidosis may have varied presentations, including exclusive vascularised retinal granuloma, and the term forme fruste OS may be used for cases that do not satisfy IWOS criteria for diagnosis.

Poster No.: FP2769

Imaging Characteristics of Normal Eyes With Pachychoroid

First Author: Yiyun ZENG
Co-Author(s): Xinyuan ZHANG

Purpose: This study aims to evaluate the imaging characteristics in normal healthy eyes with pachychoroid (pachy-N) in comparison with pachychoroidal spectrum disorders (PCD).

Methods: In this nested case-control study, 61 healthy normal subjects (86 eyes) and 75 subjects (86 eyes) with pachy-PCD, matched for gender and refractive error (RE) were enrolled. The PCD group comprised 30 subjects (39 eyes) with polypoidal choroidal vasculopathy (pachy-PCV), 8 subjects (12 eyes) with neovascular age-related macular degeneration (pachy-nAMD), and 26 subjects (35 eyes) with central serous chorioretinopathy (pachy-CSC). Subfoveal choroidal thickness (SFCT) and the thickness of Sattler's (TS) and Haller's layers (TH), were obtained using swept-source optical coherence tomography (SS-OCT).

Results: Pachy-CSC exhibited greater SFCT than the other three groups ($P < 0.05$). TS was greater in pachy-N compared to pachy-PCV ($P = 0.012$), pachy-nAMD ($P < 0.001$), and pachy-CSC ($P = 0.005$). However, TH was thinner in pachy-N compared to pachy-CSC ($P < 0.001$).

Conclusions: The image characteristics in the healthy normal pachychoroid subject are distinct from those of PCD eyes. The thickness of the Sattler's or Haller's layers may serve as new imaging risk biomarkers for PCD.

Poster No.: FP2762

Platelet Rich Plasma Treats Retinitis Pigmentosa? Mystery Reveals

First Author: Irum RAZA

Purpose: This study was done to investigate the efficacy of sub-tenon injections of platelet-rich plasma (PRP) in patients of retinitis pigmentosa (RP) with cystoid maculopathy.

Methods: A total of 84 eyes of 42 RP patients with moderate loss of vision were selected for the study. Among the patients, 18 were male and 24 were female. All the patients received three injections of freshly prepared autologous PRP at 4-week intervals in one eye only, the other eye being kept as control. They were followed up on the 1st, 3rd, 6th, and 12th months after the last injection. Pre-intervention parameters, as well as at different months of follow-ups, included best-corrected visual acuity (BCVA), fundus examination, and macular optical coherence tomography (OCT) of both eyes. The primary concern was to evaluate the effects of PRP on BCVA and visual functions.

Results: The mean age of the patients was 36.3 ± 13.9 years. The male: female ratio was 1:1.33. All the patients received three monthly unilateral sub-tenon PRP injections. Fellow eye was used as control. There were no significant ocular or systemic side effects observed. The recorded baseline BCVA in the intervened eye was 6/36 to 6/60. It improved to 6/18 to 6/24, which was statistically significant. There was not much observable difference in the fundus findings of both eyes. However, the macular thickness reduced significantly from 312 to 257 mm on average accounting for the improved BCVA contrary to no improvement in fellow eyes.

Conclusions: The sub-tenon injection of PRP could be proven effective and might preserve the central vision in the patients of RP patients.

Poster No.: FP2763

The Efficacy and Safety of Intravitreal Anti-VEGF Agents and Corticosteroids Implant in Treating Macular Edema

First Author: Khaled MOGHIB
Co-Author(s): Thoria GHANM, Ammar SALAH

Purpose: This meta-analysis and systematic review aims to evaluate the comparative efficacy and safety of these two treatments for ME associated with DR or RVO.

Methods: A thorough literature search was performed in the databases PubMed, Embase, and Cochrane Central Register of Controlled Trials from inception to August 1, 2024. The aim was to identify

studies that compared the efficacy and safety of macular edema. Data extraction focused on key outcome measures such as best-corrected visual acuity (BCVA), central retinal thickness (CRT), number of injections, and serious adverse events (SAEs). The extracted data was then synthesized using RevMan 5.3 software to conduct a meta-analysis of the included studies.

Results: We included eight studies comprising 453 eyes. Underlying causes of macular edema in included studies were RVO and DR. When comparing dexamethasone implant group to aflibercept treatment group, there was no statistically significant difference in BCVA at 3M (MD:-0.00, 95% CI:-0.04, 0.04; P=0.95), 6M (MD:-0.02, 95% CI:-0.05, 0.02; P=0.43) and 12M (MD:-0.03, 95% CI:-0.07, 0.01; P=0.16). In terms of central retinal thickness reduction, there was a significant difference between the two groups at 3M (MD:-20.04, 95% CI:-34.52, -5.56; P=0.007) and 12M (MD:-19.61, 95% CI:-37.4, -1.8; P=0.03). However, there was no significant result in 6M (MD:2.07, 95% CI:-15.4, 19.55; P=0.82).

Conclusions: Intravitreal injection of aflibercept and dexamethasone implant can both effectively increase BCVA and reduce CRT. Compared with aflibercept, dexamethasone implant showed an improvement in vision and reduced CRT in the initial treatment period (3mo) and long-term treatment period (12mo). However, it has fewer injections but is more likely to cause elevated IOP and cataract.

Retina (Surgical)

Poster No.: FP2764

Corneo-Scleral Angle Changes and Intraocular Pressure Elevation After 23 Gauge Pars Plana Vitrectomy (23G-PPV): A Prospective Case-Controlled Pilot Study

First Author: Preethi JEYABAL
Co-Author(s): George THOMAS

Purpose: To characterize anterior chamber angle changes in patients who underwent 23G-PPV with air, gas, or endotamponade using anterior segment optical coherence tomography.

Methods: Prospective study of patients who underwent 23G-PPV using corneo-scleral angle characteristics analysis with anterior segment optical coherence tomography (ASOCT) (Visante, Carl Zeiss, USA) done pre and post-operatively [Day1 (POD1), Week1 (POW1) and Month1 (POM1) and Month3 (POM3)].

Results: A total of 21 eyes were analyzed. Average age=55; Male: Female=12:9. Pre-operatively, 12 eyes had crystalline lenses, and 9 eyes were pseudophakic. Eight eyes had macular pathology, and 13 eyes had other non-macular pathology. Intraocular pressure (IOP) > 21mmHg was recorded in 1,6,2 and no eyes at POD1, POW1, POM1 and POM3 respectively. Pseudophakic eyes (x16, p=0.034) and eyes with non-macular pathology (x14, p=0.049) were more likely to develop raised IOP post-operatively. 0-180 axis: Pupil diameter increased at POD1 and POW1 (p = 0.043), Lens Vault(LV) increased at POD1 and POW1 (p=0.04), Trabecular Iris Space Area (TISA) increased at POM1 (p=0.025) and Iris Thickness Middle increased at POD1 (p=0.1). At 90-270 axis: Angle opening distance (AOD750) increased at POM1 (P=0.09), TISA500 increased at POM1 (p=0.076), Angle Recess Area (ARA 500) increased at POM1(p=0.01), Iris Thickness Middle increased at POD1, POW1 and POM3 (p=0.02), Iris Thickness Quarter increased at POD1(p=0.085) Overall: Anterior chamber depth (ACD) decreased at POD1 (p=0.029), LV increased at POW1 (p =0.092) and Iris Thickness Middle increased at POD1 (p=0.053) and cornea thickness increased at POM1 (p=0.018).

Conclusions: Significant changes in the anterior chamber and irido-corneal angle happen post-vitrectomy. Peripheral iris thickness and lens thickness changes post-vitrectomy could play a major role in the mechanism behind angle closure post-vitrectomy.

Poster No.: FP2765

Posterior Segment Complications of Peribulbar Anaesthesia

First Author: Nawazish SHAIKH

Co-Author(s): Shorya Vardhan AZAD, Akshaya BALAJI

Purpose: To describe the posterior segment complications associated with peribulbar anaesthesia and their subsequent management

Methods: Three patients underwent anterior segment surgery under peribulbar anaesthesia. However, patient 1 presented one month after cataract surgery to a tertiary eye care centre with a history of poor gain of visual acuity following surgery. On examination, an old vitreous hemorrhage was seen, while ultrasonography revealed underlying retinal detachment. He underwent a 25-gauge pars plana vitrectomy for the same. Patient 2 presented on post-operative day 1 with a history of poor gain of visual acuity following cataract surgery under peribulbar anaesthesia. Pre-operative retinal examination was unremarkable, which led to the diagnosis of fresh vitreous hemorrhage secondary to globe damage following peribulbar anaesthesia. The patient underwent a 25-gauge pars plana vitrectomy. Patient 3 underwent phakic intraocular lens implantation under peribulbar anaesthesia and presented on post-operative day 1 with loss of peripheral visual field. On examination, a superonasal area of sub-retinal bleed with peripheral retinal detachment was noted. Patient 3 also underwent 25-gauge pars plana vitrectomy

Results: All 3 patients underwent 25-gauge pars plana vitrectomy. Globe damage occurred during inferotemporal infiltration of anaesthetic agents in two patients, while one patient had a supero-nasal globe penetration. Vitreous hemorrhage, sub-retinal bleeding, and retinal detachment may be the common presenting features that determine the visual outcome.

Conclusions: Peribulbar anaesthesia may be associated with globe damage with devastating complications. Early intervention may be done in the form of laser delimitation of the area, but patients presenting with vitreous hemorrhage or retinal detachment need surgical intervention at the earliest.

The Asia-Pacific Eye Care Week is an initiative to raise public awareness about eye care and eye health in the region. To that end, member societies are invited to organize various activities, which may include:

- Organize a screening event in your local institute / hospital
- Give lectures to patient support groups / the general public
- Participate in radio and TV shows to talk about any eye diseases and to answer questions
- Contact newspapers to publish information about eye care, eye health and/or any eye diseases



APAO

WOMEN IN OPHTHALMOLOGY INTERNATIONAL FELLOWSHIP PROGRAM

In developing countries, there are few subspecialty-trained ophthalmologists, and female ophthalmologists in these roles are particularly scarce. As such, the Asia-Pacific Academy of Ophthalmology Women in Ophthalmology (WIO) International Fellowship Program aims to support a female ophthalmologist from a developing country to receive a 1-year fellowship training in a subspecialty area at an international training center of excellence.

At the end of the fellowship, the fellow will practice and become a trainer in her home country, empowering the local ophthalmology residents and promoting the restoration of sight in her community.

ELIGIBILITY

Applicants should fulfil the following criteria:

- From a developing country which is one of APAO National Members (<https://apaophth.org/members/national/>) with GDP ranking 101 or below;
- Below age 40;
- Have completed basic residency training in ophthalmology; advantages will be given to the applicants who have completed a subspecialty training program;
- Dedicated to the continuing ophthalmology training for home country upon return from the fellowship;
- Fulfill the special requirements of respective APAO training centers. Candidates who wish to apply for fellowship in the United States should have passed USMLE Steps 1, 2 and 3;
- Preference will be given to candidates who have already secured a fellowship position.

The list of training centers is available at: <https://apaophth.org/training-centers/>.

The one candidate who is successfully placed in an APAO training center will be provided with up to US\$1,000 for airfare and an allowance of US\$200 per month during the period of training.

HOW TO APPLY?

Application for the program opens from December 1 to January 31 every program year.

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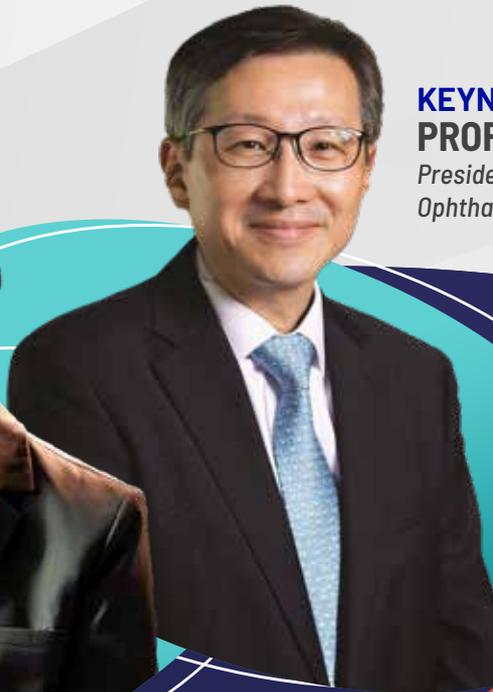
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E-POSTERS

AI, Digital Innovation and Virtual Health

Use of Artificial Intelligence (AI) for Fundoscopic Interpretation in Glaucoma Screening

*First Author: Madhuwanthi DISSANAYAKE
Co-Author(s): Malinda DE SILVA,
Gayanthee DISSANAYAKE, Tanya GAMAGE,
Hasitha RAJAKARUNA, Nilmini WIJEMUNIGE*

Purpose: Glaucoma poses a global burden as a leading cause of irreversible blindness. Glaucoma screening in low-resource settings is constrained by human resource limitations. Artificial intelligence (AI) is emerging globally with promising solutions to these challenges. This pioneering study investigates the feasibility & consistency of AI-assisted funduscopy and interpretation for glaucoma screening.

Methods: This pilot study, conducted in March 2024, assessed the cup-to-disc Ratio (CDR) using an AI-assisted handheld fundus camera. A consultant ophthalmologist, blinded to the AI interpretation examined the patients independently. The agreement between the ophthalmologist's and AI's interpretation of CDR was analyzed using SPSS version 20. AI-generated reports and the clinician's notes were then compared using paired samples t-test and Cohen's Kappa.

Results: Among the thirty-two participants (13 males, 19 females), interpretations of fifty-one eyes were compared. Results from thirteen eyes were eliminated due to poor visualization. Both raters agreed to identify thirty-six eyes as not having glaucoma, while AI identified 11 out of 15 eyes detected by the ophthalmologist as having suspected glaucoma. Interrater reliability using Cohen's Kappa was 0.795, indicating good reliability. Comparing means with the paired samples t-test revealed a p-value of 0.076 ($p > 0.05$), indicating that there was no significant difference between the AI and ophthalmologist's interpretation.

Conclusions: This pilot study confirms the feasibility of AI-assisted funduscopy for glaucoma screening,

especially in low-resource settings. It shows that the AI-generated CDR measurements were consistent with those of the clinician.

Academia, Research, Teaching and Education in Ophthalmology

Impact of Timing During Simulated Vitreoretinal Surgery by a Trainee

*First Author: Ashish MARKAN
Co-Author(s): Mohit DOGRA, Dr Ramandeep SINGH,
Basavaraj TIGARI*

Purpose: To identify the impact of timing during simulated vitreoretinal (VR) surgery by a trainee.

Methods: In a prospective study, VR trainees were asked to perform various surgical tasks, i.e. navigation and anti-tremor, pars plana vitrectomy and posterior vitreous detachment, bimanual training, bimanual scissors and epiretinal membrane peeling on the Eyesi surgical simulator. The trainees were randomly assigned to Group A (performed tasks during morning hours) and Group B (performed during evening hours). After completing assigned tasks, the trainees were asked to cross over to the other group. Primary outcome measures were objective scores and time to perform each surgical maneuver in both groups. Secondary outcome measures included subjective scores given by each trainee and complications encountered.

Results: Eight VR trainees (3 males and five females) were included in the study. The mean objective score obtained after performing various surgical tasks was similar in both groups. The time taken to complete the above tasks was identical. Though the complications were more in the evening than in the morning, the difference was not statistically significant. Subjectively, residents did not find any difference in either group.

Conclusions: The timing of VR surgery does not alter the surgical performance in a simulator setting.

Cataract

Accommodative Intraocular Lens Options for Presbyopia: An Evidence-Based Case Report

First Author: Amani AUGIANI
Co-Author(s): Faraby MARTHA

Purpose: Advancements in cataract surgery and intraocular lens (IOL) technology have raised the bar for postoperative visual acuity (VA) improvement and reduced reliance on spectacles. Accommodative IOLs aim to replicate the eye's natural ability to provide clear vision at various distances. This study aims to assess the efficacy and safety of available accommodative IOLs.

Methods: A thorough literature search was conducted up to February 2023, focusing exclusively on studies examining accommodative IOLs for presbyopia, excluding case reports, case series, and reviews. Non-human studies, non-English publications, and studies lacking full-text availability were excluded.

Results: Our review encompassed 11 studies, comprising four comparative studies and seven non-comparative studies. Overall, visual outcomes measured by distance-corrected near visual acuity (DCNVA) demonstrated satisfactory results. Among the observed accommodative IOLs, the Crystalens and 1CU, both employing the opticshift principle, were the most prevalent. In a comparative analysis between these types, the 1CU demonstrated superior uncorrected and corrected near VA. However, most studies lacked objective ancillary assessments to differentiate between IOL accommodation and pseudoaccommodation. Factors such as visual quality (halo, glare, decreased sensitivity) and adverse effects were inadequately addressed.

Conclusions: Despite the limited number of studies, accommodative IOLs exhibited promising refractive outcomes. Nonetheless, there is a pressing need for further research incorporating objective assessments to provide a more comprehensive understanding of their efficacy and safety profile.

Case Report on Keratoconus With Pre-Existing Zonular Weakness in a Cataract Patient

First Author: Soumya P P

Purpose: To report a case of pre-existing zonular weakness in a cataract with keratoconus. Usually, in eyes with keratoconus, more importance is given to the corneal parameters and IOL calculation during pre-op considerations. Through this case, we highlight the importance of being aware of intra operative complications pertaining to zonular weakness, as well. Hence, lowering the inflow pressure, decreasing the intraocular pressure, and careful hydrodissection during surgery, are very important.

Methods: The patient presented for routine pre-operative evaluation of cataract. A slit lamp examination and a scan findings revealed keratoconus. The patient was not willing for corneal topography due to financial considerations. The values were K1 49.81 D @ 33, K2 50.84 D @ 123, CCT 445 microns, and lens thickness 4.69 mm. IOL power was calculated using Barrett's formula. During the surgery, zonular weakness was identified while creating capsulorhexis. Necessary precautions were taken while doing phacoemulsification, including placement of CTR. Foldable IOL was placed in the bag.

Results: Due to meticulous pre and perioperative measures that were taken to stabilize the anterior chamber and the capsular bag, IOL was placed successfully in the bag. Post-operative recovery was uneventful with good vision.

Conclusions: Apart from the usual pre-operative considerations of corneal parameters and IOL calculation, due importance must be given to the status of zonules. Literature does not show many reports of associated zonular weakness in eyes with keratoconus. Hence, it is important to be prepared for possible zonular weakness in such eyes.

Comparison of Post Operative Inflammation in Patients Undergoing Surgery for Traumatic Cataract Using Heparin and Without Heparin in Irrigating Solution

First Author: Mahtab HAIDER

Purpose: 1. The purpose of this study was to generate local statistics regarding heparin's effectiveness in traumatic cataract surgery. 2. The effect of heparin on traumatic cataract has not yet been studied, even in international data.

Methods: Study Design: Quasi-Experimental. Study Settings: The study was carried out in the Department of Ophthalmology at Lahore General Hospital Lahore. Duration: Twelve months from April 2023 to April 2024. Sample size: The sample size was 48 patients, 24 in each group, calculated at a 5% level of significance, 80% power of test. Sampling Technique: Non-Probability purposive sampling technique.

Results: The results of this study prove to have a little bit of significance of heparin as the anti-inflammatory effect of heparin in traumatic cataract surgery.

Conclusions: On the basis of this study, we may conclude that the use of herapin showed beneficial effects as compared to the group without herapin in traumatic cataract surgery, but the difference between the groups was statistically insignificant. This insignificant difference may be because of a smaller sample size.

Phacoemulsification in Senile White Mature Cataracts

First Author: Ambreen GUL

Purpose: To evaluate the intraoperative difficulty, complications and post-operative outcome in patients with white mature cataracts undergoing phacoemulsification.

Methods: Fifty patients who had senile white mature cataract were enrolled in this interventional case series study. Detailed preoperative and intraoperative notes were taken. A small capsulorhexis was attempted initially after staining the capsule with trypan blue. An initial cut was made with cystotome, and it was enlarged with Utrata forceps. Phacoemulsification was done with the

stop and chop technique. Intraoperative difficulties related to continuous curvilinear capsulorhexis, phacoemulsification, and post-operative visual outcomes were analyzed. Post-operative examinations were done at 1 day, 1 week, 1 month, and 3 months.

Results: There were 28 males (56%) and 22 females (44%). The mean age was 63.18 ± 7.997 . The mean preoperative best corrected visual acuity (BCVA) was 0.0276 ± 0.013 with the Snellen chart (0.01-0.05), and the mean post-operative BCVA was 0.638 ± 0.305 (0.1-1.0). The mean phacoemulsification time was 4.08 ± 1.03 minutes (2.08-6.66). Posterior capsular rupture occurred in 3 (6%) and vitreous loss occurred in 1 (2%) patient. 5 (10%) cases were converted to extracapsular cataract extraction (ECCE). Postoperatively, 10 (20%) patients had transient corneal edema, and 3 patients (6%) had persistent corneal edema and corneal burn treated with steroids and hyperosmotic agents.

Conclusions: White mature cataract is a challenge for cataract surgeons, yet by means of additional dyes and proper techniques and expertise, the rate of complications during phacoemulsification can be reduced.

The Active Sentry Handpiece Is a New Addition to Improve Safety and Control in Cataract Surgery: It Allows the Surgeon to Operate at More Physiological Intraocular Pressure and a More Stable Anterior Chamber

First Author: Simran MANGAT

Purpose: To demonstrate that the Active Sentry handpiece is associated with less endothelial cell loss compared to the Ozil handpiece.

Methods: A randomized, contralateral eye, comparative study. 74 patients undergoing routine bilateral cataract surgery. One eye will be randomised to the conventional Ozil handpiece (n=74) and the fellow eye to the Active Sentry handpiece (n=74). The IOP in the Active Sentry group will be 35mmHg and the Ozil handpiece 60mmHg. Inclusion criteria are patients aged 50-85 years undergoing bilateral cataract surgery alone at separate times limited to NS2+ and NS3+ according to the LOCS grading system, any IOL placed within the capsular bag.

Exclusion criteria are Fuchs endothelial dystrophy, cornea guttata, complicated surgery, glaucoma or on topical treatment, associated procedures such as intra-operative pupil dilation, shallow anterior chambers (<2.5mm), brunescant or white cataracts, previous intraocular surgery.

Results: The primary endpoint is the central endothelial cell count at 3 months post-operatively compared to the baseline level in both the Ozil and Active Sentry groups. Secondary endpoints are central corneal thickness and aspiration time. Exploratory endpoints include BCDVA at 3 months, cumulative dispersed energy, mean case time, anterior chamber activity, ultrasound time, pain/discomfort level (VAS), and frequency of activation of Active Surge Mitigation (ASM).

Conclusions: This study will help cataract surgeons decide if the Active Sentry handpiece provides an incremental improvement in outcomes and safety.

The Influence of Surgeon Hand Dominance on Surgically Induced Astigmatism (SIA) in Phaco Cataract Surgery

First Author: Laiba MAZHRY

Co-Author(s): Muhammad Abdullah MAZHRY, Zia MAZHRY

Purpose: To compare the influence of surgeon hand dominance on surgically induced astigmatism in Phaco Cataract Surgery (Right eye operated with right dominant hand and left eye operated with left non-dominant hand).

Methods: Surgically induced astigmatism (SIA) of 200 patients who underwent phacoemulsification by a single experienced surgeon with temporal clear corneal incision. The surgeon performed phaco holding the phaco hand-piece in the right dominant hand when operating the OD and the left non-dominant hand when operating OS. (K) values were taken 1 day before surgery (Baseline) and 6 weeks post-operatively. The pre-operative and 6-week post-operative K values were entered into the spreadsheet provided by ASCRS. SIA was calculated, analysed, and plotted by ASCRS SIA Calculator (V100 Tool). A comparison of SIA between dominant and non-dominant hand phaco was calculated through SPSS (Version 26).

Results: All the participants were between 30 to 80 years of age. A double-angle plot for SIA using the ASCRS V100 tool revealed significant insights into the astigmatic changes post-surgery in both the right (OD) and left (OS) eyes. The centroid values, indicative of the mean astigmatic change, were $0.49 \pm 0.26D$ and $0.55 \pm 0.31D$, respectively. The comparison between both left and right phaco showed that the difference was non-significant between the dominant and non-dominant hands ($P=0.251$).

Conclusions: Despite the challenges of adapting surgical technique to accommodate hand dominance, our findings indicate a non-significant difference in postoperative SIA outcomes.

Trifocal Intraocular Lens Implantation to Treat Visual Demands in Mongolian Patients

First Author: Narangarav GUNCHIN-ISH

Co-Author(s): Uranchimeg DAVAATSEREN, Dashjargal TERBISH

Purpose: In this work, we aimed to compare the monofocal and trifocal IOL implantation during phacoemulsification.

Methods: 60 eyes of 60 patients were divided into 2 equal groups. Postoperative astigmatism and UCVA were measured and compared during week 1, week 2 and at 1 month.

Results: The mean preoperative UCVA was 1.09 ± 0.45 LogMAR in the monofocal IOL group and 0.99 ± 0.49 LogMAR in the trifocal IOL group. At the first week: The mean postoperative UCVA at one week was 0.34 ± 0.29 LogMAR and 0.27 ± 0.17 LogMAR, in each group respectively. The mean postoperative BCVA in the first week was 0.28 ± 0.27 LogMAR and 0.20 ± 0.15 LogMAR, in each group respectively. The mean postoperative UCVA at 1 month 0.27 ± 0.24 was and 0.15 ± 0.16 , in each group, while BCVA was 0.26 ± 0.14 and 0.06 ± 0.63 . The near visual acuity preoperative was 0.48 ± 0.24 in the monofocal IOL group and 0.60 ± 0.29 in the Trifocal group. At was postoperative 0.45 ± 0.42 in the monofocal group and 0.09 ± 0.00 in the trifocal group. There was a highly significant statistical difference between the result of UCVA preoperative and the results of UCVA at the early and last postoperative follow-up.

Conclusions: From our results, it is evident that post-operative near UCVA and BCVA was statistically significant in monofocal and trifocal groups.

Unravelling Third Nerve Palsy After Subtenon Injection: Insights and Management

First Author: Angeline LOW

Purpose: To report a case of third nerve palsy post subtenon anaesthesia in cataract surgery.

Methods: A retrospective case report.

Results: A 79-year-old woman underwent elective right eye cataract surgery. She was given subtenon anaesthesia and the surgery was uneventful. Upon completion of the surgery, she had right eye ptosis and exotropia in the primary position. She was unable to turn her right eye nasally and was also unable to elevate nor depress nasally. On further examination, the reverse relative afferent pupillary defect was negative. Anterior and posterior examination of the eye was normal. There was no systemic neurological deficiency, and her vitals were stable. She was admitted to a ward for close observation. Despite initial concerns, her condition steadily improved over the course of the next few hours, and she had a full recovery by six hours.

Conclusions: This case demonstrates a transient third nerve palsy post subtenon injection. Given the patient's age, the potential thinning of Tenon's capsule may have facilitated anaesthesia seepage into the orbital apex, affecting the third nerve.

Cornea, Dry Eyes, External Eye Diseases and Eye Banking

A Case Report of the Combined Procedures in a Complex Eye – Penetrating Keratoplasty, Pars Plana Vitrectomy, and Transscleral-Sutured Intraocular Lens

*First Author: Ariunzaya BAYARSAIKHAN
Co-Author(s): Indra AMARJARGAL,
Munkhsaikhan MUNKHKHUYAG*

Purpose: To evaluate the functional and anatomical outcomes of patients who underwent combined

pars plana vitrectomy, penetrating keratoplasty, and transscleral-sutured intraocular lens implantation using temporary keratoprosthesis (TKP) for vitreoretinal pathology and corneal opacity.

Methods: A 75-year-old male presented with pain and vision loss in the left eye with a history of undergoing two surgical procedures of Phacoemulsification and Small Incision Cataract Surgery with trabeculectomy a month apart. Following surgery, his vision dramatically decreased and at the time of consultation, visual acuity was hand motion. Intraocular pressure was 14 with one antiglaucoma medicine. Clinical examination revealed severe corneal opacity, shallow anterior chamber, and irregular, non-reactive pupil with a decentered intraocular lens. The fundus has not been visible due to corneal opacity, and ancillary tests, including b-scan and anterior segment OCT, were done. Based on history, clinical examination, and outcome of testing, he underwent combined surgeries of Optical Penetrating Keratoplasty + Temporary keratoprosthesis + Synechialysis + IOL removal + Pupilloplasty + Pars Plana Vitrectomy + SFIOL under General Anesthesia.

Results: Corneal graft transparency, VA, IOP, and complications were evaluated in follow-up examinations, and the patient's visual acuity was improved to 6/120 with normal pressure and corneal clarity.

Conclusions: Temporary keratoprosthesis-assisted vitreoretinal surgery with penetrating keratoplasty is an effective method to treat pathologies of the concomitant anterior and posterior segment and provides a final opportunity for preserving remaining vision and anatomic reconstruction in eyes that will otherwise result in phthisis bulbs. However, results may vary on a case-by-case basis.

A Novel System for Primary Corneal Ecstasy Classification Based on Correlation Between; Maximum Keratometry Location, Inferior Flatten Sizes and Topographic Patterns

First Author: Mohammedreza JAFARINASAB

Purpose: To introduce a new system for primary corneal ecstasy (PCE) classification based on the correlation between maximum keratometry location

(MKL), inferior flatten sizes (IFS), and topographic patterns (TP).

Methods: This cross-sectional study conducted axial topographic maps of 180 eyes with a diagnosis of clinical or subclinical PCE. Maps were divided into two subgroups: a-positive inferior flatten (PIF) and b-negative IF (NIF). In the NIF subgroup, the index for subtype classification was MKL. In the PIF subgroup, the index for subtype classification was the size of IF. Then, axial maps were classified into five subtypes. I- Central keratoconus (CKC) or KC type-I KC, II- paracentral keratoconus (PCKC) or KC type-II, III- inferior keratoconus (IKC), IV-Mid-peripheral keratoconus (MPKC) or PMD type -I and V- Peripheral keratoconus (PKC) or PMD type-II, which were defined as follows: I- MKL in central 3mm zone without IF. II- MKL in 3 to 5 mm of inferior zones (IZ) without IF. III- PIFA that its extension is less than 3mm in IZ. IV- PIFA with its extension in 3-5mm of IZ. V- PIFA that its extension is more than 5mm of IZ. The frequency of each subtype and its characteristic patterns in each subtype were determined.

Results: In the study, 31, 86, 25, and 12 eyes had C-KC, PC-KC I-K, C, and P-KC (PMD), respectively. The characteristics patterns for them were symmetric and asymmetrical bowties, asymmetrical and inferior steeping, apple patterns, crab claws, and butter fly patterns, respectively.

Conclusions: The most common subtype of PCE is PC-KC with characteristic patterns of asymmetrical bowtie, and the least subtype is P-KC or type II PMD with characteristic patterns of butter fly.

Clinical Efficacy of Hydroxypropyl Guar/Hyaluronic Acid Dual Polymer in Rheumatoid Arthritis-Related Dry Eye Disease: A One-Month Interim Analysis

First Author: Chi-chin SUN

Purpose: This study aimed to determine the clinical efficacy of HPG/HA in treating rheumatoid arthritis (RA)-related DED, particularly in patients who did not respond to anti-inflammatory eye drops.

Methods: Patients with mild to severe RA-related DED who were non-responsive to anti-inflammatory eye drops were enrolled. Participants received HPG/HA dual polymer eye drops (1-2 drops, four times

daily) concomitantly with 0.1% fluorometholone eye drops. Clinical signs and symptoms were assessed at baseline and after one, two, and three months of treatment. The study evaluated the Ocular Surface Disease Index (OSDI) as the primary outcome and corneal fluorescein staining (CFS), non-invasive tear break-up time (NITBUT), and Schirmer's test results as secondary endpoints.

Results: A total of 13 female patients were enrolled. Paired t-tests revealed the following mean values at baseline and after one month of HPG/HA treatment: OSDI decreased from 22.8 ± 9.6 to 21.5 ± 13.0 ; CFS slightly increased from 5.25 ± 2.9 to 5.38 ± 2.6 ; NITBUT decreased from 6.2 ± 2.8 seconds to 5.4 ± 3.4 seconds; and Schirmer's test results showed a minor change from 4 ± 2.5 to 4.07 ± 4.5 . None of these changes were statistically significant.

Conclusions: The interim analysis of HPG/HA treatment in RA-related DED did not significantly improve the evaluated parameters. However, potential benefits suggest that a longer treatment duration with a larger sample size may be needed to fully understand the therapeutic effect of HPG/HA in this patient population. Further follow-up and analysis at the three-month endpoint will provide more insights.

Comparison of the Clinical Performance of Two Daily Disposable Toric Soft Contact Lenses: Verofilcon A Versus Stenfilcon A

First Author: Inma PEREZ-GOMEZ

Co-Author(s): Katherine BCKLE, John CAPELLANI, Jenifer CHIN, Harsha NAIK, Lakshman SUBBARAMAN

Purpose: To evaluate the clinical performance of two daily disposable toric soft contact lenses (SCL), verofilcon A and stenfilcon A.

Methods: A prospective, randomized, controlled, double-masked, bilateral, crossover, multicenter study was conducted in the US (NCT05483127). Habitual toric SCL wearers (aged ≥ 18 years) were randomized to wear verofilcon A/stenfilcon A toric lenses bilaterally for 8-11 days. Primary endpoint: distance visual acuity (DVA; logMAR) at week 1 (noninferiority margin: 0.05). Other endpoints: subjective assessments for "my lenses felt comfortable all day" at 16 hours (5-point scale:

strongly agree to strongly disagree); lens movement (-2=unacceptably tight to +2=unacceptably loose); lens position (0=optimal centration to 2=unacceptable decentration); and surface characteristics (front surface wettability [0=smooth uniform to 4=non-wettable]; surface deposits [0=absent to 4=severe]).

Results: Overall, 152 participants were randomized (mean±SD age: 34.4±9.0 years; female: 61.8%). At week 1, verofilcon A was noninferior to stenfilcon A for DVA (mean±SD logMAR: -0.11±0.07 vs -0.10±0.07; 95% UCL of LSM difference: -0.00). More participants wearing verofilcon A (53.7%) versus stenfilcon A (43.6%) strongly agreed/agreed that lenses felt comfortable all day, at 16 hours (p=0.0165). All lenses (100%) had optimal/acceptable movement, centration and majority lenses graded 0 for front surface wettability (verofilcon A: 86.4%; stenfilcon A: 85.4%) and surface deposits (verofilcon A: front 88.7%, back 95.4%; stenfilcon A: front 86.1%, back 94.0%) at week 1.

Conclusions: Verofilcon A toric lenses were noninferior to stenfilcon A toric lenses for DVA. Verofilcon A toric lenses performed better than stenfilcon A toric lenses for subject-rated comfort. Both toric lenses had optimal fit and centration, and wettable and clean surfaces.

Corneal Melt Following an Uneventful Optical Penetrating Keratoplasty in a Patient With Rheumatoid Arthritis: A Correlation With Systemic Disease Activity

*First Author: Manasi TRIPATHI
Co-Author(s): Akshaya BALAJI, Rajesh SINHA, Saloni UNE*

Purpose: To report a case of corneal graft melt following optical penetrating keratoplasty in a patient with Rheumatoid Arthritis and understand its correlation with the systemic disease.

Methods: This is a case of a 51-year-old female with RE-healed keratitis with cataract. The ocular surface was stable, and there was no evidence of dry eye disease. She had a known case of rheumatoid arthritis on treatment. No disease activity was reported in the preceding 6 months. After a thorough evaluation, she underwent RE Optical Triple, gaining

a BCVA of 6/12 at post-op day (POD) 7. At POD-16, she had a sudden diminution of vision and was diagnosed with RE Sterile Corneal Melt. The patient underwent RE Amniotic membrane transplant (AMT) along with topical steroids, copious lubricants, topical immunomodulators, and oral prednisolone to save the eye from perforation. 2 days later, she developed an acute exacerbation of RA symptoms. Blood investigations revealed a raised erythrocyte sedimentation rate, raised C-reactive protein, and leucocytosis. RE AMT was repeated twice, but there was minimal improvement in her symptoms. A rheumatologist was consulted, and an injection of Adalimumab (TNF-alpha inhibitor) was added to the treatment.

Results: There was marked improvement in ocular and systemic disease at 3 weeks and complete remission at 8 weeks. The tectonic integrity of the graft was maintained.

Conclusions: Keratoplasty in patients with rheumatoid disease carries a high risk of complications. Acute exacerbation of systemic disease may jeopardize the corneal graft. Administration of biologics helps control ocular as well as systemic disease in patients with rheumatoid arthritis. A multidisciplinary approach is warranted.

Corneal Toxicity and Inflammatory Response to Retained Perfluorodecalin in Anterior Chamber: A Case Report

*First Author: Ming-hwei TSAI
Co-Author(s): Ya-feng CHENG*

Purpose: This study aims to examine the use of perfluorodecalin in vitreoretinal surgery, with a particular focus on the potential complications arising from residual perfluorodecalin left in the anterior chamber postoperatively. Specifically, we seek to investigate the incidence and impact of these remnants on the development of glaucoma, persistent inflammation, and corneal toxicity.

Methods: To report a case with corneal changes and anterior segment inflammation secondary to perfluorodecalin.

Results: A 67-year-old male presented at our ophthalmology clinic with progressive visual

loss and photopsia. Three months prior to the presentation, he had sustained blunt trauma to his right eye, leading to traumatic cataract and rhegmatogenous retinal detachment. The patient underwent a combined procedure involving cataract extraction, intraocular lens implantation, and pars plana vitrectomy. Intraoperatively, perfluorodecalin was used as a temporary retinal tamponade. On the first post-operative day, slit-lamp examination revealed the presence of perfluorodecalin in the anterior chamber, in direct contact with the corneal endothelium. Two days later, severe corneal edema developed, accompanied by hypopyon. Immediate attempts were made to remove the perfluorodecalin through a paracentesis. Following the successful removal of perfluorodecalin, there was a gradual improvement in corneal edema, and in the latest follow-up, the retina remained attached.

Conclusions: Residual perfluorodecalin in the anterior chamber can cause inflammation and corneal changes. Prompt aspiration may reverse these effects, preventing cell density loss and morphological changes. Immediate removal is recommended.

Impact of the COVID-19 Pandemic on the Incidence of Dry Eye Syndrome in Pediatric Population

First Author: Arjit SINGH
Co-Author(s): Rahul BHOLA, Diya SINHA, Jonathan RUSSELL

Purpose: To perform a comparative analysis in pediatric patients diagnosed with Dry Eye Syndrome (DES) pre and post-COVID-19 pandemic.

Methods: We conducted a Retrospective chart review of pediatric patients between the age group of 5-18 years diagnosed with DES from March 2017 to March 2023. Patients were excluded if they had concomitant systemic or ocular morbidity predisposing to DES or were on any medication causing DES. After excluding 286 patients a total of 2570 patients were included in this study.

Results: Clinical data, including age, date of first visit, and date of diagnosis, was collected, and the pre-pandemic data (March 2017-March 2020) was compared with post-pandemic data (April 2020 - March 2023). Twenty-seven percent of total patients

with DES (687/2570) had DES prior to the onset of the pandemic. There was a 2.7-fold increase in the incidence of DES post-pandemic, with 73 % developing DES after the pandemic. Further analysis showed that the incidence of DES was maximum in the age group of 10-14 years post-pandemic as opposed to 15-18 years pre-pandemic. In our study, we noticed an increasing trend of newly diagnosed DES children in the age group of 5-14 years in the post-pandemic years.

Conclusions: This study demonstrates a significant increase in the incidence of DES in the pediatric population with an increasing trend in the younger population post-pandemic. This study underscores the importance of healthy digital habits in the pediatric population and the setting of limitations on total screen time usage, emphasizing adequate breaks with prolonged digital tasks.

In Vivo Confocal Microscopy (IVCM) for Ocular Demodicosis: A Systematic Review of Diagnostic Accuracy Studies

First Author: Muhammad ALFATIH
Co-Author(s): Ida MUTHMAINNAH, Diski SAISA

Purpose: To review the performance of IVCM for detecting ocular demodicosis (OD).

Methods: All aspects of the systematic review and meta-analysis adhered to the Cochrane Handbook. Eligibility criteria include diagnostic accuracy studies that use IVCM as the index test. Three databases (PubMed, Scopus, and CENTRAL) were systematically searched using the query: (in vivo confocal microscopy OR laser microscopy OR scanning confocal microscopy) AND ("ocular demodicosis" OR "demodicosis"). Variations might occur due to databases' scripts. Two independent authors performed titles and abstract screening, study quality assessment, and data collection. If there were any conflicting decisions, the third author would decide.

Results: From 233 search results, 3 studies were included. One study conducted in Turkey showed that IVCM graded by an experienced observer has 90.7% sensitivity and 0% specificity when compared to light microscopy examination of epilated lashes with one drop of 10% potassium hydroxide (KOH) added under the coverslip. Another study in Turkey with

the same reference standard showed 75% sensitivity and 40% specificity when performed by both inexperienced and experienced graders. Meanwhile, a study conducted in China used a drop of oil added under the coverslip plus 20 µL of 100% alcohol. The result was 98.88% sensitivity and 27.16% specificity when performed by an experienced grader. Due to the low number of studies and the inconsistency of the reference standard and the performance of the graders, we couldn't conduct the meta-analysis.

Conclusions: IVCN is a very graders-dependent device, and under experienced graders, it has moderate to high sensitivity and low specificity to detect OD.

Iris Tumour in an Asian Woman

First Author: Anushia ELANGKOVAN

Co-Author(s): Chandramalar T. SANTHIRATHELAGAN

Purpose: To report a rare case of an iris tumour in an Asian woman.

Methods: A case report of an elderly woman who underwent slit lamp examinations, imaging, and serology investigations for an iris tumour.

Results: A 75-year-old Chinese woman presented with a right eye generalized painless blurring of vision progressively worsening for a month with whitish opacity rapidly increasing in size within a week on the right eye. Ophthalmic examination revealed visual acuity of 6/18 on both eyes with a negative afferent pupillary defect. The right eye anterior segment ocular examination revealed a large pedunculated amelanotic iris cystic mass occupying one-third of the inferior anterior chamber. There was no neovascularization on the iris, while the anterior chamber was deep with occasional pigmented cells, the pupil round and reactive with the posterior chamber intraocular lens in situ. Intraocular pressure was normal. Posterior segment findings were unremarkable. Anterior segment optical coherence tomography (OCT) on the right eye showed hyperreflectivity at the posterior of the cornea endothelium. Ultrasonography B-scan of the right eye was normal, the vitreous was clear, and no choroidal or retinal mass was seen. Computed Tomography (CT) of the orbit showed rim enhancing lesion at the inferior part of the right iris protruding into the right

anterior chamber with a clear plane of demarcation. Our initial diagnosis was a right eye iris cyst, and she was planned for an excisional biopsy.

Conclusions: Iris tumours are rare intraocular neoplasms. Clinicians should maintain a high index of suspicion for iris tumours in patients presenting with atypical signs and symptoms, especially in older patients, to enable early diagnosis and appropriate management.

Moraxella catarrhalis Keratitis – a Rare Organism in Corneal Ulcer

First Author: Law NGEE LING

Co-Author(s): Yong MENG HSIEN, Seow SIENG TENG

Purpose: To highlight the clinical course and management of a rare case of Moraxella catarrhalis keratitis with subsequent development of endophthalmitis.

Methods: Case report.

Results: A 59-year-old male with a 4-year history of chronic bilateral ankle venous ulcers and poor housing sanitary presented with the blurring of vision, pain, and redness in his left eye for one week. Initial examination revealed reduced vision (left eye counting fingers) and elevated intraocular pressure (IOP) of 30mmHg. No relative afferent pupillary defect (RAPD) was observed. Detailed slit-lamp examination noted deep stromal infiltration with irregular edges, hypopyon, endothelial plaque with keratic precipitate, and reduced corneal sensation. B-scan initially showed no vitritis or loculation. Initial treatment included hourly topical antibiotics (cefuroxime, gentamicin, amphotericin B, fluconazole), oral fluconazole, and topical antiglaucoma. However, the condition worsened, and repeated B-scan after two days revealed minimal vitritis suggesting endophthalmitis. Additional treatments included intravitreal ceftazidime, and vancomycin was administered four times over one week, in conjunction with systemic antibiotics and escalated gutt cefuroxime to ceftazidime. Corneal scraping culture identified Moraxella catarrhalis, which was sensitive to Augmentin, Bactrim, and erythromycin. Bilateral venous ulcer cultures showed no growth, and intravitreal cultures demonstrated no organism growth. Subsequent treatments led to gradual clinical improvement.

Conclusions: Moraxella catarrhalis keratitis is rare, and thorough examination and history-taking are vital for proper diagnosis and management. Close B-scan monitoring helps detect worsening signs early. Early, aggressive treatment and frequent reassessment are crucial for better outcomes.

Nd:YAG Laser Destruction of Ingrown Corneal Epithelium After Keratorefractive Surgeries

First Author: Maxim PSHENICHNOV

Purpose: To evaluate the effectiveness of Nd:YAG laser in the treatment of ingrowth of corneal epithelium after ReLEx Smile and Femto-LASIK.

Methods: Ten patients (10 eyes) aged 27 to 43 years. All operations were without complications. Timing of epithelial ingrowth: 1 eye – after 7 days (ReLEx Smile, traumatic impact); 8 eyes – after 1–3 months (6 eyes – Femto-LASIK, 2 – ReLEx Smile); 1 eye – after one year (Femto-LASIK). After the ReLEx Smile – ingrown epithelium in the form of a dense “white” layer under “Cap”. After the Femto-LASIK – ingrown epithelium is localized from its edge under the “Flap”. Laser irradiation using a Nd:YAG laser “ULTRA-Q” (Ellex medical, Australia), wavelength 1064 nm, was applied to remove epithelial ingrowth. Number of pulses (183–657 per session). Impact on the entire area of epithelial ingrowth until a confluent vapor-gas bubble is formed. Repeated sessions, if necessary, were carried out at intervals of 2-4 weeks. Number of sessions varied from 1 to 4.

Results: The planned visual acuity was achieved in all patients after treatment. After 6 months, in all 10 eyes, there were no signs of recurrence of epithelial ingrowth. All patients showed no difference in endothelial status compared to the paired eye.

Conclusions: The YAG laser technique to eliminate corneal epithelial ingrowth in all cases allowed for preserving the biomechanical integrity of the cornea without resorting to raising the “Flap” after Femto-LASIK and converting the “Cap” to “Flap” after ReLEx Smile, which is extremely important for the optical parameters of the operated cornea.

Non-Healing Corneal Ulcer – a Big Saviour

First Author: Ishita AGRAWAL

Co-Author(s): Raffat ANJUM, Sandhya MAKHIJA

Purpose: To treat a patient with persistent epithelial defect.

Methods: We reported a case of a 65-year-old male patient with a complaint of diminution of vision for six weeks, along with foreign body sensation, pain, redness, and watering. He consulted a nearby doctor and was using eyedrop-fortified vancomycin 5%, eyedrop natamycin 5%, eyedrop homide 2%, eyedrop CMC 1%, and eye ointment HPMC 2% in the right eye. The vision in the right eye was Perception of light and projection of light rays accurate in all quadrants and 6/9 in the left eye. On examination of the right eye, there was mild conjunctival congestion, and the cornea had a 7×6mm epithelial defect with stromal edema with ovalization of the defect and rolled-out edges. The anterior segment examination of the left eye was within normal limits. There was no significant systemic history, except that he had a known case of head and neck neoplasm for which he was operated on three years ago and had completed 3 to 4 sessions of radiotherapy. The diagnosis made was a non-healing corneal ulcer in the right eye. The management of the patient included patching of the right eye followed by serial patching along with the application of BCL, which fell down twice. After this, temporary tarsorrhaphy was tried, which also broke spontaneously. The patient was planned for AMT with glue with tarsorrhaphy.

Results: On postoperative examination at days 7 and 14, there was an improvement in vision as well as symptoms, BCL in place, and tarsorrhaphy intact.

Conclusions: Amniotic membrane transplantation is a good modality for persistent epithelial defects.

Objective and Subjective Clinical Performance Evaluation of Two Daily Disposable Soft Contact Lenses: Verofilcon A Versus Nesofilcon A

*First Author: Inma PEREZ-GOMEZ
Co-Author(s): Katherine BCKLE, John CAPELLANI, Brenda EDWARDS, Harsha NAIK, Lakshman SUBBARAMAN*

Purpose: To evaluate the clinical performance of two daily disposable soft contact lenses (SCLs), verofilcon A and nesofilcon A.

Methods: A prospective, randomized, controlled, double-masked, cross-over, multicenter study was conducted in the US (NCT05138783). Current spherical SCL wearers (aged ≥ 18 years) with SCL wearing experience of ≥ 5 days/week and ≥ 10 hours/day over the past 3 months were included. Participants were randomized (1:1) to wear verofilcon A/nesofilcon A SCLs bilaterally for 8-11 days. Endpoints evaluated at week 1: distance visual acuity (DVA; log MAR); visual analog scale (VAS; 0-100) ratings for comfort, vision, and overall impression at 16 hours; Likert ratings at 16 hours (5-point scale: strongly agree to strongly disagree); and lens movement and position. Overall preference was evaluated at the study end.

Results: Overall, 126 participants completed the study (mean \pm SD age: 32.4 \pm 7.8 years; female: 66.7%). Verofilcon A was noninferior to nesofilcon A for DVA (mean \pm SD logMAR: -0.13 \pm 0.08 vs -0.13 \pm 0.07) at week-1. At 16 hours, verofilcon A showed higher VAS ratings than nesofilcon A for comfort (77.9 \pm 18.7 vs 63.7 \pm 26.8), vision (84.1 \pm 15.6 vs 76.4 \pm 21.4), and overall impression (80.5 \pm 17.3 vs 68.9 \pm 24.9; all $p \leq 0.0001$). More subjects wearing verofilcon A (than nesofilcon A) strongly agreed/agreed for lens comfort (48.0% vs 30.4%, $p = 0.0004$), vision (80.8% vs 67.2%, $p = 0.0051$) and moistness (74.4% vs 52.0%, $p = 0.0001$). All lenses (100%) had optimal/acceptable fit and centration at week 1. 73% preferred verofilcon A ($p < 0.0001$ vs hypothesized 50.0%).

Conclusions: Verofilcon A was noninferior to nesofilcon A for DVA. Verofilcon A performed better than nesofilcon A in comfort, vision, and overall impression after 16 hours of wear. Both lenses had optimal movement/position.

Ocular Zoster Sine Herpete: Atypical Presentation of a Common Viral Disease

*First Author: Allie LEE
Co-Author(s): Wai Yan LAM*

Purpose: Ocular zoster sine (ZSH) is a rare presentation of herpes zoster ophthalmicus when the characteristic unilateral dermatomal vesicular cutaneous eruption is absent. Diagnosis is challenging and may result in a delay in treatment. We report a case with early diagnosis and excellent outcome. We aim to increase awareness and understanding of the disease.

Methods: To report an unusual case of ocular ZSH and present an in-depth review of the literature. An elderly man with a history of herpes zoster of the back presented with a one-week history of red eye and lid swelling in the right eye. A tiny ulcer in the eyelid subsequently developed. Examination showed unilateral follicular conjunctivitis, a tiny eyelid ulcer, and tender cervical lymph nodes. There were no vesicles or rash on the face or periocular skin. Due to the atypical presentations, a conjunctival swab was taken for viral polymerase chain reaction (PCR).

Results: The PCR soon came back positive for varicella-zoster virus and the diagnosis of ocular ZSH was confirmed. Oral valacyclovir was immediately started. The patient recovered within a week with no long-term sequelae. In the literature, reports of ocular HSZ remain scarce and most had intraocular sequelae. PCR for VZV DNA is the current standard for diagnosis as it is rapid, highly sensitive, and specific. Oral antiviral for 7-10 days should be started as early as possible. **Conclusions:** Ocular ZSH is rare and difficult to diagnose. Early diagnosis and treatment may minimize sight-threatening intraocular complications.

Post Pterygium Excision Donor Site Dilemma: What Lies Underneath Pushes Its Way to Surface

First Author: Yash GALA
Co-Author(s): Nitesh SINGH

Purpose: To describe a rare complication, pyogenic granuloma at the donor site post pterygium excision with conjunctival autografting technique.

Methods: A 23-year-old male presented with a painless progressive mass in his left eye for 1 year, diagnosed with grade 2 nasal progressive pterygium, for which the patient underwent pterygium excision with conjunctival autograft transplantation. Post-operative period uneventful, CAG in situ with exposed intact tenons at the donor site in the superonasal quadrant. The patient was started on topical dexamethasone-moxifloxacin eye drops in tapering dose with lubricating drops. On day 15, the patient came with a reddish mass in the superonasal quadrant. On examination, 6 x 5 mm fleshy mass, elevated, stain positive, clinically suggestive of pyogenic granuloma at the donor site. Intraocular pressure was 54mmHg, steroid responder.

Results: The patient was given IV mannitol 200 cc followed by topical timolol & brinzolamide along with loteprednol 0.5% in tapering dose with CMC 0.5% 6 times a day along with oral prednisolone 40mg in tapering dose. Conjunctivalization of the donor site with vascularization and granuloma resolution was completed over 4 weeks, and the donor area stain was negative. No surgical intervention was needed.

Conclusions: Pyogenic granuloma at the donor site is a rare complication. The explanation for the development of this kind of healing is possible due to the exposure of Tenon's capsule with permanent friction of the upper eyelid, leading to an overgrowth of the exposed tissue. Very few cases have been reported in the literature with pyogenic granuloma at the donor site.

Revolutionizing Corneal Repair: Exploring the Impact of Autologous Tenon Patch Grafts (TPG) in Healing Perforations - a Compelling Case Series

First Author: Ferdy ISKANDAR
Co-Author(s): Amirah Deandra DIBA, Faraby MARTHA

Purpose: Corneal perforation is an ocular emergency that adds to the overall burden of eye diseases causing blindness. Immediate treatment is vital to protect the eye, maintain vision, and avoid further issues. The tenon patch graft (TPG) has become popular because it's easily accessible from the same patient's eye, saving time and eliminating the need for storage. This study focuses on eight cases where corneal perforations were successfully treated with TPG.

Methods: Eight cases with corneal perforations were presented with varying perforation sizes ranging from 0.5 to 8 mm. The most common complaints were vision loss, redness, pain, and watery eyes. Ophthalmological examinations revealed six corneal ruptures and two impending corneal ruptures caused by trauma, infections, foreign body, and post-surgery cases. All patients underwent TPG surgery with compression/infinity sutures using 10-0 nylon, followed by three adjoined amniotic membrane transplants and the application of a bandage contact lens (BCL). Post TPG, the patients were followed up for 1-4 months and had deep anterior chambers with no wound leakage. No complications were found.

Results: Tenon's tissue produces autologous fibroblasts and connective tissue, which help strengthen the structure and speed up healing by reducing inflammation. Harvested from the same eye of the patient, it eliminates the need for procurement or storage, and poses no risk of infection or immune response.

Conclusions: TPG is an effective, affordable, and readily available method for corneal perforations with no complications, especially in emergency settings where donor tissue is limited.

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E-POSTERS

The Relationship Between Sedentary Behaviour and Dry Eye Disease in Elderly Patients

First Author: Kendrick SHIH

Co-Author(s): Nicole CHIU, Angie FONG, Allie LEE, Christopher LEUNG, Ian WONG

Purpose: To determine the impact of sedentary behaviour on the ocular surface in Chinese subjects aged 50 or above.

Methods: This is a cross-sectional random population-based study on Chinese subjects aged 50 and above between 27 September 2021 and 31st of August 2023. In total, 1230 consecutive subjects underwent comprehensive dry eye assessment in order from least invasive to most invasive, including dry eye questionnaire (OSDI score), non-invasive keratographic tear breakup time, tear meniscus height, NEI cornea staining score, and meiboscore. The definition of dry eye was adopted from the Asia Dry Eye Society. Physical activity was quantified into the metabolic equivalent of task (MET) minutes per week into low (≤ 600), moderate (600-3000), and high (≥ 3000) categories.

Results: The mean age of subjects was 63.0 (± 7.39), and the mean level of physical activity per week was 1810 (± 1854) MET minutes. Overall, DED prevalence was 20.2%. Subjects with low levels of weekly physical activity had higher DED prevalence when compared to those with moderate and high levels of physical activity ($p=0.0089$ and $p=0.0249$). Furthermore, subjects with DED reported significantly lower levels of weekly physical activity compared to subjects without DED ($p=0.0169$).

Conclusions: Sedentary behaviour is significantly associated with DED in elderly subjects. Thus, DED may serve as an indicator of lower exercise levels and poorer vascular health in elderly patients.

Glaucoma

A Rare Case of Combined Sturge-Weber Syndrome and Nevus of Ota in a Filipino Patient

First Author: Mark Niño ESTRELLA

Co-Author(s): Abigail MONTES, George Michael SOSUAN, Paula Rosalie TAN

Purpose: To report a case of combined Sturge-Weber Syndrome and Nevus of Ota in a Filipino woman presenting with bilateral secondary open-angle glaucoma

Methods: Case report and review of related literature.

Results: A 52-year-old woman, presented with progressive blurring of vision of the right eye and a blind left eye. No family history of glaucoma was reported. On examination, port-wine facial discoloration of the right forehead and diffuse hyperpigmentation of the left hemi-face were observed. Visual Acuity (VA) on the right eye was 20/100, with best-corrected VA to 20/63 with an IOP of 25 mmHg and hyperpigmented open angles on gonioscopy. VA on the left eye was no light perception, with an IOP of 22 mmHg and 180 degrees of the angles closed on gonioscopy. Disc examination of both eyes showed advanced cupping. Timolol-bromonidine eyedrops were started.

Conclusions: Sturge-Weber syndrome (SWS) is a neurocutaneous syndrome that has facial, brain, and orbital manifestations. Nevus of Ota is a dermal hamartoma that causes hyperpigmentation of the face and orbital area. Neurocutaneous syndrome associated with oculodermal melanocytosis is rare. Both conditions have an increased risk of developing glaucoma from angle remodeling or trabecular meshwork hyperpigmentation. We report this case, and it is the first such case to be reported in Southeast Asia.

Analysis of Routine Blood and Blood Biochemical Markers in Patients With Posner-Schlossman Syndrome

First Author: Kaiyi ZHOU

Purpose: To study the blood routine and blood biochemical indexes such as platelets, uric acid, and lipid levels in patients with Posner-Schlossman syndrome (PSS) and provide basic evidence for the pathogenesis of PSS.

Methods: A total of 100 PSS participants, 100 primary open-angle glaucoma (POAG) participants, and 100 control participants who were hospitalized from June 2018 to June 2023 were enrolled in this retrospective case-control study. The blood routine, blood biochemistry, coagulation function, liver and kidney function, and electrolytes of the three groups were collected, and the differences in platelet, uric acid, and lipid levels among the three groups were analyzed and compared, and their correlation with the thickness of retinal nerve fiber layer and visual field in PSS patients was evaluated.

Results: Higher white blood cell counts, neutrophil counts, monocyte counts, eosinophil counts, and basophil counts were found in the PSS group compared with control groups. Higher levels of uric acid, triglycerides, total cholesterol, and LDL were found in the PSS and POAG group compared with the control group. High levels of triglycerides and low-density lipoprotein are independent risk factors for refractory PSS. Higher levels of triglycerides and LDL were found in patients with severe PSS compared with the control group and patients with mild or moderate PSS.

Conclusions: High levels of triglycerides and low-density lipoprotein are independent risk factors for refractory PSS.

Axenfeld-Rieger Syndrome: A Story of Challenges and Triumphs

First Author: Muhammad Abdullah MAZHRY
Co-Author(s): Laiba MAZHRY, Zia MAZHRY

Purpose: This case report provides a detailed account of managing a 46-year-old female patient with Axenfeld-Rieger Syndrome (ARS), highlighting the

complexity of treating this condition, which presents a variety of ocular and systemic abnormalities. The purpose is to highlight the importance of a step-by-step management approach that is required when dealing with complex and rare disorders like ARS.

Methods: A 46-year-old female presented with progressively declining vision and elevated intraocular pressure, with bilateral corectopia, polycoria, posterior embryotoxon, and telecanthus. Systemic findings involved midfacial hypoplasia and a history of valve replacement surgery. The diagnosis of ARS was made, and the patient underwent bilateral trabeculectomy with MMC followed by bilateral cataract surgery over the course of the coming years.

Results: The patient had a successful outcome following the surgeries. A thorough management plan consisting of regular follow-ups and a personalized, comprehensive approach led to our patient enjoying a joyful life despite being given the diagnosis of a rare disease.

Conclusions: The importance of tailored surgical approaches and the value of prolonged regular follow-ups cannot be overlooked in order to deal with complex and rare disorders like ARS.

Bleb Associated Endophthalmitis in a Juvenile Open Angle Glaucoma Patient

First Author: Gino ROSALES
Co-Author(s): Maria Catherina NASOL

Purpose: Bleb-associated endophthalmitis (BAE) refers to the infection around or inside a filtering bleb with vitreous involvement. With the advent of anti-metabolite use in trabeculectomy, this condition is now much more common. Here, we describe a case of BAE and its risk factors, diagnosis, and treatment.

Methods: This is a case report of a patient who presented with acute redness and discharge of the right eye. The patient had undergone trabeculectomy with mitomycin-C for both eyes for juvenile open-angle glaucoma two years ago and was lost to follow-up.

Results: On examination, there was conjunctival congestion, corneal edema, and anterior chamber hypopyon. A thinned-out avascular cystic bleb with

a positive Seidel's test was noted. Ocular ultrasound showed vitreous cells. Culture and sensitivity tests did not yield any growth. The patient was treated with intravitreal vancomycin and ceftazidime. A combined bleb excision with conjunctival advancement and pars plana vitrectomy was performed. The patient responded well to treatment.

Conclusions: Bleb-related endophthalmitis is one of the complications of filtering surgery that ophthalmologists must consider when presented with acute eye pain, redness, and blurred vision after undergoing trabeculectomy. Diagnosis is guided by culture and sensitivity studies. Early recognition and treatment with intravitreal antibiotics with pars plana vitrectomy may lead to better visual outcomes.

Effect of Miosis on Irido-Corneal Angle Widening in Eyes Undergoing Ab-Interno Trabeculectomy

First Author: Yoshiyuki KITA
Co-Author(s): Ritsuko KITA, Nagahiro YATA

Purpose: Pilocarpine eye drops are commonly used after trabeculectomy; however, there has been no detailed investigation into their effect on irido-corneal angle widening. In this study, we examined the effect of postoperative pilocarpine instillation on irido-corneal angle widening in eyes that underwent phaco-ab-interno trabeculectomy.

Methods: Twenty-eight eyes of 28 patients diagnosed with primary open-angle glaucoma (POAG) who underwent phaco-ab-interno trabeculectomy were included in the study. Using the Anterior segment swept-source OCT (CASIA2: Tomey), we measured the angle opening distance (AOD; mm) and trabecular-iris space area (TISA; mm²) at four locations—500 μm and 750 μm from the scleral spur on both the temporal and nasal sides—before surgery, within one month after surgery, and one hour after instillation of 2% pilocarpine. The measurements were compared using repeated measures ANOVA.

Results: The mean age of the patients was 70.3 years, with 10 males and 18 females. The mean spherical equivalent was -3.3 D. Compared to preoperative values, the AOD and TISA significantly increased at all measured locations after surgery. When comparing postoperative measurements to those after pilocarpine instillation, the AOD significantly

increased at three out of the four locations, while no significant difference was observed in the TISA at any location.

Conclusions: Since phaco-ab-interno trabeculectomy widens the irido-corneal angle, the effect of pilocarpine instillation on further irido-corneal angle widening after surgery may be minimal.

Evaluation of Bleb Vascularity and Morphological Change After Trabeculectomy Using Anterior Segment Optical Coherence Tomography

First Author: Kae SUGIHARA
Co-Author(s): Mitsuto HOSOKAWA, Toshio OKANOUCI

Purpose: This study aims to evaluate the bleb vascularity and morphological change after trabeculectomy using anterior segment optical coherence tomography and investigate the associated factors by short-term analysis of its clinical course.

Methods: Retrospective observational study. Patients who had undergone trabeculectomy with mitomycin C at Kurashiki Medical Center between June 2023 and February 2024 were included in this study. The bleb vascularities were evaluated clinically according to a grading system. The bleb morphology, such as bleb wall thickness (BWT) and bleb cavity height (BCH), were analyzed using horizontal and vertical anterior segment optical coherence tomography (AS-OCT) scans. Factors associated with avascular bleb were assessed using univariable and multivariable regression models.

Results: A total of 30 eyes of 28 patients were included in the study. The average follow-up period was 6.0 ± 2.4 months. Ten eyes (33.3%) with avascular bleb were identified. The mean time the bleb started to show avascular appearance was 3.7 ± 3.1 months. The risk factors significantly associated with avascular bleb were BWT at 3 months after surgery (P=0.003) and the rate of decrease in BWT between 1 month and 3 months postoperatively (P=0.029). **Conclusions:** In our study, blebs with a decreased BWT resulting in a thinner bleb, between 1 month and 3 months postoperatively were more likely to be avascular bleb.

Glaucoma Drainage Device in a Case of Syndromic Unilateral Glaucoma

First Author: *Abhishek ONKAR*

Purpose: This case report purports to highlight the importance of resorting to a glaucoma drainage device as a choice surgical option for managing uncontrolled syndromic glaucoma.

Methods: A 30-year-old female presented with complaints of progressive blurring of vision in the right eye with episodes of photophobia and pain. A thorough ophthalmic examination was done, including slit-lamp examination, visual field analysis, and fundus examination, leading to a diagnosis of syndromic unilateral glaucoma.

Results: Unilateral presentation of typical mamillary projections with a washed-out appearance of rest of iris and loss of normal iris pattern, corneal oedema, anisocoria, corectopia, increased intraocular pressure (IOP) of 60 mm of Hg and 0.9 cup-disc ratio clinched the diagnosis of Cogan Reese Syndrome with glaucoma in the right eye. The raised IOP was non-responsive to medical management, and considering the fact that the other eye had a 6/6 visual acuity with no abnormal findings, the decision to implant a glaucoma drainage device was taken and implemented, leading to a reduction of IOP to 12 mm of Hg post-operatively. The patient has been on monthly follow-up since then with IOP of 14 mm of Hg recorded on the last visit.

Conclusions: Glaucoma drainage device can be considered as a first choice for managing intractable unilateral glaucoma in syndromic young patients rather than first resorting to trabeculectomy which has high failure rates in such cases.

Micropulse Cyclophotocoagulation in Acute Angle-Closure Glaucoma: Efficiency and Safety

First Author: *Natalia POSTUPAEVA*
Co-Author(s): *Alexei POSTUPAEV, Maxim PSHENICHNOV, Evgenii SOROKIN*

Purpose: To evaluate the efficacy and safety of micropulse cyclophotocoagulation (MP-CPC) in acute angle-closure glaucoma (AACG).

Methods: Eight patients with AACG 3-7 days duration. Diagnosis is made by noting elevation intraocular pressure (IOP) 36-41 mm Hg, aching eye or brow pain, headache, eye redness, engorged conjunctival vessels, corneal edema, shallow anterior chamber, fixed dilated pupil, closed angle of the anterior chamber on gonioscopy, sectoral iris atrophy, Best Corrected Visual Acuity (BVSA) was 0.94-0.62 logMAR. Strategies for lowering intraocular pressure included IOP-lowering medications and laser peripheral iridotomy. After laser peripheral iridotomy, IOP was 30-36 mm Hg, and all patients underwent MP-CPC with Cyclo G6[®] Glaucoma Laser System (USA). During surgery, we used from 2,000 to 2,200 mW diode laser with 810 nm.

Results: There were no complications after MP-CPC. The pain syndrome was eliminated in all patients on the first day after MP-CPC. IOP decreased to 14-20 mm Hg. BVSA improved 0.72-0.22 logMAR. All patients underwent phacoemulsification after MP-CPC within 1-6 months. At a follow-up period of 1 year, IOP remained normalized from 16-23 mm Hg in all eyes.

Conclusions: MP-CPC is characterized by a high safety profile in eyes with AACG. MP-CPC allowed for the effective reduction of IOP and relieving pain in the eyes at AACG. This provided improvement and preservation of visual functions with a follow-up period of up to 12 months.

Navigating the Challenges: Outcomes of Neovascular Glaucoma With Multi-Disciplinary Approach

First Author: *Gajendra CHAWLA*
Co-Author(s): *Neha BIJLANI*

Purpose: To analyze the management and assess the visual outcome of patients with Neovascular Glaucoma (NVG) presenting with visual acuity (VA) 6/60 or better.

Methods: Retrospective analysis of consecutive patients with NVG presenting between Jan 2019 to May 2023 at our center was performed. Patients with VA 6/60 or better and with at least 1-year follow-up were included in the study. All patients received immediate intravitreal Anti-VEGF upon NVG diagnosis, along with initiation of Antiglaucoma Medications. Aggressive pan-retinal photocoagulation

(PRP) was done as early as possible after initial stabilization. Trabeculectomy with Mitomycin-C (MMC) was done as the primary IOP lowering procedure if needed. Glaucoma drainage device (GDD) and vitrectomy were performed as secondary procedures if needed.

Results: A total of 76 patients with NVG presented at our center in the above-mentioned period, out of which 43 (56%) met the eligibility criteria and were included in the study. Amongst the etiology of NVG, Proliferative Diabetic Retinopathy (PDR) was the most common cause -58 % (25 of 43), followed by Retinal Vein Occlusion. 65% of patients (28 of 43) had favorable visual outcomes (Vision stable or improved) at 1-year follow-up after receiving treatment.

Conclusions: A multi-disciplinary approach with Intravitreal Anti-VEGF and aggressive PRP, along with early surgical glaucoma intervention, can avert visual loss and improve prognosis in such cases.

Ocular Penetration Injury Caused by an Acupuncture Needle During Glaucoma Treatment by Traditional Chinese Medicine Physicians

First Author: Fu-chin HUANG

Purpose: To present two cases involving posterior ocular penetration injury caused by an acupuncture needle for the management of glaucoma.

Methods: Case report.

Results: A 61-year-old man and 51-year-old woman, diagnosed with primary open-angle glaucoma and both receiving treatment with topical eyedrops prescribed by a local clinic, sought a second opinion from a traditional Chinese medicine doctor. Acupuncture was administered for intraocular pressure control, resulting in a sudden onset of blurred vision immediately after the removal of one acupuncture needle. A slit lamp examination disclosed a massive subconjunctival hemorrhage, while the retina was obscured by total vitreous hemorrhage. Orbital computed tomography (CT) confirmed deformity of the eyeballs, raising suspicion of eyeball rupture. Both patients received emergent pars plana vitrectomy surgeries and the application of endolaser. Over 1-year follow-up, the retina remained

well-attached, and the patients' best-corrected visual acuity improved to 20/25 and better.

Conclusions: The therapeutic efficacy of periocular acupuncture for glaucoma remains a subject of debate. Ocular penetration and perforation represent severe complications of periocular acupuncture. Both patients and acupuncturists should carefully consider the risks and benefits associated with such treatment modalities.

Serum Uric Acid Level in Patients With Posner-Schlossman Syndrome

First Author: Fengping ZHAO

Purpose: To access the correlations between Posner-Schlossman syndrome (PSS) and serum uric acid (UA) level.

Methods: A total of 69 PSS participants and 185 control participants were enrolled in this retrospective case-control study. Serum UA was reviewed from the electronic medical records. Propensity Score-Matched (PSM) analysis and multivariable logistic regression were utilized to assess the correlation between serum UA level and PSS.

Results: An elevated serum UA (377.71 ± 103.87 $\mu\text{mol/L}$, 332.30 ± 77.76 $\mu\text{mol/L}$, $p < 0.001$) was found in the PSS group compared with the control group. In logistic regression analysis, serum $\text{UA} \geq 344$ $\mu\text{mol/L}$ was an independent risk factor for PSS (OR= 2.071, 95% CI: 1.171-3.660, $p < 0.05$). Adjusted for age, gender, low-density lipoprotein (LDL), high-density lipoprotein (HDL), diastolic blood pressure (DBP), systolic blood pressure (SBP), and intraocular pressure (IOP), and utilized the propensity score-matched analysis, serum $\text{UA} \geq 344$ $\mu\text{mol/L}$ was still an independent risk factor for PSS (OR= 2.213, 95% CI: 1.145- 5.126, $p < 0.05$). Dose-response analysis revealed that the incidence of PSS raised as serum UA increased.

Conclusions: The serum UA level increased in patients with PSS which could be an independent risk factor for PSS.

Short-Term Surgical Outcome of PreserFlo MicroShunt Implantation in a Tertiary Hospital in Malaysia

*First Author: Hong Kee NG
Co-Author(s): Gabriellea Cj DASS, Josephine Eh LEE,
Jie Jie LIM, Jeanette Qy WONG*

Purpose: To evaluate the success rate, needling rate, and clinical outcome at 6-month (M6) post-PreserFlo MicroShunt implantation (PreserFlo) in a tertiary hospital in Malaysia.

Methods: Retrospective review of patients undergoing PreserFlo with mitomycin-C (MMC) 0.4mg/ml from March 2023 to September 2023. Primary outcome included success rate at M6 post-implantation, with success defined as intraocular pressure (IOP) ≤ 21 mmHg or $>20\%$ reduction, IOP >5 mmHg with no reoperation nor loss of light perception vision. Secondary outcomes included needling rate as well as IOP, medications, best-corrected visual acuity (BCVA) reduction, complications, and reoperation rate.

Results: A total of 17 patients were recruited in this study. Primary outcome was achieved in 16 patients (94.1%). Needling rate was 23.5% at M6. Median IOP reduced from 20.0mmHg to 14.0mmHg ($p=0.014$), and median IOP-lowering medications reduced from 4.0 to 0 at M6 ($p<0.001$). Median BCVA changes were statistically insignificant. One patient required re-operation with open revision for failed needling, while another patient required re-suturing for leaking post-needling.

Conclusions: PreserFlo showed a good success rate at M6 with a reduction of IOP and medications. Lower needling and hypotony rate (than reported data in post-trabeculectomy) made PreserFlo a potential alternative to trabeculectomy, but further study is warranted to support its wider usage.

Study on an Autopsied Eye of a Secondary Glaucoma Patient With Hereditary Transthyretin Amyloidosis, in Which Trabeculectomy Was Unsuccessful

*First Author: Yuji TAKIHARA
Co-Author(s): Toshihiro INOUE, Masayoshi TASAKI,
Mitsuharu UEDA, Takahiro WATANABE*

Purpose: The first small interfering RNA (siRNA) therapeutic received approval from the United States Food and Drug Administration for hereditary transthyretin (ATTRv) amyloidosis to inhibit transthyretin (TTR) production by the liver. However, in the eye, TTR is mainly produced by the retinal pigment epithelium, and amyloid is formed independently from liver-derived amyloid, leading to ocular amyloidosis including glaucoma. The purpose of this study is to investigate the deposition sites and composition of amyloid in an autopsied eye of a secondary glaucoma patient with ATTRv amyloidosis, in which trabeculectomy after liver transplantation was unsuccessful.

Methods: Congo red staining and immunostaining with anti-TTR antibodies were performed on an autopsied eye of a patient with a Val30Met mutation who had undergone liver transplantation. Tissues containing amyloid were collected using laser microdissection and analyzed by mass spectrometry.

Results: Amyloid, stained with Congo red and immunostained with anti-TTR antibodies, was deposited in the bleb created by trabeculectomy. Mass spectrometry revealed that mutant TTR was predominant over wild-type TTR in the samples from the bleb. Since the patient underwent trabeculectomy after liver transplantation, the mutant TTR in the bleb was considered to have been produced by ocular tissues.

Conclusions: The amyloid deposition observed in the bleb may have contributed to the reduced intraocular pressure-lowering effect of trabeculectomy in the secondary glaucoma patient. The predominance of mutant TTR derived from ocular tissues over wild-type TTR in the bleb amyloid suggests the need to inhibit TTR derived from ocular tissues in patients with ATTRv amyloidosis.

The Effect of Low Irrigation Pressure Setting During Cataract Surgery in Glaucoma Patients: An Observational Study

First Author: Shih-chun CHAO

Co-Author(s): Yi-ren HSU

Purpose: Glaucoma and cataract are leading causes of blindness worldwide. The high IOP exposure during cataract surgery raises concerns, especially in glaucoma patients. Newer technologies enable the surgery to be done under lower IOP settings. This study aims to examine the safety and efficacy of low IOP settings during cataract surgery in glaucoma patients.

Methods: Medically treated primary open-angle, primary angle closure, or normal tension glaucoma patients diagnosed with senile cataract were included. We exclude patients with surgically treated glaucoma, a history of severe vitreoretinal disease, or other traumatic, inflammatory ocular diseases. Preoperative parameters include best-corrected visual acuity (BCVA), IOP, and optical coherence tomography (OCT) with ganglion cell complex (GCC) analysis. Patients were operated under either low (20mmHg) or high (40mmHg) IOP settings. Intraoperative parameters, including cumulative dissipated energy, active sentry actuation counts, and pain score, were recorded. Follow-up visits were arranged on 1 day, 1 week, and 1 month after the surgery.

Results: A total of 34 eyes were enrolled. Post-operative BCVA and IOP showed comparable results between the two groups ($P=0.43$; $P=0.51$). Both groups showed no significant changes in GCC thickness after the surgery (low IOP: $P=0.12$; high IOP: $P=0.2$). Intergroup GCC thickness differences were also insignificant. The pain score was significantly lower in the low IOP group ($P=0.04$).

Conclusions: For patients with glaucoma, low IOP setting during cataract surgery is a safe and effective option.

The Preliminary Report of XEN Gel Implantation for Thyroid Eye Disease-Related Secondary Glaucoma

First Author: Fu-chin HUANG

Purpose: To investigate the efficacy of XEN gel stent implantation for thyroid eye disease (TED)-related glaucoma.

Methods: The single-center, retrospective study enrolled patients who received XEN gel stent implantation for TED-related glaucoma, from Oct 2022 to Oct 2023. The primary outcome measure was the change in intraocular pressure (IOP) at month 3. Secondary outcome measures included the IOP and number of IOP-lowering medications at month 1 and month 3.

Results: The study included a total of 11 eyes with TED-related glaucoma, receiving XEN gel stent implantation. At month 1, the IOP decreased from 26.4 ± 8.5 mmHg to 15.4 ± 3.6 mmHg. All the patients were medication-free at month 1. At month 3, the IOP decreased to 15.8 ± 2.0 mmHg. The change of IOP at month 3 was 11.8 ± 11.3 mmHg. The number of IOP-lowering medications at month 3 was 0.4 ± 1.3 .

Conclusions: The XEN gel stent demonstrated good efficacy for TED-related glaucoma, in reducing both IOP and IOP-lowering medications.

Trends in Glaucoma Procedures and Surgeries in a Tertiary Hospital in Malaysia

First Author: Hong Kee NG

Co-Author(s): Jie Jie LIM, Nur Rafidah MOHAMED ALI

Purpose: The aim of this study is to analyse the trends in glaucoma procedures and surgeries in the operating theatre (OT) in a tertiary hospital in Malaysia.

Methods: Retrospective review of patients undergoing glaucoma-related surgeries and procedures in OT from 2017 to 2023.

Results: There was a total of 485 glaucoma procedures performed within the 6-year period. Transscleral cyclophotocoagulation (TSCPC) and phacoemulsification-TSCPC were the two most performed in OT ($n=175$). However, TSCPC reduced from 2017 to 2023 (61%) due to its moving to be

performed in the clinic. Glaucoma drainage devices (GDD) usage has increased steadily by threefold from 2017 to 2023, with a shift of pattern with predominantly Baerveldt Glaucoma Implant to Paul Glaucoma Implant. Combined phacoemulsification with GDD was only 11.5% of the cases, showing a preference for staged surgery. Trabeculectomy was the third most frequently performed surgery. Cases of combined phaco-trabeculectomy compared to trabeculectomy alone reduced from 2017 to 2023. The evolution of minimally invasive glaucoma surgeries (MIGS) led to its increase in 2022-2023, especially with a significant increase in usage of PreserFlo MicroShunt. The total number of surgeries performed each year showed a significant drop in the period of August 2020 to July 2022, likely due to the COVID period, and the number doubled in the subsequent year.

Conclusions: TSCPC was the most performed procedure in OT, especially in early study period. The shift of TSCPC to be performed in clinic had allowed other surgeries to be done in OT, especially with the increasing number of GDD, trabeculectomies and MIGS.

Two Cases of Exfoliation Glaucoma With High Intraocular Pressure Caused by Vitreous Incarceration in the Tube of a Baerveldt Glaucoma Implant

First Author: Sachi KOJIMA

Purpose: Report of cases of high intraocular pressure (IOP) caused by vitreous incarceration in the tube of a Baerveldt Glaucoma Implant (BGI).

Methods: The progress of the subjects was collected from medical records, and the causes were considered.

Results: Case 1: A 78-year-old man. BGI (ciliary sulcus insertion) was performed at our hospital for exfoliation glaucoma (EXG) in the left eye. Five months after the surgery, the patient visited our hospital urgently with the left eye pain. The left IOP was 50 mmHg, and vitreous incarceration in the tube was suspected. Anterior vitrectomy was performed twice for vitreous impaction in the tube. The patient has progressed well since then. Case 2: An 81-year-old female. BGI (ciliary sulcus insertion)

was performed at our hospital for EXG in the left eye. 37 months after surgery, the patient visited our hospital due to pain in the left eye. The left IOP was 56 mmHg, and tube obstruction by the vitreous was suspected. An anterior vitrectomy was performed, but the tube was re-obstructed, and the intraocular lens was dislocated, so intraocular lens extraction and vitrectomy were performed. The patient has progressed well since then.

Conclusions: The tube trouble is a specific complication of tube shunt surgery. EXG is prone to vitreous prolapse into the anterior or posterior chamber due to the fragility of the ciliary zonule, and attention should be paid to the complication of vitreous becoming trapped in the tube, causing high IOP.

Unilateral Primary Open Angle Glaucoma: An Unusual Case Report From Bangladesh

First Author: Md Iftekher IQBAL

Co-Author(s): Fariah OSMAN

Purpose: To describe the case of a unilateral patient with advanced primary open-angle glaucoma (POAG) and age-related cataract in the right eye and microphthalmic left eye.

Methods: A 73-year-old one-eyed man presented with four years of painless, progressive dimness of vision in the right eye. The vision was 6/18 in the right eye, whereas the left eye had no light perception (NLP). In the left eye, severe ptosis and microphthalmos were detected, while the right eye had age-related cataracts, an open anterior chamber angle, intraocular pressure (IOP) of 30 mmHg, and progressive glaucomatous optic neuropathy. The IOP was dropped to 22 mmHg after a topical timolol maleate (0.5%), brimonidine tartrate (0.2%), and brinzolamide (1%). As the patient had a mature cataract with advanced glaucomatous optic nerve damage, target IOP was not reached, and adherence issues with antiglaucoma medications (AGM), the decision was made to proceed with cataract extraction combined with augmented trabeculectomy with mitomycin-C (MMC).

Results: There were no intraoperative complications during cataract extraction combined with augmented trabeculectomy with mitomycin-C (MMC). Over one

year, the IOP was maintained in the 12–14 mmHg range without AGM.

Conclusions: In advanced glaucoma patients, combined phaco-trabeculectomy operations can considerably lower IOP and drug load or compliance concerns with antiglaucoma drugs. This case represented an efficient and safe surgical technique for uniocular advanced POAG, particularly in a developing country like Bangladesh.

Clinical Case of Bilateral Implantation of a Multifocal Intraocular Lenses (mIOLs) With Segmental Iridoplasty in a Patient With Ophthalmic Hypertension Due to Multiple Bilateral Iridociliary Cysts

First Author: Galina USANOVA

Co-Author(s): Olga ANTONOVA, Dzhulietta UZUNYAN

Purpose: to investigate clinical outcomes of phacoemulsification with segmental iridoplasty in a patient with ocular hypertension due to multiple bilateral iridociliary cysts.

Methods: A 44-year-old patient with bilateral narrow angles and a plateau-like iris configuration on gonioscopy presented with ophthalmic hypertension. The patient's complaints were of low vision without glasses. Initial management with peripheral iridotomy was ineffective in lowering the IOP. Ultrasound biomicroscopy (UBM) demonstrated multiple bilateral ciliary body cysts with Pseudoplateau iris (PPI) syndrome. The patient ultimately required surgical management, consisting of bilateral implantation of multifocal intraocular lenses (mIOLs) with segmental iridoplasty. Visual acuity (VA) before treatment was OD 0.1 sph +2.5 cyl – 1.75 ax 180 = 1.0 OS sph +2.55 cyl – 2.75 ax 10= 1.0 Intraocular pressure was OD = 27 mm Hg, OS = 28 mm Hg.

Results: No intraoperative or postoperative complications were observed. VA after treatment was OD 0.9 and OS 0.9, IOP was OD = 13 mm Hg, OS = 14 mm Hg. After 12 months: VA was OU 0.9. IOP was OD 14 mm Hg, OS 15 mm Hg. Ultrasound biomicroscopy (UBM) demonstrated multiple bilateral ciliary body cysts without iridocorneal contact.

Conclusions: Pseudoplateau iris (PPI) syndrome is an important cause of secondary increase of IOP,

especially in younger patients. Bilateral implantation of multifocal intraocular lenses (mIOLs) with segmental iridoplasty in a patient with ophthalmic hypertension effectively reduces intraocular pressure, improves the quality of life, and may potentially reduce the risk of developing glaucoma.

Intraocular Inflammation, Uveitis and Scleritis

Atypical Fungal Endophthalmitis Caused by *Phialemoniopsis hongkongensis*

First Author: Rinrada KREESANG

Co-Author(s): Karntida CHANWIMOL

Purpose: To report a case of exogenous endophthalmitis caused by the dematiaceous molds *Phialemoniopsis Hongkongensis*.

Methods: A case report was evaluated, and a literature review was performed.

Results: A 52-year-old male presented with a painful left eye. Initial visual acuity was hand motion in the left eye. Eye examination revealed intraocular inflammation and vitritis, consistent with endophthalmitis. A vitrectomy was performed with intravitreal antibiotics. One month later, the patient presented with more severe pain of the left eye. The eye developed retinal detachment, which led to the perception of light visual acuity. Vitreous culture from the first vitrectomy confirmed the presence of *Phialemoniopsis hongkongensis*, a species that is not commonly present in Thailand and is rarely diagnosed as a pathogenic fungus of endophthalmitis. Common infections include endocarditis, keratitis, fungemia, meningitis, and skin infections. However, only a few cases of endophthalmitis caused by *Phialemoniopsis curvata* have been reported. Here, we report the first case of fungal endophthalmitis caused by *Phialemoniopsis hongkongensis*. After vitrectomy, lensectomy, intravitreal injection of voriconazole, and oral itraconazole treatment, the intraocular inflammation was alleviated, but visual acuity remained at the same light perception as a consequence of retinal detachment.

Conclusions: To our knowledge, this is the first reported case of fungal endophthalmitis caused by *Phialemoniopsis Hongkongensis*. In this rare case, it can pose significant diagnostic and management challenges. Early diagnosis and vitrectomy combined with antifungal medication are crucial for the treatment of fungal endophthalmitis.

Circadian Rhythm Disruption Exacerbates Autoimmune Uveitis: The Essential Role of PER1 in Treg Cell Metabolic Support for Stability and Function

First Author: Wenjie ZHU
Co-Author(s): Guanyu CHEN, Dan LIANG, Minzheng WANG, Zhiqiang XIAO

Purpose: The Earth's daily rotation, creating 24-hour environmental cycles, has shaped circadian rhythms across living organisms. Over the past decade, circadian rhythms have emerged as significant factors in the development and progression of autoimmune diseases. Our previous study showed that melatonin has therapeutic effects on experimental autoimmune uveitis. However, whether and how circadian rhythms are involved remains uncovered.

Methods: Our data showed circadian rhythm disruption exacerbates EAU through impaired Treg stability and function. Mechanically, we identified one key core-clock gene, *Per1*, decreased in the circadian rhythm disruption, which is essential for Treg cell metabolism and immunoregulating function. Furthermore, mice and human data indicated *PER1* modulates Treg stability through *COX7C*.

Results: We demonstrate that circadian rhythm disruption aggravates autoimmune uveitis due to Treg cell stability and function impairment. Mechanically, we identified one key core-clock gene, *Per1*, decreased in the circadian rhythm disruption, which is essential for Treg cell metabolism and immunoregulating function.

Conclusions: In summary, our study introduces a novel hypothesis suggesting that circadian rhythms are responsible for maintaining the expression of the core-clock gene *Per1*, thereby ensuring cellular stability, immunosuppressive function, and oxidative phosphorylation in Treg cells. Consequently, our findings strengthen the link between Treg cell

function, circadian rhythms, and cellular metabolism. We propose that interventions aimed at circadian and metabolic pathways hold promise as strategies to modulate Treg cell functionality in autoimmune diseases.

Efficacy of Intravitreal Methotrexate Chemotherapy in the Treatment of Primary Intraocular Lymphoma

First Author: Jing FENG
Co-Author(s): Yong TAO, Youyu XUE

Purpose: To observe the efficacy and safety of intravitreal methotrexate (MTX) in the treatment of primary intraocular lymphoma (PIOL).

Methods: This is a retrospective study. Three patients with pathologically diagnostic vitrectomy and 29 patients with intraocular lymphoma following diagnosis of central nervous system lymphoma were involved. All patients were diagnosed with diffuse large B cell lymphoma. All patients were examined by visual acuity, intraocular pressure, anterior segment examination with a slit lamp, fundus color photography, and optical coherence tomography (OCT). The visual acuity was examined with Snellen chart visual acuity. All eyes were treated with a single intravitreal injection of MTX (400 µg/0.1ml). The patients were followed up from 1 week to 18 months.

Results: The mean of visual acuity was LogMAR 0.42±0.28 in 16 eyes with visual acuity ≥0.1 before the treatment, which was improved to LogMAR 0.25±0.17 at the end of the treatment (P<0.05). The visual acuity at the end of the treatment in 14 eyes with initial visual acuity <0.1 ranged from no light perception to 0.6. 19 eyes (63%) with vitreous opacity were improved after intravitreal chemotherapy.

Conclusions: Intravitreal methotrexate is safe and effective in the treatment of primary intraocular lymphoma.

Necrotizing Nodular Anterior Scleritis Due to *Pseudomonas aeruginosa*: Diagnostic and Therapeutic Challenges

First Author: Law NGEE LING
Co-Author(s): Yong MENG HSIEN

Purpose: To present a case of necrotizing nodular anterior scleritis due to a *Pseudomonas aeruginosa* infection, emphasizing the diagnostic and therapeutic challenges.

Methods: Case report

Results: A 66-year-old male with no known medical illness presented with acute onset right eye symptoms, including redness, vision blurring, swelling, pain upon movement, and tearing. Initial examination showed visual acuity of right eye 6/24 and left eye 6/12, restricted right eye extraocular muscle (EOM) function, mild proptosis, conjunctival injection with chemosis, and subconjunctiva lesion at inferonasal. White cell count was elevated at $12.9 \times 10^9/L$ and erythrocyte sedimentation rate (ESR) at 30mm/hr. Computed tomography (CT) of the brain and orbit revealed right eye proptosis, thickened conjunctiva, and hypodensity lesion. The patient was treated for orbital cellulitis with intravitreal augmentin and gutt moxifloxacin, but symptoms worsened, prompting further diagnostic exploration, including an excisional biopsy. Examination under anesthesia (EUA) revealed a subconjunctival mass with scleral thinning. Histopathology, acid-fast bacilli (AFB) testing, and cultures were performed. AFB was negative, but cultures identified *Pseudomonas aeruginosa* sensitive to ceftazidime and amikacin. The diagnosis was revised to necrotizing nodular anterior scleritis. Antibiotic therapy was adjusted to include topical ceftazidime 5% and gentamicin 0.9%.

Conclusions: This case illustrates the importance of considering diagnostic exploration, in presumed orbital cellulitis cases, especially when initial treatments fail. Diagnosis via biopsy and culture is crucial for guiding effective treatment. Early and appropriate antibiotic modification can significantly improve clinical outcomes in necrotizing nodular anterior scleritis.

Ophthalmia Nodosa Type 4: Clinical Course and Management With Topical Steroids in a Filipino Male

First Author: Lorenz Jacob MANGAHAS
Co-Author(s): Richmond SIAZON

Purpose: To describe the clinical course of ophthalmia nodosa type 4 in a 25-year-old male, managed conservatively with topical anti-inflammatory drugs.

Methods: Case Report.

Results: Ophthalmic nodosa is an inflammatory eye condition caused by insect hair or plant material

entering the eye structures through direct contact or via wind-borne setae, with manifestations ranging from mild surface reactions to serious issues, such as iritis and vitritis, requiring vitrectomy. Locally, Claudio et al. published a case series on ophthalmia nodosa managed by removal and topical anti-inflammatory drugs, but none described a type 4 ophthalmia nodosa. This is a case of a 25-year-old Filipino male presenting with anterior chamber setae causing iritis, managed conservatively with topical steroids, and followed up closely for several months. He presented with redness in the right eye after being hit by a caterpillar directly in the eye while riding a motorcycle. Examination revealed numerous setae on the bulbar conjunctiva, corneal stroma, and anterior chamber, causing iritis. Anterior segment optical coherence tomography (AS-OCT) was used for the localization and determination of the depth of setae. Serial manual setae removal along the ocular surface and topical corticosteroid treatment were performed. After several months, vision improved to 20/20, and eye redness resolved.

Conclusions: Medical management with long-term follow-up may be a treatment option for setae located in the anterior chamber. Early removal of accessible setae must be performed as a precautionary measure to prevent intraocular migration.

Orbital Cellulitis With Panophthalmitis During Pregnancy: A Rare Case in Bangladesh

First Author: Md Iftekher IQBAL
Co-Author(s): Fariah OSMAN

Purpose: To report an unusual case of orbital cellulitis who later developed panophthalmitis during her pregnancy.

Methods: This is a case report of a 22-year-old woman in her third trimester of pregnancy who encountered orbital cellulitis with panophthalmitis caused by methicillin-positive *Staphylococcus aureus* (MSSA).

Results: Despite rigorous intravenous and topical antibiotics, she underwent evisceration of the affected eye. However, the pregnancy progressed without incident, with the delivery of a healthy baby at full term.

Conclusions: Bacterial infection is uncommon during pregnancy but may cause endogenous panophthalmitis and orbital cellulitis, especially in immunosuppression and anemia, with a poor visual outcome.

Peripheral Retinitis in a Patient Living With Human Immunodeficiency Virus With Multiple Co-Infections

First Author: Gerald Jan LUMBA
Co-Author(s): Bryan Vincent MESINA

Purpose: Necrotizing retinitis can be caused by diseases like acute retinal necrosis (ARN), ocular syphilis, or toxoplasmic retinochoroiditis. ARN typically manifests as peripheral necrotizing retinitis, retinal vasculitis, and vitritis in both immunocompetent and immunocompromised individuals. Based on the diagnostic criteria of ARN, a positive serology for syphilis provides its exclusion, however, determining the actual etiology in resource-limited settings remains challenging.

Methods: A detailed retrospective review was conducted on a Filipino patient with clinical manifestations of ARN, positive results for human immunodeficiency virus (HIV) and fluorescent treponemal antibody absorption (FTA-ABS), and elevated *Toxoplasma* IgG.

Results: A 39-year-old male presented with a three-week history of blurred vision in the left eye, marked anterior chamber reaction, severe vitritis, and dense fluffy peripheral retinal infiltrate. ARN was initially suspected. Laboratory tests showed positive HIV screening, positive FTA-ABS, and a *Toxoplasma* IgG of 300 IU/mL. Treatments for ARN, ocular syphilis, and ocular toxoplasmosis were administered. The left eye's vision improved to 20/46 as the vitritis cleared, and the fellow eye was not affected.

Conclusions: This case highlights the importance of prompt decision-making in managing a patient with multiple co-infections in an HIV patient to prevent severe ocular and systemic complications.

Peripheral Ulcerative Keratitis in Undiagnosed Rheumatoid Arthritis: A Case Report

First Author: Fitri OTHMAN
Co-Author(s): Noor Affizan RAHMAN

Purpose: To present a case of peripheral ulcerative keratitis (PUK) in a 68-year-old woman with a background of sarcoidosis and hypertension, highlighting the diagnostic challenge and the need for considering rheumatoid arthritis (RA) in such cases.

Methods: The patient, with a history of left lacrimal sarcoidosis, presented with bilateral eye redness, epiphora, photophobia, and intermittent ocular pain worsening over one week. Examination revealed visual acuity of 6/36 in the right eye and 6/60 in the left eye, with matted lids, circumcorneal congestion, and corneal melt in the right eye, and peripheral corneal thinning in the left eye. She was on methotrexate treatment for pulmonary sarcoidosis but was stopped a year before as she was stable.

Results: Her eye condition deteriorated, leading to the initiation of intravenous methylprednisolone, topical corticosteroids, and topical antibiotics. Rheumatoid factor testing was positive, prompting the re-initiation of oral methotrexate with significant clinical improvement.

Conclusions: This case highlights the importance of retesting and not relying on the original or primary diagnosis, especially if the clinical does not match the original diagnosis. Peripheral ulcerative keratitis, although rare in sarcoidosis, can be indicative of underlying rheumatoid arthritis. Early diagnosis and treatment are crucial to prevent severe ocular damage.

Risk for Endophthalmitis in Patients Receiving Traditional IOLs Compared to Premium Multifocal IOLs

First Author: Syril DORAIRAJ
Co-Author(s): Yazan ABUBAKER, Abhimanyu AHUJA, P.Connor LENTZ, Pranav VASU, Isabella WAGNER

Purpose: To evaluate the safety profile of premium intraocular lens (IOL) implantation compared to that of traditional monofocal IOLs through assessment of post-operative endophthalmitis.

Methods: A retrospective cohort analysis of the TriNetX US Collaborative Network was performed by querying all patients with premium multifocal IOLs (CPT V2788 and V2787) as well as traditional monofocal IOLs (CPT 66982). Patients in each cohort were 1:1 propensity score matched for age, sex, race, ethnicity, hypertension, glaucoma, age-related macular degeneration, retinal detachment, uveitis, and immunosuppressive states – HIV status and post-transplant. The outcome was the incidence of endophthalmitis within 1 month of the IOL procedure. Odds ratios were calculated between cohorts and a p-value of less than 0.05 was considered significant.

Results: After propensity matching, there were 28,430 patients in the multifocal IOL and monofocal cohorts, each. It was noted that there was a significantly greater incidence of endophthalmitis in patients undergoing traditional IOL procedures (58 of 28,430) compared to those receiving premium lenses (15 of 28,430) (OR: 0.258 CI: 0.146 – 0.456, p<0.0001) within 1-month of implantation.

Conclusions: Premium multifocal IOLs have demonstrated exceptional clinical utility in presbyopia and astigmatism correction compared to traditional monofocal IOLs. These data indicate that premium lenses may exhibit better efficacy and also demonstrate a more favorable safety profile. These data could influence decision-making processes in cataract surgery, potentially favoring multifocal IOLs provided their reduced risk for postoperative complications. However, it is crucial to consider these findings in the greater context of overall benefits and trade-offs for either lens including patient satisfaction and visual outcomes.

Scleritis and Peripheral Ulcerative Keratitis as Presenting Signs of Granulomatosis With Polyangiitis in a Tertiary Hospital in Manila

First Author: Tara Pamela MENDOZA

Purpose: Granulomatosis with polyangiitis (GPA) frequently causes ocular inflammation and is the prototype of small-vessel vasculitis with ocular manifestations. Currently, there is limited data on GPA in Asian patients.

Methods: This is a report of a patient with GPA presenting with scleritis and peripheral ulcerative keratitis (PUK), with a review of diagnosis and management.

Results: A 42-year-old Filipino female with a 1-year history of sudden-onset left eye redness, photophobia, discharge, tearing, and blurred vision. She noted concomitant nasal congestion, discharge, and dyspnea. On examination, she had poor vision in the left eye, with ciliary injection, diffuse scleral thinning, and a corneal melt. Her right eye only had scleral thinning. A systemic physical examination revealed a saddle-nose deformity. Laboratory testing revealed a positive c-ANCA, and a pulmonary granuloma on chest x-ray. Treatment initiated included topical steroid and antibiotic drops, systemic corticosteroids and immunomodulators. Her condition has since been stable.

Conclusions: A high index of suspicion for autoimmune vasculitides is warranted in patients presenting with necrotizing scleritis and PUK. The high incidence of ocular manifestations in GPA necessitates prompt recognition and timely referrals to subspecialists to guide work-up and initiation of treatment to reduce the risk of visual loss, morbidity, and mortality.

The Green Colonizer- an Unexpected Guest

First Author: Harshal SAHARE

Purpose: Prompt and early treatment in patients with acute post-op endophthalmitis helps in good anatomical and visual recovery.

Methods: The eye with endophthalmitis was planned for vitreous tap + Intravitreal Vancomycin (1mg/0.1ml) + Piptaz (225 micrograms/0.1ml). 2nd dose Vitreous tap sent for gram stain; KOH mount; culture and sensitivity and PCR Started locally: E/d Prednisolone acetate 6 times/day x 1 week and tapered E/d Homide 2 times/day x 1 month E/d Moxifloxacin 6 times/day x 1 month Tablet Ciprofloxacin 500mg tablet 2 times a day x 5 days.

Results: 1. Intravitreal antibiotics have been the cornerstone treatment for over 25 years in managing post-op endophthalmitis. 2. A significant preference shift from EVS guidelines is the use of primary

vitrectomy along with intravitreal steroids, regardless of the presenting visual acuity. 3. Vitrectomy should not be delayed in cases of endophthalmitis; without any wait for culture reports. 4. Pseudomonas endophthalmitis can also have a promising final outcome, so we should not lose hope.

Conclusions: Endophthalmitis is not the end; there is always hope. As someone has rightly said, "Hope is the good thing, maybe the best of thing, and no good things ever die."

Timely Management and Treatment of Active Choroiditis and Restoring Visual Outcomes

First Author: Shreya BARANWAL
Co-Author(s): Ishita AGRAWAL, Raffat ANJUM, Sandhya MAKHIJA

Purpose: To treat active choroiditis and restore visual outcomes.

Methods: A 31-year-old male patient presented with a chief complaint of right eye diminution of vision for 5 days, which was associated with headache and ocular pain. On examination, unaided visual acuity in his right eye was finger counting at a 1-meter distance, which was not improved with the pinhole. And in the left eye, the vision was 6/6. On fundus examination, the Right eye had multiple hypopigmented lesions with ill-defined margins in the peripapillary and macular region, deeper into the retinal vessels. The left eye had a hypopigmented lesion with well-defined hyperpigmented margins superiorly between 11 to 1 o'clock. OCT macula showed edema and disorganization of retinal layers with increased choroidal thickening at the macula, and OCT angiography showed multiple flow deficits throughout the macula and posterior pole that corresponded with the areas of disease activity in the right eye. On investigation, the Mantoux test and TB gold quantiferon were positive. The patient was treated with oral steroids and ATT.

Results: In the right eye, the unaided visual acuity improved to 6/18p, along with an improvement in OCT/OCTA findings after 3 weeks.

Conclusions: Early diagnosis and intervention are crucial for curing disease and achieving optimal visual outcomes.

Unilateral Choroidal Granuloma: A Masquerade

First Author: Bhuvan CHANANA

Purpose: To report a rare case of unilateral choroidal granuloma.

Methods: A 29-year-old African origin female presented to us with complaints of diminution of vision in the right eye for 3 weeks. Her best corrected visual acuity (BCVA) was finger counting in the right eye and 20/20 in the left eye. Her intraocular pressures were 18mmHg in both eyes. Anterior segment examination was normal in both eyes. Fundus examination showed vitreous inflammation with inferior exudative retinal detachment in the right eye. A yellowish-orange choroidal mass approximately 3-Disc Area in size, with surrounding exudative detachment, was observed below the infratemporal arcade in the right eye.

Results: Fundus fluorescein angiography and Indocyanine green angiography showed diffuse early hyperfluorescence which gradually increased in intensity suggesting possibility of a choroidal granuloma. Ultrasonography of the mass revealed a homogenous hyperechoic mass with absence of underlying shadowing. Based on these clinical features a differential diagnosis of tubercular granuloma or sarcoidosis was made. Blood investigations were normal. However, chest x-ray revealed a homogenous opacity with pleural effusion and underlying collapse of the middle and lower lobes of the right lung. Further relevant investigations like HRCT chest, MRI brain and Bronchial lavage were performed. The final diagnosis turned out to be moderately differentiated stage IV pulmonary adenocarcinoma with metastasis to brain, right eye and multiple organs.

Conclusions: Choroidal metastasis can be a rare presenting feature of lung adenocarcinoma. Atypical unilateral presentation in young females with secondaries from the lung has not been reported till now in world literature, which makes this case report unique.

Uveitis and Effects of Triamcinolone Injections in Young and Adult Patients

First Author: Lilia AMARAL

Co-Author(s): Irene CARVALHO

Purpose: To study common causes of uveitis and evaluate treatment, particularly triamcinolone injections.

Methods: Patients with uveitis were examined and followed up over a period of six months. All underwent ocular examination and laboratory tests. The injections of triamcinolone were given in the eye clinic after the results of the investigations were received within three days.

Results: A total of 30 patients, including 18 (60%) males and 12 (40%) females. More affected in patients between 15-60 years. Left eyes were more affected than right eyes. There were 4 bilateral cases. On the first day of being seen, 7 patients with FC, 4 patients with hand movements, 2 cases with light perception, and the rest were 6/24-6/7.5. Anterior uveitis 17 (56%) cases, intermediate uveitis 6 (20%) cases, pan-uveitis 6 (20%) cases and posterior uveitis 1 (3%) case. The underlying cause of uveitis was evaluated as non-infectious, mainly by trauma and idiopathic. Infectious uveitis was more affected by viruses and less likely affected by bacteria. Our country is endemic to tuberculosis. Almost all patients improved with steroids, antiviral, cycloplegics agents, and other treatments. Patients who developed retina detachment were sent abroad for retina surgery and cataract surgery after six months at the eye clinic. Triamcinolone was given in different local areas.

Conclusions: Uveitis was common among male patients. Most patients came with visual acuity 6/24-6/7.5. Anterior uveitis was more frequent in this study. Most patients responded well to the treatment especially to triamcinolone injection. One retinal detachment case was sent abroad and responded successfully to the treatment through the vitreo-retinal subspecialty. One cataract case was done with good results.

When the Eye Fights Back: Tackling Exogenous Panophthalmitis With Antibiotics in Aplastic Anemia Patient

First Author: Ferdy ISKANDAR

Co-Author(s): Yulia AZIZA, Rianti Wulandari PRATIWI

Purpose: To describe a rare case of panophthalmitis in an aplastic anemia patient who responds well to antibiotics, without surgical intervention.

Methods: An 81-year-old woman came with a bulging right eye (RE) accompanied by redness, pain, and progressive loss of vision for 3 days. There is no history of trauma or Valsalva maneuver. She was an aplastic anemia patient. Her RE appeared proptotic and chemotic, with visual acuity (VA) of no light perception (NLP) and intraocular pressure (IOP) of 7 mmHg. The anterior and posterior segments were hard to evaluate. Her left eye (LE) was unremarkable with a negative consensual reflex. Ultrasonography (USG) revealed vitreous haziness of RE, with the orbital computed tomography (CT) scan result suggesting panophthalmitis. Her trombocyte level was 1000u/L. Oral ampicillin sulbactam and levofloxacin eye drops were prescribed. Eight weeks later, her proptosis improved, and her RE became phthisical with no other complaints.

Results: Retinal hemorrhage and central retinal vein occlusion (CRVO) were the two most common ocular findings in aplastic anemia patients. Scleral necrosis can also be found, causing the scleral coats' integrity loss. Surgeons tend to perform evisceration, although some patients wish to preserve the eye. Our patient had panophthalmitis without scleral abscess and improved significantly with oral ampicillin sulbactam and levofloxacin eye drops. While studies on antibiotics alone for panophthalmitis are limited, antibiotic/dexamethasone intravitreal injections have shown good results without evisceration.

Conclusions: Antibiotic administrations for exogenous panophthalmitis are crucial and may prevent evisceration in aplastic anemia patients.

Myopia

Effect of High-Dose Atropine on Moderate to Severe Myopia: A Retrospective Follow-Up Analysis

First Author: Pei-tzu KUAN
Co-Author(s): Yu-hsu CHEN

Purpose: This study aims to evaluate the effectiveness of 0.3% atropine in slowing axial elongation and controlling myopia progression.

Methods: A retrospective study was conducted at Show Chwan Memorial Hospital. Medical records from 2021 to 2023 were reviewed, enrolling patients with myopia between -3.00 diopters (D) to -6.00 D at their first visit. Patients were divided into two groups based on the treatment received: the study group (0.3% atropine) and the control group (0.125% atropine), with matching for age, gender, and number. Axial length was measured three times, with the average value considered the actual value. The degree of axial length elongation was calculated as the difference between the axial length at the first and last visits. Statistical analysis using SPSS was applied to determine the differences between the two groups.

Results: The study included 150 patients in the 0.3% atropine group and 150 patients in the 0.125% atropine control group. Baseline demographic data were similar between the two groups with no significant differences. The baseline mean spherical equivalent was -4.61 ± 1.92 D in the study group and -4.89 ± 2.03 D in the control group ($p=0.41$). After 18 months, the mean spherical equivalent was -4.73 ± 2.16 D in the study group, compared to -6.77 ± 3.29 D in the control group, showing better control of myopia progression in the study group.

Conclusions: Topical atropine reduces myopia progression and axial elongation in children in a dose-dependent manner. However, higher doses can lead to side effects such as pupil dilation, loss of accommodation, and impaired near vision.

Population Percentile Curves of Axial Length in Taiwan for Myopia Surveillance

First Author: Shih Wen WANG
Co-Author(s): Yao-lin LIU, Tzu-hsun TSAI

Purpose: The prevention and control of myopia are crucial public health issues. Therefore, this study aimed to construct reference percentile curves of age-specific axial length based on population-based sampling data of Taiwanese children to assess the role of percentile curves in the progression of myopia.

Methods: Data from 2997 representative samples of schoolchildren aged 6–18 years from the recent myopia survey in Taiwan from 2016 to 2017 were analysed for axial length distribution. Axial length was measured using A-scan ultrasonography (Accutome®), specifically for children aged 6 years or older. Quantile regression with non-crossing and monotonic smooth curve estimations was used to estimate age-specific quantiles of axial length in males and females, respectively.

Results: Percentile curves of children's age-specific axial length were modelled and served as a population-based reference in Taiwan. The estimated medians or 50th percentiles of axial length at 6, 12, and 18 years of age were 22.57 mm, 24.34 mm, and 25.25 mm in males and 22.32 mm, 23.72 mm, and 24.7 mm in females, respectively. Our study demonstrated that all the centiles of the axial length of Taiwanese children were longer than those in European children, shorter than those in children in Wuhan, and similar but slightly shorter than those in children from Shanghai.

Conclusions: We established population-based reference percentile curves of age-specific axial length in Taiwanese schoolchildren, which can serve as useful indicators for the assessment of health status and vision surveillance in populations.

Subjective Vision in a Pediatric Population Wearing a Soft Contact Lens With Non-Coaxial Focus

First Author: Monica JONG

Co-Author(s): Noel BRENNAN, Alex NIXON, Jie XU

Purpose: All soft contact lenses (SCL) for myopia control impact subjective vision to some extent. A SCL (EE) with non-coaxial optics was designed to enhance myopia control efficacy while providing good vision. The Pediatric Myopia Control Contact Lens Questionnaire (PMCQ) was used to assess subjective vision with EE in a pediatric population.

Methods: In a multi-center, randomized, controlled, double-masked study, eligible subjects from 7-12 years wore the EE lens or a single vision SCLs (SV) and were monitored at 1-week, 1-month, and 3-months. The best two (T2B) and worst two (B2B) response options for a five-point response scale were used to categorize positive and negative responses. Post-hoc comparisons were conducted for the intention-to-treat (ITT) population to evaluate the differences between lens groups.

Results: The ITT population included 48 and 51 subjects in the EE and SV lens groups. At 1 week and 1 month, the T2B proportion of SV trended higher than EE, with a significant difference in 2 items ($p < 0.05$) at 1 month. These items included "distance vision" (16.8% T2B percentage difference) and "start of day vision" (16.2% T2B percentage difference). At 3-months, the T2B percentage was similar for each lens group and no significant difference was observed for any items. No significant ocular adverse events were reported in the study.

Conclusions: The EE lens showed a small but measurable difference in subjective vision compared to SV up to 1-month duration, but no significant difference versus SV at 3-months. These results suggest that the vision performance of EE will be acceptable for most pediatric patients.

Synergistic Effects of Defocus-Incorporated Multiple Segments and Low-Dose Atropine in Slowing the Progression of Myopia

First Author: Yachi HUANG

Purpose: To investigate the potential benefit of combining defocus-incorporated multiple segments (DIMS) and low-dose atropine on the efficacy of myopia control.

Methods: This retrospective study included patients who were followed for 2 years. Cycloplegic refraction, axial length, and best-corrected visual acuity were measured at baseline, 6 months, 12 months, and 24 months. The progression of myopia was compared combination of DIMS with low-dose atropine and DIMS alone. The treatment effects were analyzed among two groups in axial length and myopia progression.

Results: We included 76 children with myopia who were treated with DIMS and 0.01% atropine combination (DIMS+ATP group) and DIMS monotherapy (DIMS group). After a 2-year follow-up, the DIMS+ATP group showed a smaller change in axial length and myopia progression than the DIMS group ($P < 0.05$). **Conclusions:** The combination treatment with DIMS and 0.01% atropine is a better choice for controlling myopia.

Neuro-Ophthalmology

Anti-Aquaporin 4 Antibody Positive Optic Neuritis With Systemic Corticosteroid Pulse Therapy and a Series of Visual Field Test Results - a Case Report

First Author: Pei-jane BAIR

Co-Author(s): Tsai-wei LIN

Purpose: This case aimed to better understand the sequential visual field improvements with a daily-based test of an AQP-4 positive optic neuritis patient.

Methods: To report a case of AQP-4 positive optic neuritis by following a series of visual field and disc OCT results.

Results: A 21-year-old female patient presented with left eye swelling and eye-rolling pain and with a sudden decrease in vision for a week.

She had no neurological dysfunction or previous ophthalmic history. The BCVA was 20/20 in the right eye, and counting fingers/20cm in the left. IOP measurement was normal. Positive RAPD and failure of the Ishihara test were detected. Visual field test revealed complete visual field loss. A mild hyperemic non-swelling disc was reported. Disc OCT revealed increased RNFL thickness at superior-nasal and inferior-temporal regions. An enhanced T1 fat-suppression brain MRI signal of the left intra-orbital optic nerve was detected. The Anti-AQP4 antibody test was positive. The patient received IV pulse therapy for 3 days and then tapered to oral form for 11 days under the diagnosis of left eye optic neuritis. A series of visual field and disc OCT tests was documented during daily follow-up. A near-total restoration of visual acuity and visual field was reported. Maintenance therapy was not applied in the consideration of age, gender, and adverse effects.

Conclusions: We presented a good recovery of vision acuity and visual field AQP4 antibody positive optic neuritis patient without applying a maintenance dose of steroids. However, closely monitoring the signs of recurrence was desirable.

Cerebral Venous Sinus Thrombosis Presenting With Papilloedema

First Author: Li Faung TAN

Co-Author(s): Suyi SLOW

Purpose: This case highlights a relatively rare case of cerebral venous sinus thrombosis manifesting as papilloedema in an otherwise healthy man.

Methods: Case report.

Results: A 47-year-old gentleman with no relevant medical history presented with bilateral blurring of vision and diplopia for the past 8 months. He also complained of occasional chronic mild headaches with tinnitus. On clinical examination, visual acuity was 6/12 in the right eye and 6/9 in the left eye. Intraocular pressure was normal. There was no afferent pupillary defect, colour desaturation, or reduced contrast sensitivity. Eye movements revealed mild bilateral abduction deficit and fundoscopic examination demonstrated bilateral optic disc swelling corresponded to Frisen Grade 3. Anterior segment examination was unremarkable.

There was no evidence of other neurological deficits. Bjerrum test showed a bilateral enlarged blind spot. Non-contrast computed tomography (CT) of the head initially showed no abnormalities. Contrast-enhanced CT noted a filling defect within the right sigmoid sinus extending to the right jugular foramen and right transverse sinus. Magnetic resonance venography (MRV) revealed loss of flow in the right transverse till the right sigmoid sinus due to thrombosis. A blood test indicated no thrombotic predisposition. The patient was diagnosed with papilloedema secondary to central venous sinus thrombosis (CVST), and anti-coagulant therapy and oral acetazolamide were commenced.

Conclusions: CVST is relatively uncommon and should be suspected in patients presenting with papilloedema. Non-contrast CT may have limitations in diagnosing CVST. The definitive treatment for CVST is focused on anti-coagulation and managing complications such as increased intracranial pressure, as seen in our patient.

Eye'm Feeling Nosy

First Author: Jose Martin Iv VELASCO

Purpose: To present a case of an orbital apex mass in which the etiology was found to be a nasopharyngeal carcinoma (NPCA) wherein the incidence is 2.6% (Sandhya et. al, 2016).

Methods: A chart and histopathologic slide review was conducted.

Results: This is a case of a 40-year-old male presenting with unilateral proptosis and unilateral blurring of vision with a best corrected visual acuity (BCVA) of 20/150 with poor color vision at 1/15 by Ishihara color plate testing. On MRI, they noted a lobulated homogeneously enhancing mass along the orbital apex that measures 3.1 x 1.9 x 4.4 cm from the cranial meninges. The patient then underwent a re-biopsy with the frozen section as well as a review of the initial slides. On immunohistochemistry, a positive cytokeratin, P40, and negative synaptophysin, CD45, S-100, and CD68 were found. The case was diagnosed as a poorly differentiated malignancy favoring a non-keratinizing carcinoma. The most common primary malignancy affecting the orbit is orbital lymphoma at 20.8%, while 20%

of malignancies of the orbit are due to distant metastases (Lim and Tham, 2023). NPCA presenting as orbital apex syndrome is rare and classified as T4a disease with an incidence of 2.6% and denotes recurrence in 44% of cases (Sandhya et al., 2015, and (Lim and Tham, 2023). Furthermore, primary orbital apex SCC is rare, with less than 5 cases reported (Lim and Tham, 2023).

Conclusions: In conclusion, ophthalmologic symptoms may be the primary presentation and a high index of suspicion along with proper diagnostics is key for timely diagnosis and management.

Homonymous Hemianopia Caused by Occipital Infarction Following Ischaemic Stroke in a Middle-Aged Man: A Case Report

First Author: Channarith KITH
Co-Author(s): Kossama CHUKMOL, Piseth KONG

Purpose: To report a case involving a middle-aged man who presented with acute visual field loss while maintaining visual acuity.

Methods: This is a case report.

Results: A 54-year-old man visited our department after suddenly losing vision in his right visual field. He had no trauma but high blood pressure for 15 years, which had not been properly treated. He did not experience occipital headaches. Upon examination, the anterior segment has no significant abnormalities except mild lens opacity in his eye. His dilated fundus exam was normal. However, a visual field analyzer showed that he had complete right homonymous hemianopia which may have been caused by lesions or compressions in the retro-chiasma. Further tests revealed very high levels of serum triglycerides and cholesterol. A computed tomography scan indicated hypodense lesions in the left occipital lobe that might be related to acute ischemic lesions. A discussion involving a cardiologist led to a full stroke evaluation, which revealed atherosclerotic plaques (20–25%) in the right internal carotid artery. The patient was prescribed aspirin, nifedipine, bisoprolol, and rosuvastatin, and was closely monitored by the cardiology department.

Conclusions: It is crucial to identify the most concerning chief complaints of patients, particularly

in cases where there is limited past medical history. We should be vigilant when a patient presents with normal visual acuity but experiences loss of visual fields, as this could indicate glaucomatous damage or neurological disorders. Lastly, understanding the options for managing field loss and the significance of promptly identifying the underlying causes of homonymous hemianopia is essential.

Orbital Apex Syndrome With Dermatophytosis

First Author: Anushia ELANGKOVAN
Co-Author(s): Sangita MANIAM, Nurul 'ain MASNON, Nor Diyana ZAINAL NOOR

Purpose: To present a rare case of orbital apex syndrome attributed to fungal infection.

Methods: A case report of a young immunocompetent gentleman with orbital apex syndrome.

Results: A 23-year-old Malay gentleman presented with subacute onset of left eye blurring of vision, diplopia, and restricted eye movements associated with left eye dull pain and headache. On examination, his left visual acuity was counting fingers, with a positive left afferent pupillary defect and decreased optic nerve function test. He also exhibited left ptosis and complete ophthalmoplegia with a dilated pupil. His systemic examination revealed multiple hypopigmented, ring-shaped lesions on his scalp, face, trunk, and extremities. Magnetic resonance imaging (MRI) of the brain and orbit showed fullness of the left orbital apex and superior orbital fissure with enhancement of the left optic nerve sheath and anterior cavernous sinus. Fungal cultures of skin scrapings identified *Trichophyton mentagrophytes*. The patient was diagnosed with left orbital apex syndrome secondary to a fungal infection based on the presence of fungal skin lesions. He was administered intravenous fluconazole for a two-week period, followed by a three-month course of oral fluconazole, which resulted in a near-complete recovery of vision and extraocular movement. A serial MRI of the brain and orbit was performed instead, which demonstrated improvement and resolution of the left orbital and cavernous sinus lesion.

Conclusions: A prompt diagnosis and appropriate treatment are crucial to prevent irreversible damage

and improve visual outcomes in orbital apex syndrome. Fungal infection is an uncommon but important etiology of orbital apex syndrome that should be considered.

Pontine Tuberculoma: A Palsy Points to Pons

First Author: Nampi TADU

Co-Author(s): Gopal Krushna DAS, Isha SHARMA

Purpose: To describe a case of pontine lesion presenting as unilateral lateral rectus palsy.

Methods: A 21-year-old male presented with acute onset right esotropia and binocular horizontal diplopia without neurological or systemic symptoms. On examination, the right eye showed severe abduction deficit, with the rest of the extraocular movements within normal range. The rest of his ocular examination was unremarkable. Contrast MRI identified an enhancing lesion in the pons with surrounding edema, with differential diagnoses as tuberculoma and glioma. Diffusion-weighted imaging (DWI) and magnetic resonance (MR) spectroscopy could not achieve a conclusive diagnosis. Chest X-ray exposed unilateral pleural effusion with ADA levels but a negative nucleic acid amplification test (NAAT) for tuberculosis. CSF analysis showed no abnormalities. His Mantoux and IGRA tests were nonreactive. Assuming the endemicity of tuberculosis in the region and the co-existence of pleural effusion, a presumptive diagnosis of disseminated tuberculosis was made, and the patient was started on anti-tubercular therapy (ATT) under the cover of systemic steroids. An intracranial biopsy was deferred after signs of improvement were noted.

Results: After 12 months of ATT, with simultaneous tapering of steroids, the patient has mild esotropia with an improved range of abduction and no diplopia in the primary gaze. Pleural effusion was resolved.

Conclusions: Pontine tuberculoma can present as isolated cranial nerve palsy. A differential diagnosis of glioma and its need for biopsy can prove to be a difficult clinical decision. Early initiation of ATT, in view of the endemicity of tuberculosis, can lead to significant improvement.

Treatment Outcomes of Nutritional Optic Neuropathy

First Author: Shouhei KAJIWARA

Co-Author(s): Fumi GOMI, Junichiro HIRATAKE, Akiko MASUDA, Yoshihito MOCHIZUKI

Purpose: While case reports of nutritional optic neuropathy are occasionally found, studies examining multiple cases from the same institution are rare. This report discusses the treatment outcomes of nutritional optic neuropathy (NON) at our hospital.

Methods: We retrospectively reviewed four cases diagnosed with NON and treated at our hospital from July 2019 to July 2024. We compared visual acuity, CFF, and visual fields before and after treatment. NON was diagnosed based on slowly progressive visual impairment in both eyes, absence of MRI findings suggestive of optic neuritis or intracranial disease, and evidence of vitamin deficiency in blood tests.

Results: The average age was 44±9.1 years, with two males and two females. The average period from the onset of vision loss to the first visit to our hospital was 10.7±5.4 months. Three out of four patients were heavy alcohol drinkers. All cases experienced bilateral vision loss, with an average logMAR visual acuity of 0.8±0.4 and CFF of 13.8±10.4 Hz. Visual field tests showed central scotomas in three cases. Blood tests revealed deficiencies in folic acid, vitamin B1, and vitamin B12. Each patient received vitamin supplements, and post-treatment logMAR visual acuity improved to 0.3±0.5 and CFF to 24.0±7.8, showing a trend toward improvement ($p=0.128$, $p=0.163$). It took an average of 12±4.6 months from the start of treatment for vision to improve.

Conclusions: Even when a considerable amount of time has passed since the onset of NON, appropriate nutritional supplementation can lead to improvements in visual function.

Ocular Imaging

Easy and Cost-Effective Ways of Fundus Photography You May Not Have Known Before

First Author: Anum HANEEF

Purpose: The purpose is to introduce an easy and cost-effective also handy approach to get fundus pictures.

Methods: A prospective approach to introduce easy methods that are cost-effective too for getting fundus images for teaching records and patient education purposes.

Results: There are many ways to get desired fundus images that you can get with many handy things you have in your daily life using your smartphone and a few small accessories. There are many kinds of smartphones linked fundus cameras introduced now, and they are cost-effective and approachable.

Conclusions: Fundus images are very important for diagnostics and prognostics and also for patient education and record purposes. Previously, fundus image acquisition has been difficult to approach, but with new handy imaging techniques introduced, we can have fundus images almost anywhere or wherever we are.

Ocular Oncology and Pathology

A Mother's Blinding Trade for a New Life

*First Author: Suyi SIOW
Co-Author(s): Li Yen CHAN, Envira LEE,
Jamalia RAHMAT*

Purpose: To report a very late recurrence of retinoblastoma in pregnancy.

Methods: Case report.

Results: A 26-year-old female in her third trimester of pregnancy presented with a large tumour in the left vitreous cavity. Diagnosed with advanced retinoblastoma in both eyes at 2.5 years old, she underwent right eye enucleation and systemic chemotherapy. Focal therapies and radiotherapy targeted the residual disease in her left eye. Following

13 years of tumour remission, she underwent uncomplicated cataract surgery with intraocular lens implantation. No intraocular recurrence was seen after the surgery and she underwent surgical removal of dense posterior capsule opacification 9 years (22 years of remission) after cataract surgery. Very low vision has been recorded as counting fingers over the years. Twenty-two years after remission, a large tumour was seen on a slit lamp examination. Further evaluation with B-scan ultrasonography and MRI supported suspicions of recurrent retinoblastoma with significant posterior segment involvement. The decision for a caesarean section and left eye enucleation at 31 weeks + 5 days gestation was reached following a multidisciplinary team discussion. Histopathology confirmed retinoblastoma with choroidal invasion. The patient was then referred to the oncologist for systemic chemotherapy.

Conclusions: There are no previous reports of the recurrence of an intraocular tumour after 22 years in the literature. However, it is essential to recognise that recurrence can still occur after such an extended period of remission. This highlights the critical importance of lifelong surveillance in patients with a history of retinoblastoma to monitor for any potential reemergence of the disease.

Acanthamoeba spp. Aggregate and Encyst on Some Daily Disposable Contact

*First Author: Anjana PARAMESWARAN
Co-Author(s): Allison CAMPOLO, Monica CRARY,
Esther LARA, Brian PATTERSON, Reed PIFER*

Purpose: Daily disposable contact lenses (DDCL) are designed for single use but are often reused by patients, leading to an increased risk of Acanthamoeba keratitis, a potential vision-impairing infection of the corneal surface. Poor hygiene and handling of contact lenses are significant risk factors for developing this infection. Here, we evaluated Acanthamoeba behavior on DDCLs and hypothesized that Acanthamoeba aggregation and encystment may be induced by contact lens materials.

Methods: A time-lapse visualization study was performed to characterize the behavior of Acanthamoeba spp. (Genotypes T1, T2, T3, T4, T5, T7, T11) on the surface of Dailies TOTAL1[®], PRECISION1[®],

Proclear® 1 day, Biotrue® ONEday, MyDay® and 1-Day ACUVUE® MOIST DDCLs. Acanthamoeba behavior was quantified to determine the amount of aggregation over time. Confocal microscopy was utilized to identify Acanthamoeba cysts after adherence to DDCL materials over time.

Results: Microscopy revealed that within three hours of contamination, Proclear 1 day, Biotrue ONEday, and MyDay promoted the formation of Acanthamoeba aggregates and that these aggregates remained stable for at least 24 hours. Confocal microscopy confirmed Acanthamoeba aggregation-initiated cyst formation on these lenses. Dailies TOTAL1 and PRECISION1 prohibited the process of aggregate formation across most strains of Acanthamoeba.

Conclusions: The surface of Dailies TOTAL1 and PRECISION1 hindered Acanthamoeba spp. aggregation and encystment. Acanthamoeba cysts resist treatment and immune responses, emphasizing the need to prevent patient-Acanthamoeba contact. Rising Acanthamoeba keratitis cases among DDCL users highlight the risk associated with patient noncompliance, warranting further research on pathogen-contact lens interactions.

Bilateral Ocular Surface Lesion in a Young Female: A Case Report

First Author: Nur Nadiyah HJ JELUDIN
Co-Author(s): Mohan RAMALINGHAM

Purpose: We describe a case of a 33-year-old female presenting with eyelid symptoms, initially presumed benign, but later diagnosed as lymphoma histopathologically.

Methods: The patient presented with progressive, painless bilateral eyelid swelling over five years without visual disturbances. On examination, her right eye was found to have 360 degrees of soft erythematous papillary growth extending from the fornix onto the ocular surface. Similar findings were seen in her left eye but of less intensity and more localized to the left caruncle. Magnetic Resonance Imaging (MRI) showed a well-defined soft tissue mass in the left orbital caruncle extending into the canaliculi and lacrimal sac but without orbital or globe invasion. In view of the bilateral involvement,

the painless and progressive nature of her ocular surface presentation was highly suspicious and warranted a conjunctival biopsy to confirm the diagnosis. Laboratory tests were also done to rule out systemic involvement.

Results: Histopathology of the biopsy specimen revealed atypical lymphoid proliferation, consistent with non-Hodgkin's lymphoma. Identified as low-grade B-cell mucosa-associated lymphoid tissue (MALT) lymphoma. PET-CT staging reported eyelid and left lacrimal gland localization, with no systemic spread. Blood tests indicated a mild increase in lymphocytes otherwise unremarkable.

Conclusions: This case, where the bilateral simultaneous ocular surface was involved, highlights the need to consider the malignant diagnosis in atypical eyelid presentation. Orbital lymphomas are usually unilateral and indolent; however, the risk of systemic metastasis is 20% with bilateral involvement. Hence, we emphasize the need to perform a biopsy to ascertain an accurate early diagnosis and the importance of multidisciplinary management to improve prognosis.

Congenital Orbital Malignancy — a Case Report

First Author: Mukti MITRA
Co-Author(s): Alauddin AL AZAD, Narayan BHOWMIK

Purpose: To present a rare case of congenital malignancy of orbit and to see the outcome of treatment.

Methods: A 3-day-old newborn female baby was referred to the Department of Ophthalmology of a tertiary multidisciplinary hospital in October 2023. The child was born with left-sided orbital growth, which was rapidly growing in nature. The proptosed eye measured 7x5 cm, globular in shape, covering almost two-thirds of her face and compressing the nose with severe chemosis and exposure keratopathy. Her other eye was normal. Her antenatal and perinatal history was uneventful. She was 2nd issue of her non-consanguineous parents. General Systemic workup was done to exclude metastatic involvement. Orbital Imaging revealed a diffuse, homogenous, hyperdense lesion involving the whole of the orbital cavity, causing expansion of the bony orbit, and no intracranial extension was seen.

The patient was prepared for surgical excision under general anesthesia.

Results: Modified exenteration was done in the presence of a neurosurgeon and a pediatric surgeon. Histopathology showed embryonal rhabdomyosarcoma, but immunohistochemistry revealed Ewing sarcoma. The patient was referred to the pediatric oncology department for further management, where she received two cycles of chemotherapy with an injection of vincristine. Rapid recurrence was seen with ongoing treatment. The child expired after 6 weeks of treatment.

Conclusions: Congenital orbital malignancy is a rare malignancy in children. Management is often very difficult & prognosis is frequently fatal.

Correlation Between the Clinical Features and the Pathological Anatomy of Choroidal Melanoma

First Author: Nam NGUYEN

Co-Author(s): Van BIEN, Hai TON

Purpose: To examine pathological findings on the eyes diagnosed with choroidal melanoma and to determine the correlation between clinical presentations and the pathological features.

Methods: Data from 17 patients with a diagnosis of choroidal melanoma and who underwent enucleation were examined. Patients were followed up to 6 months postoperatively. Age, gender, tumor size, TNM stage, B-scan ultrasound, and histological features were recorded. The correlation between clinical presentations and the pathological features was analyzed using logistic regression.

Results: 17 patients were clinically diagnosed with unilateral choroidal melanoma. Histologically, we observed that 16 patients (94.12%) resulted in melanoma, the distributions of Spindle A and B cell types were equal (3 cases each). The epithelioid cell morphology was found in 9 cases (52.94%), and one case showed mixed cell type carcinoma (6.00%). Most tumors were highly infiltrated, with more than 100 lymphocytes per 40X field in 5 cases (56.25%). Analysis indicated that a male patient, middle-aged (40-60 years old), with positive mushroom and Kappa sign on B-scan, had a 2.39 times higher likelihood of having choroidal melanoma compared to patients

without these characteristics ($p < 0.0001$). The adverse prognostic factors included a mean age of 50 (particularly high if over 60), male gender, positive Kappa sign, stage T3a or higher, and a high index of infiltration ($p < 0.0001$).

Conclusions: Choroidal melanoma, a life-threatening disease, should be considered in patients with male gender, middle age, positive mushroom, and Kappa sign on B-scan. Poor prognosis can be predicted by age, gender, B-scan findings, TNM stage, and density of lymphocyte infiltration.

Evaluation of a Short Training Program to Improve Detection and Management of Retinoblastoma in Nepalese Children

First Author: Purnima RAJKARNIKAR STHAPIT

Co-Author(s): Manish PAUDEL

Purpose: Retinoblastoma is the only childhood cancer where early detection significantly improves the life and vision prognosis of the affected. However, awareness of and screening for retinoblastoma is often poor, particularly in low and middle-income countries. This study aims to evaluate the impact of a retinoblastoma screening training program on primary healthcare workers.

Methods: A half-day training program was conducted by trained ophthalmologists for 20 primary healthcare workers on the importance of early identification of retinoblastoma and screening methods. Pre- and post-test knowledge, practice and attitudes towards retinoblastoma were assessed using the Knowledge and Attitudes to Retinoblastoma Scale (KARS). They were also provided with the screening device 'Arclight'.

Results: The majority of participants (90%) were female, with a mean age of 36.7 years (± 10.5). Before the training program, participants' general knowledge of retinoblastoma averaged 85% and reached 100% post-training. Knowledge of the Arclight device and retinoblastoma treatment increased from an average of 56% to 68% post-training, with overall knowledge increasing from 70% to 84%. Confidence in detecting retinoblastoma increased from 65% before training to 95% post-training.

Conclusions: Improving primary healthcare workers' knowledge and confidence in retinoblastoma screening using a readily accessible device like Arclight has the potential to increase the rate of early detection of retinoblastoma and reduce the burden of this cancer in low and middle-income countries.

Histological Picture of Vasoproliferative Tumors Obtained by Different Surgical Procedures in 15 Patients

First Author: Andrey YAROVOY
Co-Author(s): Ilya GORSHKOV, Anna SHATSKIKH

Purpose: To present the histological picture of vasoproliferative tumors (VPTs) obtained by different surgical procedures.

Methods: Fifteen patients with clinically established diagnoses of VPTs were treated surgically by obtaining tissue samples of lesions. Eleven samples were obtained after endoresection, 3 after transvitreal excision en bloc, and one after enucleation. A standard histological examination was fulfilled.

Results: Excision en bloc and enucleation samples provided the full picture of the lesion at different stages of the process, from pigment epithelium disturbances to dense fibro-glial proliferative masses and secondary changes of retina and vitreous within every sample. Endoresection samples were sufficient and informative with correlation with excision en bloc and enucleation samples. In all cases, the histological picture was similar. The retinal and not tumorous origin of VPTs was confirmed. A histological picture will be presented.

Conclusions: VPTs are benign lesions of different origins, various terminologies, and not clearly determined treatment approaches. Histological presentation of VPTs in literature is still limited because of the very rare obtaining of the histological samples of this lesion after en bloc excision or enucleation. Our results give additional information about the histological picture of VPTs with a clearer understanding of this disease. Further investigation of pathogenesis and treatment options is needed.

Iris Metastasis As the First Presentation of Systemic Cancer: A Case Report

First Author: Zhe Woon LIM

Purpose: This case report aims to highlight the rare occurrence of Iris metastasis as the initial manifestation of systemic cancer and discuss its diagnostic and therapeutic implications.

Methods: A 77-year-old male with a background of diabetes mellitus, hypertension, hyperlipidemia, atrial fibrillation, and anaemia presented to our clinic for an annual review of bilateral primary open-angle glaucoma. Ocular history includes previous cataract surgery in the right eye 9 months prior. The patient denied any ocular symptoms. His right eye visual acuity was 6/12, and intraocular pressure was 14mmHg. Ocular examination revealed a 4x3mm red fleshy iris mass from 8 to 10 o'clock near the iridocorneal angle in the right eye with a prominent episcleral vessel temporally. A high suspicion of malignancy prompted admission for further investigations.

Results: Radiological findings identified a large exophytic right renal mass measuring 10.5x5.8x7cm, prostate and thyroid enlargement, as well as multiple rounded lung nodules and mediastinal lymphadenopathy. Subsequent work-up confirmed a double primary malignancy of clear cell renal carcinoma and prostate adenocarcinoma with metastases to the thyroid, lung, and mediastinum. A clinical diagnosis of iridociliary metastasis was established. The patient was initiated on systemic chemotherapy and showed partial regression of the iris lesion at follow-up.

Conclusions: Iris metastasis, though rare, can be the first indicator of an underlying systemic malignancy. This case underscores the importance of a thorough systemic evaluation in patients presenting with unusual ocular symptoms. Early diagnosis and treatment significantly influence patient outcomes, highlighting the need for heightened clinical suspicion and interdisciplinary collaboration.

Ophthalmic Epidemiology and Prevention of Blindness

Elevated Blood Viscosity in Thyroid-Associated Ophthalmopathy: A Study of Hemorheological Alterations and Correlations With Thyroid Stimulating Immunoglobulin

First Author: Suk-woo YANG

Purpose: To investigate hemorheological changes in blood viscosity and the relationship between blood viscosity and thyroid function parameters, including Thyroid Stimulating Immunoglobulin (TSI), in patients with thyroid-associated ophthalmopathy (TAO).

Methods: This study analyzed data from 98 TAO patients. Key parameters included systolic and diastolic blood viscosity, thyroid function parameters, and underlying systemic conditions.

Results: All TAO patients exhibited blood viscosity levels above reference ranges. The average systolic viscosity was 4.75 ± 0.88 cP (reference: 3.5 - 4.1 cP for males, 3.0 - 3.6 cP for females), and the average diastolic viscosity was 14.35 ± 2.34 cP (reference: 9.4 - 13.0 cP for males, 7.6 - 11.1 cP for females). Positive correlations were found between TSI levels and both systolic ($r = 0.279$, $p < 0.05$) and diastolic viscosity ($r = 0.271$, $p < 0.05$). Gender differences showed higher viscosity in males (systolic: 5.36 ± 1.04 cP, diastolic: 15.85 ± 2.53 cP) compared to females (systolic: 4.54 ± 0.70 cP, diastolic: 13.84 ± 2.05 cP) with $p = 0.000$ for both. No significant viscosity difference was observed between TAO patients with and without underlying conditions. Hematological (RBC, Hb, Hct, MCV) and lipid profile parameters (total cholesterol, LDL) are positively correlated with blood viscosity.

Conclusions: Elevated TSI levels are associated with increased blood viscosity in TAO patients, all exhibiting viscosity levels above reference ranges. This emphasizes the importance of considering blood viscosity and TSI levels in TAO patient management. Further research is needed to understand these associations and their implications for treatment strategies.

Relationship Between Computer Vision Syndrome and Objective Autorefractometry in First Semester Students of the Faculty of Medicine in Cawang

First Author: Nathaniel TAN

Co-Author(s): Jannes Fritz TAN, Nyssa Alexandra TEDJONEGORO

Purpose: This study was conducted to determine the correlation between Computer Vision Syndrome (CVS) and objective autorefractometry in medical students.

Methods: The type of study chosen was observational analytic using a cross-sectional design. Random sampling was chosen to take samples. This study used a total of 65 people as samples, which were analyzed using SPSS 27. Bivariate analysis used the Chi-square test.

Results: Univariate analysis shows that there were 53 women in this study (81.5%) and 12 men (18.5%). The age range of 21-23 years was 34 people (52.3%) and the age range of 19-20 years was 31 people (47.7%). The results of the most objective autorefractometry at refraction values SE (Spherical Equivalent) = ≥ -0.50 D with a total of 68 eyes (52.3%) and at refraction values SE = < -0.50 D as many as 62 eyes (47.7%). Respondents who experienced mild Computer Vision Syndrome were 72 eyes (55.4%) and severe Computer Vision Syndrome had as many as 58 eyes (44.6%). The results of the frequency of long-term use of gadgets in a day with the highest number were duration < 4 hours, totaling 26 people (40.0%), and the least at duration > 5 hours, namely 17 people (26.2%). Statistical tests using the chi-square test found a p-value of 0.003 (< 0.05). The discussion stated that there is a significant correlation between Computer Vision Syndrome and objective autorefractometry results (SE = ≥ -0.50).

Conclusions: This study concludes that a correlation was found between Computer Vision Syndrome and the results of objective autorefractometry in medical students.

Vision Impairment in Taiwan's Diabetic Population: The Impact of Diabetic Retinopathy

First Author: Yao-lin LIU
Co-Author(s): Chuhsing Kate HSIAO, Hsien-ho LIN, Tzu-hsun TSAI

Purpose: To determine the burden of cause-specific vision impairment in the diabetic population and to provide overall and subgroup estimates for the prevalence of PDR, DME, and DR-related vision impairment in Taiwan.

Methods: Primary ophthalmologic data was collected from a random sample of 2,471 diabetic patients through the National Taiwan University Hospital Integrated Medical Database (NTUH-iMD). The nationwide diabetic population utilizing ophthalmologic services, with or without diagnosis codes of specific eye diseases, was extracted from the National Health Insurance Research Database (NHIRD). Epidemiologic indicators of interest were estimated through hierarchical Bayesian modeling incorporating information from both databases.

Results: In 2019, the estimated total YLDs for all-cause vision impairment in the diabetic population was 2,526.1 (95% credible interval [CI]: 2,150.3, 2,971.9). DR accounted for 1,283.9 YLDs (95% CI: 992.9 to 1,644.6), representing 50.8% of the total YLDs. The estimated rates of PDR and DME in the diabetic population were 2.42% (95% CI: 2.24, 2.61) and 0.42% (95% CI: 0.35, 0.51), respectively. Stratified analyses indicated that the diabetic population aged 20-39 had the highest rates of PDR and DME. Over the period from 2010 to 2020, there was an overall increasing trend in the crude prevalence of DR-related vision impairment, but a decreasing trend was noted among those aged 55 and above.

Conclusions: DR is the primary cause of vision impairment in the diabetic population. As the diabetic population expands, the burden of vision impairment is also increasing in Taiwan. This updated information can be utilized to guide optimal public health and eye care strategies in Taiwan.

Ophthalmic Trauma

A Retrospective Analysis of Ocular Trauma in School-Aged Children in a Metropolitan Hospital in Taiwan

First Author: Chee-ming LEE

Purpose: In this study, we aimed to analyze the cause and visual outcome of school-age children with ocular trauma in a metropolitan hospital in Taiwan.

Methods: A retrospective chart review was collected for the school-age child with eyeball rupture (age from 7 to 17 years old as a student of elementary school to senior high school.) who presented to the ophthalmology department or emergency department of ShowChwan Hospital. We collect the data of demographic profile, place, cause of trauma, complications, and best-corrected visual acuity. We categorized the cause of trauma as penetrating, perforating, intraocular foreign body, and rupture.

Results: We collected 20 eyes in 20 patients. The mean follow-up time was 4.1 months. The causes of injury include accidents (16 patients, 80%) and violence (4 patients, 20%). Penetrating ocular injury was the most common type of trauma (13 patients, 65%), which is followed by violence (4 patients, 20%). The preoperative visual acuity ranged from 0.2 to hand movement at 30cm, and all patients underwent initial treatment with eyeball rupture repair and removal of the intraocular foreign body if needed. Systemic and topical medication were prescribed and tapered according to the patient's clinical condition. Most of the patients had much improvement, with mean BCVA reaching 0.5. As for complications, one patient developed endophthalmitis after treatment and received evisceration.

Conclusions: Accident is the most common reason for ocular trauma in school-aged children, and most of them present with penetrating ocular injury. Ocular trauma may lead to complications like endophthalmitis and results in poor visual outcomes.

Beneath the Surface: The Mystery of a Preseptal Stone

First Author: Kah Mun LOCK

Co-Author(s): Sieng Teng SEOW, Nor Fadzillah BINTI ABD JALIL, Juliana BINTI JALALUDDIN

Purpose: We report a case of retained ocular foreign body in a young male following a motor vehicle accident.

Methods: Case report.

Results: A young male presented to the emergency department following a motor vehicle accident. Post-trauma, he experienced loss of consciousness and retrograde amnesia, with no ocular complaint. On examination, both eyes had visual acuity 6/6, with no relative afferent pupillary defect. There was no periorbital hematoma or open wound besides a scab measuring 40mm x 20mm below the temporal region of the right lower eyelid. Both anterior and posterior segments are normal with normal intraocular pressure. No foreign bodies were detected upon exploring the upper and lower eyelids. Extraocular muscle movements are full, with no diplopia. Computed tomography of the brain revealed a subcutaneous foreign body in the lateral aspect preseptal space of the right orbit with no evidence of intracranial hemorrhage. Upon further examination after removing the scab, a small deep laceration wound size 1mm x 1mm was discovered. Exploration of the deep wound further revealed a stone measuring 4mm x 6mm x 5mm underneath it.

Conclusions: It is crucial to consider the possibility of a retained foreign body in all orbital trauma cases. Hence, a thorough examination with a high level of suspicion for a foreign body in the evaluation of all wounds, including scab removal and wound exploration, and prompt use of imaging studies is essential to prevent the devastating complication of retained ocular foreign body.

Intra-Orbital Bullet: A Case Report

First Author: Nur SAAT

Co-Author(s): Jaya Vani ETTIKAN

Purpose: Gunshot injury is rare and may result in unfavorable visual outcomes due to either open or closed-globe injuries. The aim of this case report is to describe the ocular presentation and management of such injury.

Methods: A case report.

Results: A 22-year-old Indian gentleman presented with sudden onset generalized blurring of vision, pain, and periorbital swelling post-gunshot injury. Ocular examination showed marked proptosis and edema of the left eye. His left visual acuity was hand movement (HM), while his right eye visual acuity was 6/6. The relative afferent pupillary defect was positive over the left eye. Conjunctiva chemosis with subconjunctival hemorrhage with clear cornea. The anterior chamber showed deep with no hyphema, and the pupil was mid-dilated. Fundus examination showed a pink disc with hemorrhage at the disc. There was a commotio retina at the macula, inferior and superior retina. Pre-retinal hemorrhage is temporal to the fovea with minimal vitreous hemorrhage. Left extraocular muscle movement revealed markedly restricted movement at abduction and at the superior gaze with minimal restriction of inferior gaze and adduction. A computed tomography scan showed an intra-orbital bullet at the left orbital apex and lamina papyracea. Endoscopic removal of left-sided embedded nasal foreign body (bullet) was done and revealed a bullet embedded over the left posterior ethmoid and into lamina papyracea.

Conclusions: Gunshot injury patients will present with various symptoms, but history and imaging were crucial for accurate diagnosis and surgical planning. High-impact injuries can result in significant ocular morbidity.

Unveiling an Uncommon Case: Sports-Related Isolated Medial Wall Fracture With Medial Rectus Entrapment and Herniation Into Ethmoid Sinus

First Author: Angeline LOW

Purpose: To report a case of medial wall fracture with muscle entrapment and herniation into the ethmoid sinus from a sports injury.

Methods: Case report.

Results: A 14-year-old male complained of left eye double vision and being unable to move his left eye towards his nasal side following a sports injury while playing soccer. He was allegedly elbowed by his friend over his left eye. He was brought to the Emergency Department by his parents 7 days after the incident. On examination, visual acuity was 6/6 on both eyes with negative relative afferent pupillary defect. There was no facial swelling or periorbital haematoma seen. Extraocular movement showed left eye restriction on laevoelevation, laeoversion and laevodepression. Anterior and posterior segment examinations were normal for both eyes. A computed tomography scan of the orbit revealed a displaced fracture of the medial wall of the left orbit. There was left entrapment of the left medial rectus muscle with herniation of the muscle into the left ethmoid sinus. Patient underwent an endoscopic left eye adhesiolysis and left middle meatal antrostomy surgery. Five months post-operative, extraocular movement was full with vision of 6/6 bilaterally.

Conclusions: In this unique case, we detail a patient with a rare scenario: an isolated fracture of the medial orbital wall causing entrapment and herniation of the medial rectus muscle into the ethmoid sinus resulting in the limitation of extraocular movement.

Orbital and Oculoplastic Surgery

A One-Stage Eyelid Reconstruction: Sandwich Technique via Skin Graft, Periosteal Flap and Conjunctival Transfer

First Author: Lorenz Jacob MANGAHAS

Co-Author(s): Charisse Ann TANLAPCO

Purpose: The selection of an eyelid reconstruction method is influenced by factors such as the size and location of the defect, as well as the condition of surrounding tissues. We present a case involving the successful one-stage repair of full-thickness eyelid reconstruction.

Methods: Case report.

Results: A 78-year-old male presented with a progressively enlarging mass on his left upper eyelid. Initially, the patient noticed a small lump on the upper eyelid five years ago, which has progressively grown. With a history of over 50 years as a farmer, examination revealed a pearly, hyperpigmented, and ulcerated mass spanning the entire upper eyelid margin and extending past the mucocutaneous junction. Biopsy confirmed Basal Cell Carcinoma. Subsequent treatment involved extensive excision of the mass and eyelid reconstruction utilizing the Sandwich Technique, incorporating a free periosteal flap, skin graft, and conjunctival transfer. A week post-operatively, the graft showed satisfactory viability. By 12 weeks, the patient achieved excellent cosmetic and functional results.

Conclusions: The sandwich technique for eyelid reconstruction involves incorporating an orbicularis oculi muscle advancement flap sandwiched between two free grafts. In contrast to procedures like the Cutler–Beard flap and the modified Hughes flap, the Sandwich technique is a one-stage method tailored for addressing shallow lower eyelid defects encompassing up to 70% of the total eyelid width horizontally. To conclude, the Sandwich technique, a modification of the frequently employed tarsomarginal graft, presents a streamlined and effective one-step strategy for repairing marginal defects in both upper and lower eyelids.

Clinical Characteristics and Treatment Outcomes of Morbihan Disease of the Eyelids: A Single-Center

Retrospective Study

First Author: Ho-seok SA

Purpose: This study investigates the clinical features and treatment outcomes of Morbihan disease of the eyelids, a rare condition marked by chronic erythematous edema affecting the face and eyelids.

Methods: We retrospectively reviewed the records of patients diagnosed with Morbihan disease from March 2011 to December 2023. We assessed clinical presentations, histopathological findings, and treatment outcomes. Patients received nonsurgical treatments categorized as no treatment, oral steroids, intralesional steroid injections, or a combination of both. Intralesional steroid injection patients were further divided into low-dose (<20mg) and high-dose (≥20mg) subgroups. Outcomes were classified as complete response (CR), partial response (PR), or no response.

Results: The study included 67 patients (mean age: 54.3 ± 11.9 years), with 44 (65.7%) being male. Among 57 patients who received nonsurgical treatment, significant differences in treatment response were observed between oral steroids (n=13), intralesional steroid injections (n=16), and combination therapy (n=28) (p < 0.001). The intralesional steroid (50.0%) and combination (89.3%) groups had better responses compared to the oral steroid group (46.2%) (p < 0.05). High-dose (≥20mg) injections showed a slightly better response than low-dose (<20mg) injections (p=0.06). During follow-up, 23 of 57 patients (40.3%) underwent debulking surgery with blepharoplasty, with 21 out of 23 (91.3%) achieving persistent satisfactory results. Histopathological findings commonly included lymphocytic infiltration, dermal edema, and lymphangiectasia.

Conclusions: Intralesional steroid injections, particularly at doses ≥20mg, were more effective than oral steroids in treating Morbihan disease of the eyelids. Debulking surgery was required for less than half of the patients and provided long-term control of eyelid edema.

Critical Insights Into Rhino-Orbital Mucormycosis in a Rare Hemophagocytic Lymphohistiocytosis Patient

First Author: Yulia AZIZA

Co-Author(s): Salmarezka DEWIPUTRI, Nisrina SARI

Purpose: Rhino-orbital-cerebral mucormycosis (ROCM) is a rare but life- and sight-threatening infection primarily affecting immunocompromised individuals. The orbital spread of mucorales infection is characterized by eyelid edema, visual disturbance, ophthalmoplegia, and black eschar at a later stage. Co-infection with *Aspergillus* increases morbidity. Hemophagocytic lymphohistiocytosis (HLH) is a hyper-inflammation syndrome characterized by uncontrolled immune activation and a dysregulated response to infection. Due to their immunocompromised nature, this population presents a significant challenge in managing co-infection. This case report discusses a case of ROM in a patient with HLH, highlighting the clinical manifestations, diagnostic challenges, and therapeutic approaches.

Methods: This is a case report study.

Results: A 37-year-old woman developed proptosis during intensive treatment for HLH. The patient was currently in chemotherapy and had neutropenia. An initial ophthalmology examination revealed proptosis and hypotropia in the right eye. Visual acuity was 3/60 in both eyes. Radiological examination showed sinus cavity infection spreading towards the orbital cavity. Later on, the patient developed black eschar on the medial canthal, and the visual acuity worsened with no light perception in the right eye. The patient has been prescribed Isavuconazole and Amphotericin B and is scheduled for debridement and orbital exenteration. Histopathology and microorganism culture examinations revealed hyphae of Mucorales and *Aspergillus* species, supporting the diagnosis of mixed fungal infection.

Conclusions: Early detection and aggressive treatment involving an interdisciplinary approach are the paramount keys to treating ROCM with *Aspergillosis* co-infection, as the prognosis significantly declines with delayed intervention.

Effects of Orbicularis Oculi Flap Suspension on Transcutaneous Lower Blepharoplasty

First Author: Hyungyu LEE

Co-Author(s): Sehyun BAEK, Hwa LEE

Purpose: The purpose of this study was to analyze the clinical effects of orbicularis oculi muscle suspension in conjunction with transcutaneous blepharoplasty in patients 60 years of age or older.

Methods: A retrospective study was conducted on patients aged 60 or older who underwent orbicularis oculi flap suspension in conjunction with transcutaneous blepharoplasty to treat lower lid festoons, lower lid fat prolapse, and lid laxity at Korea University Guro Hospital. The outcomes were surgical success rate, recurrence rate, postoperative complications, and patient satisfaction.

Results: In total, 39 patients (18 males, 21 females) were included, with an average age of 67.5 years (60-86 years) and a follow-up period of 145.7 days (95-195 days). In all patients, eyelid laxity was effectively corrected, and there was no recurrence of eyelid laxity after surgery. Three patients suffered postoperative complications, transient skin edema in two patients, and transient ectropion in one patient. Subjective satisfaction score following surgery was high, with an average score of 2.56 out of 3 points.

Conclusions: Orbicularis oculi flap suspension with transcutaneous blepharoplasty can shorten operation time due to surgical ease. It also has the advantage of not involving conjunctival-related complications such as conjunctival edema since it does not pass through the conjunctiva. Finally, it can successfully treat lid laxity and could be used in lower blepharoplasty procedures.

Lower Lid Basal Cell Carcinoma With Concomitant Invasive Ductal Carcinoma of the Breast in a 51-Year-Old Male

First Author: Ahnna AGUSTIN

Co-Author(s): Charisse Ann TANLAPCO

Purpose: Basal cell carcinoma is generally known as the most common neoplasm of the eyelids. It is highly related to sun exposure and is considered its main risk factor. It is mostly found in the lower eyelids and medial canthus, as these are the sites in the periorbital area that are highly exposed to sunlight.

Methods: To present a case of lower lid basal cell carcinoma with concomitant invasive ductal carcinoma of the breast in a 51-year-old male and to discover if there is a direct relation between them.

Results: Tumors in the medial canthal area are more likely to be deeply invasive and involve the orbit. Invasive ductal carcinoma arises from epithelial elements and accounts for 70 to 80 percent of invasive breast cancer lesions. The connection between these 2 cancers still remains unclear, but there is an existing hypothesis that says that the constant barrage of UV-induced mutagenesis in the skin may uncover early deficiencies in DNA repair.

Conclusions: The first noted case of basal carcinoma of the eyelid with concomitant invasive ductal carcinoma of the breast. The connection still remains unclear since literature similar to the case is still limited, but it can be possibly hypothesized that DNA mutation caused by UV radiation exposure plays a big role.

Myoconjunctival Enucleation Study (MES): Outcome of Myoconjunctival Enucleation Technique With Polymethyl Methacrylate (PMMA) Implant With Custom Made Prosthesis (CMP) in Tertiary Eye Care Center in Nepal

First Author: Hom Bahadur GURUNG

Co-Author(s): Sushant ADIGA, Malita AMATYA, Dikshya BISTA, Rohit SAIJU, Raba THAPA

Purpose: The aim of this study was to assess the average motility of implant and prosthesis after Myoconjunctival enucleation, the average time for surgery, the complications during surgery in a tertiary eye hospital, and patient satisfaction.

Methods: A prospective non-randomized interventional study was done. The muscles were attached to the fornix before removing the eyeball to save time and suture. Ethical approval was obtained from the Nepal Health Research Council on 10th May 2023, and 35 consecutive cases fulfilling the inclusion criteria were recruited from 30th May 2023. Average surgery time, rates of complication, motility of implant and custom-made prosthesis and patient satisfaction were recorded and analyzed.

Results: The mean implant movement on elevation was 2.34 mm, depression was 2.25mm, abduction was 2.74mm, and adduction was 2.71mm. The mean custom-made prosthesis movement on elevation was 2.45mm, depression was 2.62, adduction was 2.74, and abduction was 2.82mm. The operating time ranged from 30 to 50 minutes (Mean± SD, 39.30±3.76). The slipped superior rectus was the only intraoperative complication in one patient. Most of the patients complained of headache and nausea on first post operative day, four patients vomited during first post operative day. One patient developed suture granuloma at six weeks post-surgery, and one had a grade I contracted socket. More than 88 % of patients were satisfied with the treatment.

Conclusions: Myoconjunctival enucleation imparts good motility to custom made prosthesis with minimal complication and reasonable operating time.

Orbital Incidentalomas: Clinicoradiological Characteristics and Management Considerations

First Author: Ho-seok SA

Purpose: Orbital incidentalomas are orbital masses discovered incidentally during imaging for unrelated conditions. This study aims to explore the clinical features, diagnostic strategies, and management of these incidental findings.

Methods: We performed a retrospective analysis of patients with orbital incidentalomas from March 2015 to July 2023. Evaluations included reasons for imaging, presenting symptoms, ophthalmic findings, radiological characteristics, treatment options, and outcomes.

Results: The cohort included 43 patients, 20 (46.5%) male, with a mean diagnosis age of 57.1 years and a mean follow-up of 2.77 years. Imaging was most often conducted for health check-ups (21 patients, 48.8%), followed by headaches (12 patients, 27.9%). Ophthalmic findings included proptosis (18 patients, 41.8%) and peripheral diplopia (9 patients, 21.4%). The average mass size was 16.27 ± 1.20 mm; 11.6% had anterior, and 88.4% had posterior orbital masses. Imaging diagnoses commonly included cavernous venous malformation (57.2%) and schwannoma (28.6%), with other diagnoses being less frequent.

Surgical excision was performed in 14 patients (32.6%) for reasons such as proptosis and suspected metastasis. The remaining 29 patients were monitored with imaging, showing size changes but no functional impairment.

Conclusions: Orbital incidentalomas are often found during routine health checks or imaging for other issues and may present with asymptomatic proptosis or diplopia. Common diagnoses include cavernous venous malformation and schwannoma. Surgical intervention is typically reserved for symptomatic anterior orbital masses, while posterior masses are usually managed with surveillance.

Prospective Comparative Study of Various Dacryocystorhinostomy (DCR) Surgical Modalities in Children

First Author: Selma MILISIC

Purpose: The objectives and aims of the study are to evaluate the anatomical and physiological success and the efficacy and efficiency profile of endonasal laser-assisted (ENL) DCR versus trans canalicular laser-assisted (TCL) DCR versus mechanical endonasal (MEN) DCR in comparison with traditional external (EXT) DCR in children.

Methods: A prospective series of 109 children (128 ducts). The patients are subdivided into four groups, every group including 32 patients. Group A includes patients treated with EXT-DCR, Group B is subjected to MENDCR, Group C ENL-DCR, and Group D patients are managed with TCL-DCR.

Results: The success rate was total relief of epiphora and anatomical success in 93,75% for EXT-DCR and 90,62% for MENDCR, in addition to 81,25% in ENL-DCR and 78,12 % in TCL-DCR. However, a significant number of patients continued to have symptoms of physiological failure despite the anatomical success and patent fistula. The physiological success rate with relief of symptoms was 65,62% for EXT-DCR and 78,12% for MENDCR in addition to 65,62% in ENL-DCR and 62,50% in TCL-DCR.

Conclusions: The EXT-DCR, when compared with MENDCR, ENL-DCR and TCL-DCR still provides higher and superior anatomical success results in children but not necessarily with an equivalent rate

of physiological relief of symptoms and so an inferior placed ostium is better to result in physiological success and relief of symptoms with great advantage. MENDCR shows promise in the long-term management of duct obstruction and is associated with more advantages than EXT-DCR. However, a larger study is required before any generalization is made.

Pseudocarcinomatous Hyperplasia of Eyelid - a Case Report

First Author: Alauddin AL AZAD

Co-Author(s): Mukti MITRA

Purpose: To present a rare case report of bilateral pseudocarcinomatous hyperplasia of the eyelid and to evaluate the outcome of treatment.

Methods: A 45-year-old woman had been referred to the ophthalmology department of a tertiary multidisciplinary hospital on 1st June 2024 with a blackish, dry, itchy lesion in both lower lids for the last 6 months. It was painless & slowly growing in nature. On examination, it was a 15x 8 mm black, crusty lesion located at the middle third of both lower lids, sparing the lid margin properly. Surrounding skin and eyelashes were normal. The base of the lesion was not ulcerated, and the margins were slightly rolled. No lymphadenopathy was found. Her best corrected visual acuity was 6/6(OU). Other ocular findings were normal. The patient was planned for an incision biopsy from lesions of both lower lids for diagnosis.

Results: Histopathology showed Pseudocarcinomatous hyperplasia on both lower lids. After discussion with the histopathologist, excision of the lesion with a 5 mm healthy margin was done, followed by reconstruction of both lower lids with a Tenzel rotational flap. A tumor-free margin was ensured & immunohistochemistry was done to confirm the diagnosis.

Conclusions: Pseudocarcinomatous hyperplasia is a rare benign disorder of eyelid skin caused by irritation from some external stimuli. But this should be differentiated from potentially malignant Squamous cell carcinoma.

Reconstruction of Upper Eyelid Malignancy Using Cutler-Beard Technique: The Continued Success of a Classic Procedure

First Author: Agnesstacia LUMINTANG

Co-Author(s): Amani AUGIANI, Yunia IRAWATI

Purpose: Reconstruction of eyelid malignancy has been challenging due to its goal for a good outcome in functional and cosmetic aspects. Cutler-Beard is an old technique that indicates a larger upper eyelid defect, and requires a two-stage procedure. We report a case using this technique and its outcome.

Methods: A 60-year-old female had a lump on the left eyelid (LE) for 3 months before visiting the hospital. The lump was initially small, like a sty, and gradually growing larger. The examination revealed a mass on the upper LE measured 16 mm x 9 mm with margin involvement extended to the tarsal conjunctiva, irregular surface, well-defined border, blackish crust, and yellowish discharge, and no pain upon pressing. There was no enlargement of the lymph node. She was diagnosed with sebaceous carcinoma of the upper LE and underwent wide excision, a frozen section of the tumor, and reconstruction of the eyelid using the cutler-beard technique.

Results: Intraoperatively, the defect following wide excision 5 mm from the tumor margin was more than 50% horizontally. We performed the classic Cutler-Beard technique, with the initial incision 3 mm inferior to the lower eyelid margin. The second step, reconstruction, was done 8 weeks later. No complication was found. The patient had adequate eyelid closure and good cosmetic satisfaction

Conclusions: The cutler-beard technique still provides a good functional and cosmetic outcome. It can be considered the procedure of choice for upper eyelid defects larger than 50% horizontally and intermediate defects vertically. Regular follow-up is essential due to the high potential of recurrence and metastasis of sebaceous carcinoma.

Restoring Function and Aesthetics Following Orbital Reconstruction Surgery

First Author: Pei Chia OUI

Co-Author(s): Shu Yu TAN, Wan Haslina WAN ABDUL HALIM, Meng Hsien YONG, Vanessa MASNSURALI

Purpose: Restoring function and aesthetics following orbital reconstruction surgery.

Methods: Case report.

Results: A 46-year-old male was involved in a motor vehicle accident resulting in severe head and left periorbital injuries. He underwent left lower eyelid retraction release and ectropion correction by a plastic surgeon; however, he developed worsening left eye chemosis and cicatricial ectropion, which did not respond to topical eyedrops. He was then referred for an oculoplastic consult. Upon presentation, the left eye showed periorbital scars with anterior lamellae shortage in both upper and lower eyelids, along with severe chemosis, lagophthalmos, and corneal punctate epithelial erosions. After the release of left conjunctival chemosis and temporary tarsorrhaphy, we applied compression eye pad dressing. The patient was also treated with topical levofloxacin and tobradex ointment. One week later, the chemosis had resolved and tarsorrhaphy was removed. Subsequently, left upper and lower eyelid reconstruction with posterior auricular skin graft was done and recovered well.

Conclusions: Orbital reconstruction surgery can damage the structures of conjunctival lymphatic vessels, potentially worsening the chemosis and resulting in lagophthalmos and keratopathy. Tarsorrhaphy is an effective method to reduce moderate chemosis and decrease the likelihood of severe chemosis. In our case, drainage of fluid, temporary tarsorrhaphy, and gentle compression dressing with an eye pad were applied to address conjunctival chemosis, and the patient responded well to the treatment.

Revitalizing the Gaze: Open Temporal Post-Trichial Brow Lift for Functional and Aesthetic Correction of Brow Ptosis

First Author: Amani AUGIANI

Co-Author(s): Yunia IRAWATI, Agnesstacia LUMINTANG

Purpose: Cases of brow ptosis are frequently underdiagnosed and should be considered in older patients with dermatochalasis. This condition is not only aesthetically concerning, but may also cause a heavy brow sensation, headache, and visual field restriction. We aim to present a case of brow ptosis successfully managed by surgical correction.

Methods: A case report.

Results: A 60-year-old man with a history of paralysis was referred to our clinic with entropion and dermatochalasis of both eyes. The patient complained of gradually worsening drooping eyelids and a foreign body sensation in both eyes, which was first noticed one year earlier. No other ocular complaints were reported. Ophthalmological examination revealed a deep transverse forehead crease, brow ptosis, dermatochalasis, and involuntional entropion, particularly in the right eye (RE). We performed the open temporal brow lift and entropion correction of the RE. The procedure involved a 3 mm incision along the temporal post-trichial area without the need for sophisticated equipment as in the endoscopic approach. The patient was not only satisfied by the improved comfort while opening his eyes but was also pleased by the aesthetic results, with no post-operative complications observed.

Conclusions: Recognizing each patient's unique features and planning a tailored approach is crucial to achieving the utmost functional and aesthetic benefits in brow ptosis correction. The open temporal post-trichial brow lift provides a simple and safe method that yields satisfactory outcomes.

Study on Balloon-Assisted Primary Bone Fragment Repositioning in Orbital Wall Fractures

First Author: Wenwen YANG

Co-Author(s): Zaihong CHEN, Jue LIU, Jindou TAO

Purpose: Some orbital surgeons think restoring and securing the original position of the orbital wall during fractures is difficult. As a result, artificial materials are often used to reconstruct the bone defect areas. In this study, we retrospectively analyzed the surgical outcomes of orbital wall fractures over three years, comparing a balloon support group with a non-balloon support group.

Methods: A retrospective analysis was conducted on 19 patients with orbital wall fractures who underwent surgical repair at our hospital between March 2021 and March 2024. Five patients underwent primary orbital wall fracture repair with temporary balloon support and no orbital implants, while 14 patients underwent orbital wall reconstruction using artificial implants. Preoperative and postoperative Naugle scale scores and orbital volumes at six months postoperatively were compared. Follow-up assessments included maxillary sinus inflammation, patient postoperative experience, and complications such as balloon rupture.

Results: All five patients who underwent primary orbital wall fracture repair using transmaxillary sinus balloon support achieved successful outcomes with no complications. The orbital volume of the two groups was significantly smaller than that before the operation, which was statistically significant. There was no significant difference in volume between the patients and the unaffected side after surgery. There was no significant difference in the degree of orbital volume change between the two groups before and after surgery.

Conclusions: The temporary balloon support technique via the natural maxillary sinus opening can achieve good results in primary orbital wall fracture repair. The technique is safe and effective, and can reduce the economic burden on patients.

The Silent Threat of Flesh-Eating Bacteria: Orbital Necrotizing Fasciitis Caused by Streptococcus pyogenes

First Author: Amani AUGIANI

Co-Author(s): Seruni ARDHIA, Yulia AZIZA, Valerie GRACIA, Hindun ZAKIYAH

Purpose: Necrotizing fasciitis is an emergent condition that can lead to blindness and significant deformity. This study aims to present a case of orbital necrotizing fasciitis caused by the flesh-eating *Streptococcus pyogenes*, a rare and rapidly progressing condition. *S. pyogenes* infection may develop into complications, including the deadly streptococcal toxic shock syndrome.

Methods: A case report.

Results: A 57-year-old male with a history of uncontrolled diabetes mellitus and oral gangrene presented to our emergency unit with rapidly progressing swelling and discharge from his left eyelid. Two weeks prior, he experienced redness and intense pain in the eyelid without any previous trauma, which subsequently ulcerated. Examination revealed a massive ulcerated wound with vigorous discharge from multiple fistulas on both the superior and inferior palpebra. Proptosis and limited ocular movement were noted, though the left eye was otherwise within normal limits. A post-contrast orbital CT scan suggested cellulitis and abscess formation extending from the pre-septal to the extraconal area. Gram staining of pus preparation showed gram-positive streptococci, later confirmed as *Streptococcus pyogenes* by culture. Other than elevated blood glucose, the overall systemic condition was decent. Initial treatment included blood glucose regulation and intravenous broad-spectrum antibiotics, which showed partial response. Surgical drainage was performed, leading to progressive healing of the ulcerated wound.

Conclusions: *Streptococcus pyogenes* is a rare and critical etiological agent of orbital necrotizing fasciitis, which may put the infected patient at risk for potentially fatal complications. Appropriate and prompt management can prevent further ocular, intracranial, and systemic complications.

Using Transverse Superior Fascia Expansion (TSFE) in Ptosis Treatment

First Author: Nguyễn HIỀN

Purpose: Aim to evaluate the outcomes of TSFE in the treatment of moderate and recurrent ptosis.

Methods: Prospective and describing an interventional study.

Results: This study was divided into 2 groups: primary congenital ptosis and recurrent ptosis. The follow-up time was 6 months. MRD1 raised from 0.5mm post-op to 3.4 mm after operation. Lagophthalmos occurred in almost all patients but changed to a good 6 months after surgery. 87% were satisfied with the results. Over 90% got symmetry after time followed up.

Conclusions: Good autologous material to treat moderate and recurrent ptosis. Prevent complications of synthetic materials. Prevent amblyopia.

Pediatric Ophthalmology and Strabismus

Association With Sagging Eye Syndrome and Scleral Buckling – a Case Report

First Author: Shaochun CHEN

Purpose: We present a case report of sagging eye syndrome (SES) associated with scleral buckling (SB).

Methods: A case report.

Results: A 70-year-old male presented with recent complaints of diplopia. Upon reviewing his medical history, it was discovered that he underwent retinal detachment surgery with SB placement in the right eye 30 years ago. Additionally, bilateral high myopia was observed. Physical examination revealed esotropia in the right eye, accompanied by limited upper and temporal movements as well as ptosis. Magnetic resonance imaging revealed a 1.9cm cystic lesion adjacent to the inferior aspect of the right eyeball. Furthermore, an attenuated band remnant in the superolateral orbit was noted, along with an abrupt termination. The high signal swelling object was initially identified as the SB, which was found to

be progressively enlarging. Despite the removal of the scleral buckle, SES and tendon defect persisted.

Conclusions: We present a unique case involving SES with SB. The SB exhibited enlargement in the inferonasal region, exerting pressure on the eyeball in a superotemporal direction. This may have led to the deformation of the lateral rectus-superior rectus band ligament, resulting in secondary SES development as a consequence of the enlarging SB.

Beyond the Surface: Tear Inflammatory Markers for Retinopathy of Prematurity Screening - a Systematic Review

First Author: Andintia SANTOSO

Co-Author(s): Adantio Rashid SANTOSO

Purpose: To systematically evaluate the potential role of inflammatory factors in the tear fluid of infants at risk for retinopathy of prematurity (ROP).

Methods: A systematic review was conducted using multiple databases, including the Cochrane Library, PubMed, Scopus, EBSCO, and ProQuest, complemented by manual searches. Studies were screened following PRISMA guidelines, and the quality of cohort and cross-sectional studies was assessed using the Newcastle-Ottawa Scale (NOS). The primary outcome was the measurement of cytokine levels in the tear fluid of preterm infants with ROP. Secondary outcomes included the correlation between inflammatory proteins and key risk factors for ROP, such as gestational age and birth weight.

Results: Seven studies involving 641 infants were included. A total of 26 inflammatory markers in tear fluid were identified, with VEGF, IL-6, IL-8, TNF- α , IFN- γ , and CCL2 being the most frequently analyzed. Findings on VEGF were inconsistent: two studies reported lower VEGF levels in ROP patients, particularly in stage 3, whereas two other studies found higher VEGF levels associated with severe ROP. Elevated levels of interleukins and CCL2, and decreased levels of IFN- γ were noted in ROP infants. Some markers were correlated with gestational age and birth weight, either individually or in combination.

Conclusions: The review highlights the potential of inflammatory markers in tear fluid for noninvasive ROP screening and early detection. Targeted analysis of the biomarkers could improve ROP management, highlighting the need for further research to validate these findings.

Challenging Uveal Melanoma Treatment in a Child: Stereotactic Radiosurgery, Complications and Outcomes

*First Author: Ekaterina MALAKSHINOVA
Co-Author(s): Andrey GOLANOV, Valeri KOSTUCHENKO, Roman LOGINOV*

Purpose: To present a rare clinical case of a child with UM treated with Gamma-Knife stereotactic radiosurgery (GKSRS).

Methods: A 14-year-old girl with decreased vision in the right eye was referred to our center. The visual acuity (VA) was 0,45. UM of 9.9mm high and 10.5mm basal diameter was diagnosed. The enucleation was proposed, but the child and parents refused. Gamma-Knife stereotactic radiosurgery (GKSRS) was performed as an alternative to enucleation. The marginal prescribed dose was 30 Gy@50%.

Results: During the 43-month follow-up, the UM reduced to 3.4mm in prominence and to 10.4mm in basal diameter. Eighteen months after treatment, the girl was diagnosed to be evaluated on radiation macula edema (ME). VA was 0,1, and the average central macular thickness (CMT) - 330 microns. Seven intravitreal injections of anti-VEGF therapy were performed to make ME completely gone (CMT = 216 microns). Radiation cataract was also treated with IOL implantation 40 months after GKSRS. The final VA was 0,7. No tumor relapse and no signs of metastasis were detected within 43 months of follow-up. We look forward to managing the girl.

Conclusions: The first experience of stereotactic radiosurgery "Gamma knife" demonstrates the possibility of using a method for the treatment of large-sized uveal melanoma in children

Changes in Anisometropia by Age in Children With Hyperopia, Myopia, and Antimetropia

*First Author: Shih Wen WANG
Co-Author(s): Chiunho HOU*

Purpose: Anisometropia is a unique condition of both eyes and it is associated with vision problems such as amblyopia and reduced stereoacuity. Previous studies have not reported its change pattern by age and its correlation with the refractive condition of both eyes. This study aims to compare the changes in anisometropia by age in children with hyperopia, myopia, and antimetropia.

Methods: In total, 156 children were included. Children aged 3–11 years with anisometropia ≥ 1.00 D were followed up for ≥ 1 year with ≥ 2 visits at two medical centers in Taiwan. Refractive errors by cycloplegic autorefractometry, bestcorrected visual acuity, eye position, and atropine use were recorded. The children were divided into hyperopic, myopic, and antimetropic groups.

Results: The results showed that anisometropia decreased in children aged < 6 years (3.34–2.96 D; $P = 0.038$) and increased in older children (2.16–2.55 D; $P = 0.005$). In children aged 3, 4, 5, and 6 years, the mean anisometropia was higher in children with myopia and antimetropia than in those with hyperopia ($P = 0.005, 0.002, 0.001, \text{ and } 0.011$, respectively). The differences were not significant in children aged > 6 years (all $P > 0.05$). The factors associated with changes in anisometropia were age, refractive group, amblyopia, and strabismus.

Conclusions: Anisometropia decreased with age in children younger than 6 years, and the changes in anisometropia were found in children with myopia and antimetropia.

Comparison of Binocular Reading Speed in Patients With Strabismus Without Amblyopia Versus Controls

*First Author: Vishaal BHAMBHWANI
Co-Author(s): Daniel LAMOUREUX, Sarah YEO*

Purpose: Amblyopia has been shown to slow binocular reading speed. Limited literature exists on reading speed in strabismus without amblyopia. Our study compares binocular reading speed in patients with strabismus without amblyopia versus normal controls.

Methods: We conducted a prospective study with 48 participants: 12 childhood-onset (onset <8 years of age) strabismus without amblyopia and 36 age- and education level-matched controls. Inclusion criteria were age 14-50 years, education >9 years, primary language English, BCVA >20/30 distance and >N8 near either eye. Exclusion criteria were the presence of other eye pathology or neurological/cognitive conditions which may impact reading, and previous treatment for strabismus/amblyopia. International Reading Speed Texts (IReST) were used for binocular reading speed assessment. Each participant read two passages (passages 1 and 8), following all IReST instructions. Reading time was measured using a stopwatch. Reading speed was calculated in words per minute (WPM).

Results: The mean age for the strabismus group was 28.3+/-11.1, and the control group was 28.2+/-11.0 years (p=0.96). The mean education level for the strabismus group was 14.2+/-2.4, and the control group was 13.8+/-2.5 years (p=0.62). The mean binocular reading speed for passage 1 for the strabismus group was 192.0 (+/-42.4), and for the control group was 220.0 (+/-29.3) WPM (p=0.01). The mean binocular reading speed for passage 8 for the strabismus group was 201.3 (+/-47.1), and for the control group was 226.2 (+/-30.7) WPM (p=0.04).

Conclusions: Strabismus (without amblyopia) patients had slower binocular reading speeds compared to controls. Further studies with eye tracking may provide more information. Strabismus, even without amblyopia, may affect reading performance and, consequently, vision-related quality of life.

Current Screening Practices and Treatment Trends of ROP Management in the Healthcare System of Pakistan

First Author: Aisha AZAM

Co-Author(s): Muhammad MOIN

Purpose: The principal objective of our study is to evaluate the characteristics of babies with type 1 ROP, screening practices, and treatment trends in a tertiary care center in Pakistan.

Methods: Infants were categorized using international (Gestational Age or GA <32 weeks or Birthweight or BW <1500g) and local (GA <35

weeks or BW <2000g) screening criteria. Treatment outcomes were compared across three groups: Anti-VEGF, combination therapy, and laser therapy. Statistical analysis was conducted using SPSS 27.0 with Chi-square and Fisher Exact tests for categorical variables, and significance was set at p<0.05.

Results: Out of 355 infants screened, 89 (25.1%) had type 1 ROP, with 61.8% male and 38.2% female, averaging 31.31 weeks gestational age and 1602.25 grams birth weight. Zone 1 ROP (36%) was linked to lower birth weight and earlier gestation, often treated with anti-VEGF or combination therapy. Zone 2 ROP (64%) was associated with higher birth weight and later gestation, mostly receiving laser therapy. Infants meeting international screening criteria (70.8%) were more likely to have Zone 1 ROP and receive anti-VEGF or combination therapy, while those not meeting the international criteria (29.2%) had mostly Zone 2 ROP and received laser therapy.

Conclusions: International screening criteria effectively identify severe type 1 ROP, particularly Zone 1 cases requiring anti-VEGF therapy. Local criteria capture additional Zone 2 cases, often needing laser treatment. These findings underscore the importance of tailored screening and treatment strategies to enhance ROP management in preterm infants.

Duane Retraction Syndrome and Treatment Options

First Author: Thao NGUYEN

Purpose: To propose treatment options in Duane patients.

Methods: A case series of 8 patients who were diagnosed with Duane syndrome is reported, and we present the treatment and outcomes of these patients.

Results: Eight Duane patients were collected. Among them, one patient is of Duane type 1 with mild esotropia in the Duane eye and treated by plus glasses (+4.00 DS). One patient with Duane type 1 with esotropia and head tilt was treated by medial rectus recession in the Duane eye. One patient with left eye Duane type 1 without abnormal head posture and has a straight eye in primary position was followed without any intervention. One patient with

left eye Duane type 1- exotropia and the dominant eye is the Duane eye was treated by recess- resect the other eye. Two patients with Duane type 2 in the left eye and exotropia with downshoot or upshoot were treated by a bilateral lateral recession of Y split in the Duane eye. One patient with bilateral Duane type 2 and exotropia was treated with bilateral lateral recession with Y split. One bilateral Duane type 3 with mild exotropia and without head tilt did not receive any treatment but follow-up. All patients who received the intervention (glasses or surgeries) achieved the goal of straight eyes in the primary position and diminished or eliminated the head tilt position.

Conclusions: Duane retraction syndrome is a rare strabismus syndrome in which the treatments are variable. The choice of treatment depends on cycloplegic refractive error, strabismus in the primary position, and abnormal head posture.

Epidemiology of Strabismus in Children in the Western Region of Azerbaijan

First Author: Yazgöl ABDIYEVA

Purpose: To learn the rapid spread of strabismus among children in the western region of Azerbaijan and its epidemiological features.

Methods: More than 900 children living in the western region were involved in the study to learn the structure and prevalence of squint in children. All patients were subjected to the standard ophthalmological examinations.

Results: The prevalence of strabismus among young children (under 5 years old), those aged 5-9, and 10-14 years old were found to be $3.9 \pm 0.6\%$, $4.3 \pm 0.7\%$, and $3.2 \pm 0.6\%$, respectively, with equal statistical significance ($P > 0.05$). Similar results were observed when comparing the prevalence rate for age groups of children residing in different living environments, including big cities, small towns, and rural areas. The visual acuity among the examined children was noted to be $< 6/18$ (0,3). The specific weight for children with visual acuity of $< 0,05$; $0,05-0,1$ and $0,1-0,3$ was $0,04 \pm 0,1$ (under 5 years old); $3,2 \pm 0,4$ (5-9 years old) and $6,8 \pm 0,7$ % (9-14 years old), respectively. It was identified that the prevalence of strabismus among

children aged 1-15 years varies based on the place of residence.

Conclusions: The level of strabismus spread is different in all 3 age groups. Age and gender haven't contributed to the spread of squint among children, but the spread of the pathology in urban areas is less than that in big cities.

I Did 16 Tooth Extractions!!

*First Author: Daniel PHANG
Co-Author(s): Chee SHEW FEI,
Wan Hazabbah WAN HITAM*

Purpose: Pediatric preseptal cellulitis is an ophthalmic emergency. We herein report a unique presentation of preseptal cellulitis secondary to odontogenic origin which was treated with systemic antibiotic and dental clearance.

Methods: Case report.

Results: A 6-year-old girl presented with sudden painless left cheek swelling extending to the preseptal region. She had tooth pain 2 days prior to the onset of illness. Her past medical history was unremarkable. On examination, the best corrected left visual acuity was OU 6/6 with no relative afferent pupillary defect. She had facial cellulitis involving the periorbital region, which extended to her lower cheek. Otherwise, the examination of the anterior and posterior segments was unremarkable. Intraocular pressure (IOP) of both eyes was within normal limits. Laboratory markers showed borderline raised total white blood cells, and culture, and sensitivity were negative. She was started on systemic intravenous antibiotics and underwent extraction of a decayed tooth. A total of 16 teeth were extracted in the process. After the surgery, she recovered well, and her temperature remained afebrile throughout admission. She was discharged well after a week of systemic antibiotics. During follow-up, her final visual acuity was 6/6, and her dental hygiene was satisfactory.

Conclusions: Pediatric preseptal cellulitis secondary to a decayed tooth is a life-threatening condition if left untreated. This case highlights the importance of oral hygiene, which is still lacking in our community.

Impact of MiSight 1 Day Contact Lenses on Myopia Control: A Retrospective Follow-Up Study at a Regional Hospital

First Author: Chao Jung WU
Co-Author(s): Yu CHEN

Purpose: Over the past few decades, myopia has significantly increased, particularly in East Asia. Children with early-onset or moderate myopia are at risk of progressing to high myopia, leading to complications. This study investigates the effectiveness of MiSight 1 Day Contact Lenses in slowing axial elongation and controlling myopia progression.

Methods: This retrospective study at Show Chwan Memorial Hospital included patients aged 10 to 16 years, regularly monitored for myopia control. The study group used MiSight Contact Lenses, and the control group used 0.125% atropine, matched by age, gender, and number. Cycloplegic autorefractometry and axial length were measured at baseline, follow-ups, and 52 weeks. SPSS was used for statistical analysis between groups.

Results: Thirty patients received MiSight lenses, and another thirty received 0.125% atropine. Baseline demographics and spherical equivalent (-2.08 ± 1.07 D for MiSight, -2.3 ± 0.76 D for atropine) were similar, with no significant differences ($p=0.36$). After 12 months, spherical equivalent changes were -2.27 ± 1.31 D (MiSight) and -2.45 ± 1.02 D (atropine) ($p=0.26$). Baseline axial lengths were 24.58 ± 0.74 mm (MiSight) and 24.5 ± 0.5 mm (atropine) ($p=0.61$). At 12 months, axial lengths were 24.72 ± 0.85 mm (MiSight) and 24.65 ± 0.47 mm (atropine), showing no significant differences ($p=0.82$). Axial length changes were 0.14 ± 0.57 mm (MiSight) and 0.12 ± 0.29 mm (atropine) ($p=0.3$).

Conclusions: MiSight lenses were not inferior to 0.125% atropine in controlling myopia progression, suggesting they are a viable alternative for myopia management.

Incidence and Clinical Characteristics of Retinopathy of Prematurity Among Preterm Infants Attending Tertiary Eye Center in Cambodia

First Author: Vannaroit TENG
Co-Author(s): Piseth KONG, Amarin MAR

Purpose: The study aimed to analyze the cumulative incidence of retinopathy of prematurity (ROP) and understand the clinical patterns and its risk factors.

Methods: This is a prospective, non-comparative, observational study which took place from January to December 2022. All infants born prematurely were subjected to a comprehensive examination. The cumulative incidence of ROP and its clinical patterns were examined. Follow-up care was individualized for each patient, and prompt treatments were utilized as necessary.

Results: Among a total of 32 babies born, 17 were boys (53.13%) and 15 were girls (46.77%). 23 babies (71.81%) were born after 32 weeks, and 9 babies (28.19%) were born before 32 weeks. Notably, 24 babies (75%) weighed more than 1,500 grams (g). Six babies (18.75%) weighed between 1,000 and 1,500 g, and two babies (6.25%) weighed less than 1,000 g. Out of the 32 babies, 7 (21.8%) were diagnosed with ROP. It is notable that two babies had ROP stage 5 in Zone I, while five babies had ROP stage 1 in Zone III.

Conclusions: The cumulative incidence of ROP at our center is 28.19%, which is lower than the 31.43% reported by other multiple centers in Cambodia. Yet, this rate remains among the highest in Southeast Asian countries nearby. It is important to conduct ROP screening nationwide, and it is essential for neonatologists, pediatricians, and parents of premature babies to have clear information about ROP. The national guideline for ROP awareness and screening should be implemented as soon as possible, and collaboration among multidisciplinary teams should be encouraged.

The Incidence of Pediatric Dacryocystitis Among a Population-Based Cohort of Infants With Congenital Nasolacrimal Duct Obstruction

First Author: Brian MOHNEY

Co-Author(s): Grayson ASHBY

Purpose: To report the incidence, clinical characteristics, and outcomes of acute dacryocystitis among a large, population-based cohort of children born with congenital nasolacrimal duct obstruction (CNLDO) over a 10-year period.

Methods: This multicenter retrospective, population-based cohort study included all patients diagnosed with acute dacryocystitis in a cohort of patients diagnosed with CNLDO before age 5 years in Olmsted County, Minnesota, United States of America from January 1, 1995, through December 31, 2004.

Results: Of 1,998 patients with CNLDO, there were 70 cases (36 female [(51%)]) of acute dacryocystitis during the study, yielding an incidence rate of 243 per 100,000 children (95% CI, 170-316). The mean age at diagnosis was 9.0 months. Patients who developed dacryocystitis were significantly less likely to be born via C-section (OR = 0.29, P = 0.009). Less than half of patients with dacryocystitis were treated with oral/intravenous antibiotics (46%), but those who were had significantly higher odds of requiring probing (OR = 8.50, P = 0.004). Spontaneous CNLDO resolution was significantly less likely to occur in patients diagnosed with acute dacryocystitis compared with those without (OR = 2.46, P = 0.001). The median age of spontaneous resolution in the dacryocystitis group (6.0 months) was significantly older than the uncomplicated CNLDO group (P = 0.012).

Conclusions: Pediatric acute dacryocystitis is an uncommon complication of CNLDO and is associated with both a lower likelihood of and older age at spontaneous resolution of CNLDO symptoms.

Treatment and Diagnosis of Intermediate Cystinosis – a Case Review

First Author: Chee-ming LEE

Purpose: We reported an intermediate cystinosis case with diagnosis and medication treatment. Appropriate treatment for renal disease and other cystinosis-induced symptoms was crucial.

Methods: We reviewed the current literature and highlighted the importance of clinical symptoms, diagnosis, and treatment of intermediate cystinosis.

Results: A 15-year-old female without known underlying disease presented with photophobia and tearing for many years. In our OPD, the visual acuity was 0.7(OD) and 0.8(OS), respectively. A slit lamp showed bilateral cornea crystal deposition. The anterior chamber was formed and clear. No conjunctival iris or ciliary body crystals were found. Fundoscopy showed no RPE mottling or other retina degeneration. According to the patient, no joint tenderness, no recent medication usage, or family history was known. Lab data showed no leukocytosis and normal ESR and CRP, but decreased renal function was found. Because of the cornea crystal deposition, we checked the cystine level, and elevated leukocyte cystine was found. Therefore, intermediate cystinosis was diagnosed. We then arranged the patient to a nephrologist for further evaluation. Oral cysteamine was started. For ophthalmic follow-up, we kept eyedrops for symptom relief and informed the patient to follow up closely. We also informed her that cysteamine eyedrops would be used if symptoms increased. The patient would be followed up on regularly.

Conclusions: Cystinosis is a rare lysosomal storage disease in which cystine accumulates throughout the body. In our case, intermediate cystinosis was diagnosed by clinical presentation and lab data. Appropriate treatment for renal disease and other cystinosis-induced symptoms was crucial, and regular long-term follow-up would be done.

Refractive Surgery

Initial Clinical Outcomes of ICL Implantation Combined With Laser-Assisted in Situ Keratomileusis in Patients With Over High Refractive Errors

First Author: Nazim ZAYNUTDINOV

Purpose: To evaluate initial clinical outcomes after ICL implantation combined with laser-assisted in situ keratomileusis in patients with over high refractive errors.

Methods: In this retrospective, observational study, 35 eyes of 20 patients were observed after ICL implantation and laser-assisted in situ keratomileusis (LASIK) surgery. The main clinical outcomes of this study were uncorrected visual acuity (UCVA), best corrected visual acuity (BCVA), ICL vault, intraocular pressure (IOP), and central corneal thickness (CCT). All postoperative outcomes were evaluated at 1 day, 1 week, 1, 3, and 6 months in the postoperative period.

Results: Totally 35 eyes of 20 patients underwent ICL implantation and Trans Epi method of LASIK surgery from 2020 to 2023. The mean age of patients was 27.45 ± 3.25 . The mean preoperative manifest spherical equivalent was -18.75 ± 2.65 D and the manifest cylinder was -2.25 ± 0.54 D, respectively ($p \leq 0.001$), with postoperative spherical refractive measures reduced to -0.5 ± 0.25 D and cylinder measures reduced to -0.5 ± 0.12 D. After ICL implantation, the mean residual spheric equivalent was -2.75 ± 0.75 D and was corrected with using Trans Epi Lasik surgery on 1st month of postop period. The mean CCT value was 476 ± 34 μ m preoperatively and has changed after LASIK. The mean postop CCT was 412 ± 25 μ m respectively ($p \leq 0.001$). The mean IOP was 14.2 ± 1.5 mmHg preoperatively. The mean IOP has changed until 15.44 ± 1.76 mmHg during the six-month postop period, respectively ($p \leq 0.001$). Any kind of complications were not revealed during the postop investigation period.

Conclusions: ICL implantation is a safe, effective method, and residual spheric equivalent might be corrected by using LASIK.

LASIK Flap Dislocation After Mynah Bird Attack: A Case Report

First Author: Hung-yu LIN

Co-Author(s): Yu-hsu CHEN

Purpose: This study examines patient outcomes following LASIK flap dislocation due to a mynah bird attack, focusing on corneal infection potential, flap repositioning outcome, and final uncorrected distance visual acuity (UDVA).

Methods: To report a case of LASIK flap dislocation caused by a mynah bird attack.

Results: A 54-year-old female with a history of LASIK in both eyes 5 years prior presented to our clinic with sudden visual loss and pain after being attacked by her pet mynah bird. Initially treated with levofloxacin eye drops at a local medical department, she was transferred to our hospital. At our outpatient department, her UDVA was counting fingers at 20 cm in the right eye. She was diagnosed with LASIK flap dislocation and diffuse lamellar keratitis. Slit-lamp examination showed flap dislocation from 11 o'clock to 5 o'clock, with an inverted flap and epithelial ingrowth. She underwent immediate B.S.S. irrigation, flap repositioning, and epithelial ingrowth removal. Postoperatively, she was treated with topical moxifloxacin for 2 weeks and topical prednisolone acetate 1% tapered over 4 weeks. On postoperative day one, her UDVA improved to 20/200, and at the 1-month visit, her final UDVA was 20/25. Resolution of diffuse lamellar keratitis and minimal residual macrostriae were noted.

Conclusions: This case highlights the successful management of a LASIK flap dislocation caused by a mynah bird attack. Prompt repositioning of the flap and prophylactic antibiotic treatment were critical in preventing infection and restoring visual acuity.

Visual Recovery Status of Eyeball Trauma After Laser-Assisted in Situ Keratomileusis

First Author: Yachi HUANG

Purpose: To observe the vision outcome of eyeball trauma after laser-assisted in situ keratomileusis (LASIK).

Methods: A case report.

Results: A 24-year-old woman had eyeball trauma due to a traffic accident. She underwent LASIK for myopia a week ago. Both eyes were hit by airbags. Her right eye had a cornea-sclera laceration at 9 o'clock and a vitreous hemorrhage. Both eyes had cornea flap dislocations. She received repair surgery in the right eye and reposition flap surgery in both eyes. After one month, visual acuity improved to 20/20 in both eyes. There were no serious complications of flap.

Conclusions: Eyeball trauma several months or years after LASIK may cause flap injury. Adequate and prompt treatment is important for visual recovery.

Retina (Medical)

A Case of Chronic Multifocal Central Serous Chorio Retinopathy (CSCR) Successfully Treated With Combined Laser and Aflibercept Injection

First Author: Mahesh JAYAWEERA GAMAGE
Co-Author(s): Dhh WARIYAPOLA

Purpose: Current treatment approaches for chronic multifocal central serous chorio retinopathy (CSCR) include photodynamic therapy, oral aldosterone antagonism, anti-VEGF therapy, and subthreshold multifocal laser. I present a case of chronic multifocal CSCR successfully treated with combined laser and anti-VEGF therapy.

Methods: A 36-year-old female present with blurring of vision in the right eye for nearly 1 year duration. She is otherwise healthy and not on any routine medications. BCVA was 6/12 OD and 6/6 OS. OD examination showed CSCR, confirmed by OCT macula. On failed initial conservative management, FFA was performed, which showed multiple areas of leakage. Treatment with intravitreal bevacizumab injection showed no response at 4 weeks. Subsequently, she was treated with FFA-guided multifocal laser therapy followed by intravitreal aflibercept injection.

Results: On presentation, her right eye macula central retinal thickness (CRT) was 371 μ m, and central subfield mean thickness (CSMT) was 355 μ m. Four weeks after the bevacizumab injection, BCVA remained unchanged at 6/12. CRT and CSMT were 375 μ m and 374 μ m respectively. Six weeks following combined multifocal laser therapy and aflibercept injection, BCVA has improved to 6/6. OCT showed

complete resolution of SRF. Three months follow-up BCVA remained at 6/6, with no recurrence of SRF on the OCT. CRT and CSMT were 202 μ m and 274 μ m at 6 weeks and 206 μ m and 276 μ m at 3 months.

Conclusions: This case shows complete resolution of chronic multifocal CSCR following combined multifocal laser therapy and aflibercept injection.

A Medusa in the Eye? Unveiling Wyburn-Mason Syndrome

First Author: Moi ZJEN PANG
Co-Author(s): Shir Yen WANG

Purpose: Wyburn-Mason syndrome (WMS) is a rare non-hereditary congenital arteriovenous malformation (AVM). Approximately 30% of patients with Wyburn-Mason Syndrome who exhibit retinal abnormalities also show brain abnormalities, while 8% of those with brain abnormalities have retinal findings.

Methods: A case report.

Results: A 19-year-old lady with no previous known medical illnesses presented with left eye blurring of vision for a day, and associated floaters. She experienced throbbing headaches 2 months prior without any neurological symptoms. Her right eye best corrected visual acuity was 6/6 while her left eye was 6/24. Both eyes showed normal optic nerve function and intact ocular mobility. Anterior segment examination was unremarkable bilaterally. However, the left eye fundus examination revealed vitreous hemorrhage (VH) adjacent to the optic disc (OD). During the subsequent follow-up, as the vitreous hemorrhage resolved, the fundus examination revealed tortuous and dilated vessels. Collateral vessels were seen at the peripapillary along nasal and superior OD. Fundus fluorescein angiography (FFA) of the left eye revealed AV malformation with dilated and tortuous arteries around the peripapillary area. Subsequent computed tomography (CT) angiography of the brain reported no evidence of intracranial aneurysm or AV malformation.

Conclusions: WMS may present itself in varying sizes and locations involving the brain, orbit, retina, and skin. It can be both sight-threatening and life-threatening. Thus, understanding the neurological association is crucial to preserve vision and save lives.

A Rare Overlap in a Very Rare Complex: Vogt-Koyanagi-Harada Syndrome Superimposed on Choroideremia

First Author: Triana GUNARDI

Co-Author(s): Rina La Distia NORA, Ratna SITOMPUL, Anggun Rama YUDANTHA

Purpose: Choroideremia has been linked to deafness as well as neurological, and psychiatric manifestations. This is the first reported case of VKH overlapping a 1:100,000 prevalence of choroideremia, treated with intravitreal anti-VEGF therapy, highlighting the need for comprehensive diagnostic and treatment approaches.

Methods: A 19-year-old male diagnosed with convalescent VKH, treated with corticosteroids and corticosteroid-sparing agents, fundus examination revealed features suggestive of choroideremia.

Results: The patient exhibited granulomatous keratic precipitates, sunset glow fundus, recurrent vitreous haziness, and bilateral pseudophakia from corticosteroid-induced cataract. He had mild headaches, without nyctalopia or dermatological complaints. His visual acuity (VA) was 6/15 RE and 0.5/60 LE, treated with azathioprine and methylprednisolone, maintaining 6/18 RE, 1/60 LE during 2022. By 2023, VA declined to 6/60 RE, 1/60 LE, likely from VKH relapse and non-compliant treatment. By 2024, VA further deteriorated to 3/60 RE, 1/60 LE. Optical coherence tomography showed LE's cystoid macular edema. Regiments are continued with additional acetazolamide and intravitreal anti-VEGF on LE, improving VA to 6/30 RE, 3/60 LE. A June 2024 flare-up reduced VA, which improved after high-dose intravenous methylprednisolone. Examination revealed a normal optic disc, diffuse chorioretinal thinning with visible vortex veins, and widespread pigment clumping; highly suggestive of choroideremia. The only definitive genetic diagnosis is not yet available in our country. The patient is scheduled for monthly intravitreal anti-VEGF injections.

Conclusions: This case highlights the complexity of diagnosing and managing concurrent choroideremia and VKH. The comprehensive treatment approach, including anti-VEGF injection, has allowed the patient to continue his education, illustrating the importance of tailored strategies for each individual.

Acute Syphilitic Posterior Placoid Chorioretinitis in an Immunocompetent Individual

First Author: Saritrasaraswathy RAJ

Co-Author(s): Roslin Azni ABDUL AZIZ,

Mimiwati ZAHARI

Purpose: To report a rarely encountered case of ocular syphilis in an immunocompetent patient.

Methods: Case report.

Results: A young immunocompetent gentleman presented with a two-month history of painless generalized blurring of vision over his left eye. Upon examination, there was an inconspicuous placoid subretinal lesion surrounding the left posterior pole and a few incidental choroiditis spots over the inferior right macula. Left fundus autofluorescence (FAF) showed parafoveal hyperautofluorescence over the placoid area. Spectral Domain Optical Coherence Tomography (SD-OCT) of both macula showed choroidal thickening and hyperreflective irregularities over the outer retina except for an intact external limiting membrane and ellipsoid layer over the right eye. Fundus fluorescein angiography (FFA) showed generalized small vessel vasculitis. He was positive for Syphilis with a high Rapid Plasma Reagin (RPR) titre. He was then treated with intravenous antibiotics for two weeks and subsequently responded well with the resolution of the abnormal fundus findings and recovery of outer retinal layers.

Conclusions: Acute Syphilitic Posterior Placoid Chorioretinitis can manifest in immunocompetent individuals and has a good overall visual prognosis with treatment. Besides its typical fundus finding, ocular imaging such as OCT, FAF, FFA and haematological assays can help to ascertain the diagnosis. Imaging is also a helpful tool to diagnose this condition when clinical findings appear vague.

Advances in Understanding and Treating Central Serous Chorioretinopathy

First Author: Xinyuan ZHANG

Co-Author(s): Xinyuan ZHANG

Purpose: Central serous chorioretinopathy (CSCR) is characterized by idiopathic focal serous detachment of the neural retina and/or retinal pigment epithelium (RPE) in the posterior pole. In the

recent 15 years, with the development of advanced imaging techniques such as optical coherence tomography (OCT), a novel concept of pachychoroid spectrum disorder (PCD), has been described. This comprehensive review aims to highlight the currently available evidence on the pathogenesis, diagnosis, multimodality imaging features, and management strategies, including recent findings related to CSCR.

Methods: In this review, PubMed, Medline, Springerlink, the Cochrane Library, Google Scholar, and Embase Medline database from the year 1990 to November 28, 2022, have been searched to retrieve English articles with the following key terms: "central serous chorioretinopathy", "central serous retinopathy", "chorioretinopathy", "central serous retinopathy" and "CSCR". The search is limited to the terms "epidemiology" or "risk factors" or "pathogenesis"; or "management" or "treatment" or "trial" or "randomized" to focus on the findings of randomized clinical trials, cohort studies, meta-analyses, reviews, and technological advancements in the past decade.

Results: We highlighted the currently available evidence on the pathogenesis, diagnosis, multimodality imaging features, and management strategies, including recent findings related to CSCR.

Conclusions: CSCR is continuously updated based on the understanding of the pathogenesis of pachychoroidal spectrum disorder and venous overload choroidopathy.

Bilateral Purtscher-like Retinopathy with Serous Retinal Detachment in Preeclampsia: A Case Report

*First Author: Shih-hao TZENG
Co-Author(s): Ya-feng CHENG*

Purpose: This case investigated the rare association between preeclampsia and Purtscher-like retinopathy, characterized by cotton-wool patches, retinal whitening, and hemorrhages. While serous retinal detachment is commonly associated with preeclampsia, it is notably absent in cases of Purtscher-like retinopathy.

Methods: We reported an unusual case presented with bilateral Purtscher-like retinopathy, along with the concurrent occurrence of serous retinal detachment as complications of preeclampsia.

Results: A 38-year-old woman in her 33rd week of gestation (gravida 3, para 2), previously prescribed nifedipine for gestational hypertension, presented with sudden diminished vision in her right eye. Ocular examination showed visual acuity of 30/50 in the right eye and 20/20 in the left. Intraocular pressure and anterior segment were unremarkable. Fundus examination revealed multiple cotton wool spots, serous retinal detachment along the superior arcade, and a peripapillary flame-shaped hemorrhage in the right eye. Optical coherence tomography confirmed serous retinal detachment and hyperreflectivity in the ellipsoid zone and inner retinal layers. She had facial puffiness and bilateral pedal edema, with blood pressure at 186/123 mmHg and 2+ proteinuria. An emergency cesarean section was scheduled, and postpartum management included labetalol and magnesium sulfate. One week later, her vision improved to 20/20, and fundoscopy showed a reduction in Purtscher-like flecken.

Conclusions: The coexistence of Purtscher-like retinopathy and serous retinal detachment in preeclampsia is rare and sight-threatening. Urgent ophthalmology consultation is crucial to rule out serious etiologies, despite most visual changes in preeclampsia being transient.

Clinical Outcomes of Double-Dose Aflibercept Treatment for Refractory Wet Age-Related Macular Degeneration

*First Author: Iksoo BYON
Co-Author(s): Ji Eun LEE, Boo Sup OUM,
Sung Who PARK*

Purpose: To evaluate the clinical outcomes and prognostic factors of double-dose aflibercept in patients with refractory neovascular age-related macular degeneration (nAMD).

Methods: We reviewed the medical records of nAMD patients treated with a double dose of aflibercept (4 mg/0.1 mL) due to an inadequate response to standard 8-weekly intravitreal injections of 2 mg/0.05 mL aflibercept. The assessment at week 8 after treatment included changes in subretinal/intraretinal fluid (SRF/IRF) and best-corrected visual acuity, with patients showing absence or reduction in SRF/IRF classified as the response group. Baseline factors influencing clinical outcomes

were analyzed, including central macular thickness (CMT), central choroidal thickness (CCT), size of choroidal neovascularization (CNV), CNV subtype, and maximum height of SRF and IRF.

Results: The study included 95 eyes of 95 subjects, with 61 eyes (64.2%) categorized as the response group following double-dose treatment. Responders exhibited thicker CCT (290.4 μm vs. 194.0 μm , $p < 0.001$), thinner CMT (251.2 μm vs 311.1 μm , $p = 0.018$), smaller CNV area (2.718 mm^2 vs. 3.964 mm^2 , $p = 0.034$), and a higher prevalence of type 1 CNV (85.2% vs. 58.8%, $p = 0.011$) compared to the non-response group. Multivariate binary logistic regression analysis identified thicker CCT ($p < 0.001$, $r = 1.016$), thinner CMT ($p = 0.014$, $r = 0.988$), smaller CNV area ($p = 0.015$, $r = 0.662$), and type 1 CNV ($p = 0.001$, $r = 0.061$) as factors associated with better anatomical outcomes.

Conclusions: Double-dose aflibercept was effective in 64% of patients with refractory nAMD, suggesting it may be considered for those with small CNV areas, thinner CMT, and thicker CCT.

Comparison of Therapeutic Effects of Ranibizumab in Retinal Vein Occlusion and Macular Edema With Different Optical Coherence Tomographic Patterns

First Author: Yue XU

Purpose: For exploring morphological and functional parameters to evaluate the effectiveness of intravitreal ranibizumab injection in ME secondary to RVO.

Methods: This was a retrospective study of 65 RVO patients with ranibizumab injections and follow-up for over 3 months. ME was classified into cystoid macular edema (CME), diffuse retinal thickening (DRT), and serous retinal detachment (SRD) according to OCT. The comparison of BCVA and CMT among different follow-up points and three groups was performed. The correlation between BCVA and baseline parameters was also analyzed.

Results: BCVA was prone to improve in CME, DRT, and SRD, especially significant in CME and DRT groups. CMT reduced most after 1-week and kept stable in the following 3 months. DRT patients had the worst BCVA and the highest CMT at baseline, but

the differences became smaller after ranibizumab treatment. After 3 months of treatment, the CMT of the SRD group was significantly better than that of the CME and DRT groups. DRT patients were most likely to transform into the other morphological groups, while SRD patients seldom changed into other morphological groups. BCVA at baseline was the most important prognostic indicator in all three groups in this study. Baseline CMT tended to be another prognostic indicator for SRD patients.

Conclusions: The effectiveness of intravitreal injections of ranibizumab was highly associated with BCVA at baseline in three groups. SRD patients are more likely to get anatomical recovery, while DRT patients need additional injections and recovery duration. Different morphological ME patients showed diverse characteristics and should be distinguished in diagnosis, personalized treatment, and prognosis.

Decoding Retinal Vasculitis: Insights From Case Studies

First Author: Chander PRABHA

Purpose: To provide a comprehensive analysis of multiple patient cases to better understand the clinical presentation, diagnostic challenges, and treatment outcomes of retinal vasculitis.

Methods: Retinal vasculitis can be an isolated condition or a complication of local or systemic inflammatory disorders characterized by inflammation of the retinal vessels. Case 1 - Here, we present a case of retinal vasculitis in a patient with Behcet's disease. An 18-year-old man presented with vitreous inflammation, macular edema in right eye. He had scarring acneiform lesions over his face, an oral ulcer, and gastric discomfort. He was found to be HLA B 52 positive. Case 2 - A single-eyed 18-year-old male presented with DOV in another eye was found to have active ocular toxoplasmosis. Case 3- A 27-year-old male presented with papillitis, perivascular sheathing, and choroid granuloma and was diagnosed with ocular tuberculosis. Case 4 - A 17-year-old male presented with neuroretinitis with neovascularization with periphlebitis in the right eye and vitreous haemorrhage in the left eye. He was diagnosed with ocular TB. Case 5 - A 36-year-old male

presented with right eye BRVO with perivascular sheathing and left eye vitreous haemorrhage. He was diagnosed with Eales disease.

Results: Extensive workup was done to rule out systemic disease. Based on etiologies, patients were started on oral steroids, immunosuppressive therapy, and antitubercular therapy.

Conclusions: Retinal vasculitis presents with varied etiologies and requires a thorough diagnostic approach to identify the underlying cause. Prompt and appropriate treatment can lead to significant improvement in visual outcomes.

Diagnostic Approach and Management of Gronblad-Strandberg Syndrome - a Rare Case Report

First Author: Sidratul Muntaha NAZNIN

Co-Author(s): Shah Md.Rajibul ISLAM

Purpose: To report a rare genetic disorder that causes abnormal calcification of skin, eye, and blood vessels, leading to vision loss, poor quality of life, and vascular problems.

Methods: A 58-year-old female complained of gradually decreased vision in their left eye for the last 3 months. General examination showed yellow soft papules affecting the neck and axillary area, hypertension for fifteen years, and a history of cerebral infarction. Ocular examination showed best corrected visual acuity of left eyes was 6/60(log MAR1); right eye 6/6(log MAR 0). Fundus examination (left) revealed radial angioid streaks around the optic disc and subretinal hemorrhages below the macular area. Optical coherence tomography (OCT) of the left eye showed a focal hyper-reflective lesion with minimal subretinal fluid. Fluorescein angiography of the left eye detected hyperfluorescence around optic discs with choroidal neovascularization leakage. These manifestations were consistent with changes in the pseudoxanthoma elasticum (PXE) fundus. Due to her chicken skin appearance in the neck region, she was examined at the Department of dermatology by tissue paraffin section with molecular pathology analyses. Diagnosis of PXE was then confirmed. After intravitreal Avastin (10 mg/ml) injections; her vision was improved to 6/12 log MAR .3.

Results: The cutaneous and ocular finding of PEX is referred to as Gronblad-Strandberg syndrome.

Following 3 injections of Avastin, OCT showed improvement, and vision improved to 6/12 in the left eye.

Conclusions: The Gronblad-Strandberg syndrome is a disease with low incidence, and thus, no effective cure has been established. Targeted symptomatic treatment can effectively retard disease progression and visual morbidity.

Early Onset Macular Drusen: A Severe Variant of Typical Age-Related Macular Degeneration?

First Author: Ranjana MATHUR

Purpose: EOMD is a dominantly inherited condition attributed to aberrant complement activity that interferes with the clearance of metabolic by-products from the outer retina, resulting in the accumulation of macular drusen as early as the fourth decade of life, which progresses to geographic atrophy and central vision loss. Highly penetrant pathogenic variants in the complement factor H gene are a known cause of EOMD. Here we present cases of and review potential therapeutic approaches for both EOMD and typical AMD.

Methods: Findings in two siblings with EOMD caused by CFH haploinsufficiency and CFH gene variant. Multimodal imaging and genotyping by whole-exome sequencing were done.

Results: The proband presented at age 66, with BCVA of 6/6 RE and 6/9 LE, macula showed large central drusenoid RPE elevations with subfoveal fluid and elongated photoreceptor outer segments. BCVA declined over a 4-year to 6/15 due to the development of geographic atrophy (GA). Her 60-year-old sister was found to have an identical phenotype. The proband was homozygous for the relatively common Genotyping result showed CFH c.1277T>C (p.Y402H) variant and heterozygous for the novel variant CFH c.55G>T p.E19X, leading to CFH haploinsufficiency. Additionally, the patient was found to have mild renal impairment.

Conclusions: EOMD appears to represent the severe end of the AMD spectrum with more common genetic variants in CFH, such as Y402H, leading to a late-onset macular drusen and GA phenotype. Greater awareness of this condition is warranted.

The complement pathway is considered the most important pathway and thus may represent an ideal treatment target for candidates.

Early Real-World Experience With Faricimab in Retinal Vein Occlusion in Thailand

First Author: Nuntachai SURAWATSATIEN

Purpose: To investigate the efficacy and safety of intravitreal faricimab for the treatment of macular edema from retinal vein occlusion (RVO).

Methods: This retrospective study analyzed outcomes after 1 and 3 injections of faricimab in both treatment-naïve and treatment-resistant macular edema from RVO. 12 eyes that received the first intravitreal injection of faricimab from October 2023 to June 2024 were included in this study. The injection decision and interval were decided by the treating retinal specialist. Best-corrected visual acuity (BCVA), central subfield thickness (CST), intraretinal fluid (IRF) status, and adverse events were assessed.

Results: Three treatment-naïve and 9 treatment-resistant patients were included. All treatment-resistant patients received aflibercept before switching to faricimab. The average number of injections in the treatment-resistant group was 19 (95%CI 7.21–31.01). 2 patients were diagnosed with branch RVO and 9 were diagnosed with central RVO. After the first injection, BCVA and CST showed a trend of improvement (difference: -0.045 logMAR (95%CI -0.12–0.03) and -37.5 um (95%CI -97.32–22.32), respectively). In 8 patients who received at least 3 injections, both BCVA and CST showed significant improvement after 3 injections (difference: -0.32 logMAR (95%CI -0.60 – -0.03) and -202.17 (95%CI -364.08–40.26) respectively). Subgroup analysis showed that CST decreased significantly after the first injection in the naïve group (difference -49 um (95%CI -61.71 – -36.29). No serious adverse event was reported.

Conclusions: In real-world settings, faricimab shows good functional and anatomical outcomes in macular edema from retinal vein occlusion in both treatment-naïve and treatment-resistant patients.

Evaluation of Choroidal Thickness and Its Associated Factors Among Age-Related Macular Degeneration Patients

First Author: Chee SHEW FEI

Co-Author(s): Zunaina EMBONG, Nur Aliah HASSAN

Purpose: To compare the mean subfoveal choroidal thickness (SFCT) between early ARMD, late ARMD, and control group, and to compare the mean SFCT between neovascular ARMD (nARMD), polypoidal choroidal vasculopathy (PCV) and control group. Also, to identify the associated factors (demographic data and clinical characteristics) of SFCT among ARMD patients.

Methods: A comparative cross-sectional study was conducted in the Ophthalmology Clinic Hospital Universiti Sains Malaysia (USM) and Hospital Selayang from January 2021 to January 2022. This study involved patients with early ARMD, late ARMD, and a control group. The choroidal thickness (CT) was measured using EDI-SD-OCT, and statistical analysis was done using SPSS Inc Version 26.

Results: A total of 144 patients were recruited into the study, and 143 patients were analyzed (Early ARMD: 48 patients, late ARMD: 47 patients, control group: 48 patients). The mean SFCT was significantly higher in late ARMD ($262.76 \pm 68.80 \mu\text{m}$) compared to early ARMD ($236 \pm 28.18 \mu\text{m}$, $p=0.025$) as well as the control group ($244.04 \pm 25.76 \mu\text{m}$, $p=0.037$). The mean SFCT was significantly higher in PCV ($324 \pm 32.13 \mu\text{m}$) than in nARMD ($200.17 \pm 21.31 \mu\text{m}$) and control group ($p<0.001$). Factors that showed significant associations with the CT were age ($p=0.004$), Malay ethnicity ($p=0.031$), nARMD ($p<0.001$), and PCV ($p<0.001$).

Conclusions: CT measurements with OCT devices can make a contribution to the understanding of the pathophysiology of ARMD as well as provide potential non-invasive biomarkers to identify the subtype and assess the progression of ARMD.

Full-Thickness Macular Hole Formation After Intravitreal Faricimab Injection for Polypoidal Choroidal Vasculopathy

First Author: Fahsiri TAVONVUNCHAI
Co-Author(s): Thanwarat CHAIPHO,
Karntida CHANWIMOL

Purpose: To report a case of an Asian man with idiopathic polypoidal choroidal vasculopathy (PCV) who developed a full-thickness macular hole (FTMH) following treatment with intravitreal faricimab, which resolved after vitreoretinal surgery.

Methods: A 63-year-old man with idiopathic PCV was treated with intravitreal faricimab. He developed cystoid macular edema, vitreomacular traction (VMT), and a decreased pigment epithelial detachment (PED), which progressed to an FTMH.

Results: Pars plana vitrectomy and internal limiting membrane peeling successfully treated the FTMH. Eight months after the procedure, the macular hole remains closed, and the PCV is inactive.

Conclusions: Various mechanisms may have contributed to the exacerbation of the preexisting VMT and PED, which finally resulted in the development of an FTMH. Careful attention should be paid to changes in the vitreomacular interface and posterior vitreous detachment before performing intravitreal anti-vascular endothelial growth factor treatment. Nevertheless, FTMHs can be successfully treated with prompt vitreoretinal surgery.

Malignant Hypertension Diagnosed at a Primary Eye Care Clinic Setting

First Author: Deborah LEE
Co-Author(s): Vivien LIM, Thet NAING

Purpose: To present a case of malignant hypertension first diagnosed at an urban primary eye care clinic. To present symptoms of macular star subjectively seen as radiating linear black lines.

Methods: A 39-year-old patient reported seeing a constant central black ring in the right eye for 1 day. He was examined at the primary care eye clinic at a community branch of a tertiary eye centre. The clinical examination, fundus photography and optical coherence tomography revealed right macular

oedema and bilateral disc swelling. That led to the diagnosis of malignant hypertension. He had an uneventful admission and was discharged stable with antihypertensive therapy. Two weeks after an initial presentation, he reported seeing black lines radiating from a central blurred patch in the right eye. Examination and imaging showed a nasal half-macular star corresponding to the morphology of the visual defect changes documented on the Amsler chart. Retinopathy resolved later.

Results: The retina is sensitive to acute changes in systemic blood pressure, and retinopathy can be the first manifestation of hypertension. Diagnosis at primary care settings and early treatment of malignant hypertension have prevented possible life-threatening complications in this case. Secondly, to our knowledge, this is the first reported case of subjectively seeing macular star as black lines radiating from a central black patch.

Conclusions: Primary care eye clinics at community centres can diagnose life-threatening malignant hypertension. Macular star from hypertensive retinopathy can be seen subjectively as radiating black lines.

Outcomes From a Single-Centre Experience of Switching Patients to Faricimab for Treatment Refractory Diabetic Macular Oedema

First Author: Virinder DHILLON

Purpose: The treatment paradigm of diabetic macular oedema (DMO) has rapidly progressed with biological and antibody-directed therapies. Faricimab is a monoclonal antibody designed to block VEGF-A and ANG2, which has demonstrated significant visual improvements. We evaluated its use in a single UK centre in the treatment of refractory patients with DMO.

Methods: We undertook a retrospective analysis of patients switching to Faricimab. Twenty-three patients were included for analysis, [n=18 male (78%), median age 66 (range 55-88 years)]. Of this cohort, n=13 (57%) were treated for right eye disease, and n=19 (83%) were phakic. All patients had prior Ranibizumab, Aflibercept or Ozurdex, or a successive therapy switch prior to Faricimab. We

evaluated changes in visual acuity and central retinal thickness (CMT) to determine treatment response.

Results: In the cohort, n=10 (43%) received Ranibizumab as first-line therapy, and n=20 (87%) had prior treatment with Aflibercept, of which 7/20 (35%) switched from Ranibizumab. Five patients (22%) were treated with Ozurdex, all of whom had prior Ranibizumab or Aflibercept or both agents. Patients were switched to Faricimab, receiving between 4-13 injections to date. Evaluating the response pre and during Faricimab, we report sustained visual acuity (p=0.48) and significant improvement in CMT (median CMT pre Faricimab vs. post = 480 vs. 360, p=0.0001).

Conclusions: In this small real-world cohort, we show visual gains and anatomical improvement in subjects switching to Faricimab. Further work is being undertaken to extend this dataset and determine patient factors to treatment response to develop personalized treatment intervals.

Posterior Reversible Encephalopathy Syndrome and Hypertensive Choroidopathy

First Author: Chee SHEW FEI

Co-Author(s): Zunaina EMBONG, Daniel PHANG

Purpose: Posterior reversible encephalopathy syndrome (PRES) and hypertensive choroidopathy are both medical conditions that can arise in the setting of uncontrolled hypertension. We report a case of PRES with hypertensive choroidopathy in a young woman.

Methods: Case report.

Results: A 31-year-old female with underlying hypertension complained of unresolved headaches for 3 days. She complained of bilateral eyes' painless progressive visual loss with the left eye worse than the right eye. Her right eye vision was 6/18 and her left eye vision was counting fingers with no relative afferent pupillary defect. Slit-lamp biomicroscope of the anterior segment was unremarkable. Fundoscopic examination revealed both eyes Frisen grade IV hyperaemic, swollen optic disc. There was the presence of Elschnig spots and Siegrist streaks at the peripheral retina. Computed tomography (CT) of the brain showed hypodensities in the parieto-

occipital regions. She was initially treated with both eyes with hypertensive retinopathy grade IV with PRES. However, her vision was not improved on 1-month follow-up. Optical coherence tomography (OCT) showed bilateral fovea atrophy. Fluorescein angiography showed both eyes with increased foveal avascular zone, multiple hypofluorescent spots at the peripheral retina, and the presence of hot discs. We diagnosed her with both eyes hypertensive choroidopathy. She was co-managed with physicians to optimize her blood pressure control.

Conclusions: Chronic uncontrolled hypertension can lead to changes in the retinal vasculature and subsequent microvascular damage. Management involves controlling blood pressure to prevent further damage. However, in her case, her visual prognosis was guarded as there was the presence of fovea atrophy.

Rapid Clearance of Dumbbell Shaped Sub Inner Limiting Membrane Haemorrhage Due to Valsalva Retinopathy -a Case Report

First Author: Hema RAWAL

Purpose: A 29-year-old healthy female with no known systemic or ocular ailment presented with complaints of 14 days of sudden painless diminution of vision in her Right eye after straining. The best corrected visual acuity (BCVA) in the Right eye was 20/100. The anterior segment was unremarkable. Fundoscopy in the Right eye revealed a dumbbell-shaped pre-retinal hemorrhage starting from the fovea in the macular region, and spectral domain coherence tomography (SD-OCT) confirmed the location in the sub-inner limiting membrane (ILM) space.

Methods: Neodymium: YAG (Nd: YAG) laser membranotomy was performed the same day in order to drain the hemorrhage into the vitreous cavity.

Results: Two weeks post laser membranotomy, the BCVA in the left eye improved to 20/40, and after 4 weeks to 20/20, the fundus examination showed the blood being almost reabsorbed with few ILM striations and the SD-OCT showing a resolution of the sub-ILM hemorrhage.

Conclusions: Nd yag laser membranotomy is a safe and effective modality for rapid clearance of sub-ILM bleed, as there are good results with no side effects. Nd Yag laser membranotomy is highly recommended for sub-ILM bleeding as it is a non-surgical, inexpensive, and simple, treatment option and enables speedy recovery of sub-ILM hemorrhage by rapid clearance of premacular subhyaloid haemorrhage with early restoration of visual function, preventing the occurrence of preretinal fibrosis seen in the natural course of the disease and also obviates the need for vitreoretinal surgery.

Real-World Effectiveness and Safety of Faricimab in Diabetic Macular Edema: A Multicenter Cohort Study From J-CREST

First Author: Fumiko MURAO
Co-Author(s): Yoshinori MITAMURA, Ryoji YANAI

Purpose: To assess the real-world effectiveness, safety, and treatment patterns of faricimab for diabetic macular edema (DME) over six months.

Methods: This retrospective multicenter cohort study included 215 eyes of 174 Japanese patients with DME treated with faricimab and followed over six months at 13 institutions affiliated with the Japan Clinical Retina Study Group (J-CREST). Best-corrected visual acuity (BCVA) and central subfield thickness (CST) were primary outcomes, with injection frequency, prior anti-VEGF therapy, adjunctive treatments, and adverse events also evaluated.

Results: The mean patient age was 64.6±11.3 years. Of the 215 eyes, 65 were treatment-naïve, while 150 had prior anti-VEGF therapy. In treatment-naïve eyes, logMAR BCVA significantly improved from 0.335 at baseline to 0.163 at 6 months ($p < 0.05$); however, no significant improvement was observed in previously treated eyes. CST significantly decreased in both groups (treatment-naïve: -107.2 μ m, previously treated: -85.22 μ m, $p < 0.001$). IOP remained stable. Patients received an average of 3.41 faricimab injections. One case of anterior uveitis occurred, with no systemic adverse events. Adjunctive therapies included laser photocoagulation in 27 eyes (13 microaneurysm photocoagulation, 11 panretinal photocoagulation, 3 both), vitrectomy in 7 eyes, cataract surgery in 6 eyes, and glaucoma surgery in 2 eyes. Thirty-eight

eyes were switched to alternative anti-VEGF agents or steroid sub-tenon injections.

Conclusions: Faricimab demonstrated significant functional and anatomical improvement in treatment-naïve DME, with a favorable safety profile. The lack of significant visual acuity improvement in previously treated eyes and the frequent need for adjunctive therapies suggest the need for individualized approaches for refractory DME.

Retinal Microvasculature Alternation After LASIK

First Author: Shih-hao TZENG
Co-Author(s): Ching-tai CHEN

Purpose: In our study, we used optical coherence tomography angiography (OCTA) to analyze the retinal microvasculature and the change in vascular density of the retina after LASIK.

Methods: Ten patients with twenty eyes who undertook LASIK were investigated by using OCTA three times, respectively (preoperation, 3 post-operation-days, and 14 post-operation-days). Vessel density (VD) and foveal avascular zone (FAZ) were analyzed during each follow-up. Qualified data was processed with Python 3.8.5, and all data were normally distributed, confirmed by a Kolmogorov-Smirnov test. Measurements before and after surgery were compared by using the Mann-Whitney U test. $P < 0.05$ was considered statistically significant.

Results: Ten subjects who had undertaken LASIK in both eyes were included in the study. We found the VD of the whole macular image in the superficial capillary plexuses (SCP) decreased significantly on the 14 post-operation-days ($P = 0.005$), and the VD of the disc also decreased significantly both in the capillary and whole vessel on the 14-post-operation-days ($P = 0.035$ in capillary, $P = 0.03$ in whole vessel). On the contrary, the VD of the deep capillary plexuses (DCP) increased slightly after operation ($P = 0.103$). The VD of the foveal region decreased slightly both in the superficial and deep layers. The foveal avascular zone (FAZ) slightly enlarged after operation ($P = 0.382$).

Conclusions: In conclusion, retinal microvascular density at the SCP and the disc region decreased significantly after 14 post-operation days.

The Mechanisms of Microglia Activation Lead to BRB Breakdown Aggravating DME in Diabetic Retinopathy

First Author: Jingfa ZHANG

Co-Author(s): Chaoyang ZHANG

Purpose: Diabetes retinopathy (DR) is the leading cause of vision loss in the working population, in which inflammation plays an important role. This study aims to explore microglia activation and the related mechanisms leading to the breakdown of the blood-retinal barrier (BRB) in DR.

Methods: The patients with DME were examined with OCTA. The diabetic rat model was induced by streptozotocin. Iba-1 immunolabeling was used to detect microglia activation. Albumin immunostaining and FITC-dextran permeability assay were used to evaluate BRB breakdown. The co-culture model with endothelial cells and/or pericytes to study the phagocytic effect and related mechanisms of activated microglia on endothelial cells. PCR, WB, and immunofluorescence were used to detect changes in signaling pathway molecules.

Results: Hyperreflective foci (HRF), indicating activated microglia, were evidenced in different types of DME. In experimental DR, the microglia become activated, demonstrating the increased number and migration, and the morphological changes. Activated microglia penetrate the retinal vascular basement membrane and engulf retinal endothelial cells, leading to BRB disruption, increased leakage and the formation of acellular capillaries. In addition, activated microglia release an increased amount of inflammatory factors, which lead to the death of endothelial and pericytes, exacerbate BRB damage, and further increase leakage. Mechanistically, activated microglia enhance their phagocytic function through reduced Src/Akt/cofilin signaling pathway and increasing the inflammatory cytokine release through activated PI3K/Akt/Stat3/NF-κB pathway.

Conclusions: In DR, activated microglia phagocytose endothelial cells release multiple inflammation-related factors, exacerbating BRB breakdown and contributing to DME formation.

The Role of Oct Angiography in the Differential Diagnosis of Early Worsening of Diabetic Retinopathy and Real Diabetic Retinopathy Progression in Pregnant Women

First Author: Natalia POMYTKINA

Co-Author(s): Evgenii SOROKIN

Purpose: To study the possibilities of OCT angiography in the differentiation of early worsening of diabetic retinopathy and real diabetic retinopathy progression in pregnant women.

Methods: A total of 69 pregnant women with diabetes mellitus type 1 and diabetic retinopathy (DR) were examined. OCTA (Optovue, HD Angio Retina 6.0 mm) was performed in each trimester and 3 months after delivery. Macular edema (ME) was detected in 15 patients. The DR progression was noted in 49 women (71%) (34 with proliferative DR, 20 with severe nonproliferative DR); in 20 women, the course of DR was stable. The DR progression was characterized by the increase in the number of "cotton-like foci," retinal hemorrhages, microaneurysms, IRMA, and retinal neovascularization in the dynamics.

Results: When detecting signs of DR progression, the dynamics of retinal nonperfusion zones were evaluated by OCT angiograms of the superficial and deep plexuses. In the case of the expansion of those zones between two studies, true progression of DR was diagnosed; in the absence of such changes, early worsening of DR was detected. Expansion of retinal nonperfusion zones was revealed in all 49 patients with signs of DR progression. In 3 patients, ME has completely regressed after delivery. It was a transient feature.

Conclusions: 1. The progression of DR in pregnant women is true in most cases. 2. ME is more often a transient change in pregnant women with DR. 3. OCTA makes it possible to differentiate between early worsening of DR and real DR progression in pregnant women.

Treatment of Polypoidal Choroidal Vasculopathy Using Standard and Reduced-Fluence Photodynamic Therapy

First Author: Colin TAN

Purpose: To evaluate treatment outcomes of polypoidal choroidal vasculopathy (PCV) using reduced-fluence and standard-fluence photodynamic therapy (PDT).

Methods: Review of all treatment-naive PCV cases treated with PDT at a tertiary ophthalmology center. Patients treated with reduced (light dose, 50 J/cm²; dose rate, 600 mW/cm²; wavelength, 689 nm; time, 42 seconds) and standard-duration (light dose, 50 J/cm²; dose rate, 600 mW/cm²; wavelength, 689 nm; time, 83 seconds) PDT were recruited for this study.

Results: Thirty-seven eyes of 37 patients (24 males and 13 females) with an average age of 69.9 years old (range 50 – 89 years, S.D. ± 8.9) were included. Of these, 29 (78.4%) were treated with standard-fluence PDT while 8 (21.6%) had reduced-fluence PDT. Patients treated using reduced-fluence PDT had better visual acuity (VA) outcomes when compared to standard-fluence PDT at 6 months (mean LogMAR 0.22 vs. 0.56) and 12 months (mean LogMAR 0.23 vs. 0.48). Time to quiescence in the standard-fluence group was shorter when compared to the reduced-fluence group (2.8 vs. 3.6 months). There was no difference in the recurrence of disease activity between the two groups (58.6% recurrence in the standard-fluence group vs. 37.5% in the reduced-fluence group). There were no significant adverse events reported in either group.

Conclusions: Reduced-fluence PDT showed better VA outcomes while having the comparable need for rescue anti-VEGF injections, recurrence rates, and time to disease quiescent when analyzed against standard-fluence PDT in the treatment of PCV.

Unexpected Retinal Vascular Occlusion After Intraocular Surgery

First Author: Michael HARTONO
Co-Author(s): Paramita FITRIANINGRUM, Carennia PARAMITA, Florentina PRISCILIA, Anggun Rama YUDANTHA

Purpose: Presenting the diagnostic approach for a rare case of retinal vascular occlusion post intraocular surgery.

Methods: This case illustrates retinal vascular occlusion in a 46-year-old male who developed this condition after phaco-goniosynechialysis surgery.

Results: A 46-year-old male patient with uncontrolled hypertension of 158/93 and a history of acute angle-closure in the right eye (RE) underwent a phaco-goniosynechialysis surgery in retrobulbar anesthesia due to inadequately controlled intraocular pressure (IOP) despite medications. One week post-surgery, the funduscopy and Optical Coherence Tomography (OCT) revealed discrete tortuous veins, flame-shaped hemorrhage, pre-retinal hemorrhage, and perimacular edema. Systemic conditions of uncontrolled hypertension, retrobulbar anesthesia, and surgical manipulations contributed to IOP fluctuations, likely contributing to reduced blood flow. The unilateral retinal vessel occlusion, in this case, was probably due to the significant IOP variation during the phaco-goniosynechialysis procedure. The patient was managed with close monitoring of IOP and blood pressure. At one-month follow-up, the hemorrhage and peri-macular edema had resolved.

Conclusions: Retinal vascular occlusion following intraocular surgery may arise due to significant intraocular pressure (IOP) surges and a compromised vascular system. This underscores the need for careful management of IOP and close monitoring of the patient's vascular health during and after the surgical procedure to mitigate such risks.

Unveiling the Hidden Threat: Cancer-Associated Retinopathy in a Multiple Myeloma Patient

First Author: Florentina PRISCILIA
Co-Author(s): Michael HARTONO, Lily Raudah PUTRI, Anggun Rama YUDANTHA, Hindun ZAKIYAH

Purpose: This study aims to highlight the evolving diagnostic approach for a rare case of cancer-associated retinopathy (CAR) in multiple myeloma.

Methods: The case illustrates bilateral vision loss in a 41-year-old male with multiple myeloma (MM).

Results: The patient presented with fluctuating visual acuity (VA) over 18 months. At the initial visit, his VA was 3/60 in both eyes (BE). Examination of BE revealed a pre- and intraretinal hemorrhage with tortuosity of the retinal vein. With a history of MM and aplastic anemia, he was initially diagnosed with chronic central retinal vein occlusion (CRVO),

a common ocular manifestation in MM patients with leakage limited to intraretinal layers. After chemotherapy, his VA improved to 6/30 with stable conditions. However, 2 months after chemotherapy finished, his left eye deteriorated to 1.5/60. Fundus Fluorescein Angiography (FFA) revealed a massive hyperfluorescent peripapillary and parafoveal region in the late phase, indicating leakage from the retinal pigment epithelium (RPE), leading to a revised diagnosis of CAR. CAR is a rare paraneoplastic disorder characterized by progressive visual deterioration due to autoantibodies triggered by tumor antigens. Systemic steroids are commonly used, with variable outcomes. In this case, the patient was administered methylprednisolone, which improved his LE to 3/60 and stabilized the condition of RE.

Conclusions: Diagnosing CAR can be challenging due to its non-specific ocular manifestations. Clinicians should remain vigilant for the possibility of CAR in patients with malignancy, as early identification and treatment can impact visual outcomes.

Retina (Surgical)

Amniotic Membrane Graft for the Treatment of Large Refractory Macular Hole

First Author: Hussain KHAQAN

Purpose: Study off-label human amniotic membrane use outcomes for giant refractory macular hole closure.

Methods: The study was performed at Lahore General Hospital, Lahore, over 52 months on patients who had undergone standard macular hole surgical procedures for treatment, but the hole failed to close. Refractory macular hole dimensions ranged from 824 μ m to 1,568 μ m. Before surgery, patients underwent slit-lamp examination, fundus photography, and optical coherence tomography for macular scan. Amniotic membrane graft (AMG) used in surgery was harvested from a human placenta 24 hours before. Before AMG application, enough internal limiting membrane peeling was performed to ensure perfect fitting and recovery. All holes were plugged with AMG and SF6.

Results: Twenty-nine patients, 20 men and nine women, were included in this study. The mean age of patients was 58 ± 6 . Patients had refractory holes of average $1,237.48 \pm 151.25 \mu$ m. Post-op, 100% macular hole closure was achieved in all patients. Type 1 closure was found in patients (37.93%) who underwent AMG surgery within 3 months after primary surgical failure. Type 2 closure was found in patients (62.07%) who were operated on 3 months after primary surgical failure.

Conclusions: Refractory macular holes treated by AMG with SF6 gas tamponade achieve anatomical Type 1 closure if performed within 3 months of primary surgical repair.

Clinical Outcomes of Endoscope-Assisted Vitrectomy for Treatment of Rhegmatogenous Retinal Detachment

First Author: Minh Tien VU

Purpose: To evaluate the outcome of endoscope-assisted vitrectomy for treatment of rhegmatogenous retinal detachment.

Methods: This is a randomized, uncontrolled interventional study of endoscope-assisted vitrectomy for the treatment of rhegmatogenous retinal detachment in VINO from 6/2022 to 8/2023.

Results: The study included 35 eyes of 35 patients who were operated on at the vitreo-retinal department in VINO. Mean age was 60.3 ± 7.0 yrs old, 54,3% male and 45,7% female. Mean baseline VA was 2.09 ± 0.41 logMAR. At baseline, there were 88,6% phakic and 11,4% pseudophakic. Quadrants of RD were 11,4% with 1 quadrant, 45,7% with 2 quadrants, 31,4% with 3 quadrants, and 11,4% with 4 quadrants (including total retinal detachment). Single surgery anatomic success rate was 88.6%. The retina was reattached at the last follow-up in 35/35 (100%). The mean postoperative VA was 0.86 ± 0.36 logMAR.

Conclusions: In the current study of retinal detachment surgery, visual and anatomical outcomes at the last follow-up were generally favorable.

Macular Buckle, Vitrectomy or a Combined Approach for the Management of Myopic Macular Hole Retinal Detachment: A Systematic Review and Network Meta-Analysis

First Author: Alvin Wei Jun TEO

Purpose: To systematically review and compare anatomical and functional outcomes of the macular buckle, vitrectomy, or combined approaches for macular hole retinal detachments in highly myopic eyes.

Methods: A literature search was performed in medical databases for comparative studies reporting outcomes of TPPV, MB, or combined TPPV/MB for MHRD in highly myopic eyes. Anatomical outcomes, including retinal reattachment rate and macular hole closure rate, were assessed. Functional outcomes were assessed by best-corrected visual acuity (BCVA). Frequentist Meta-Analysis of Proportions and Bayesian Network Meta-Analysis (NMA) were conducted to allow head-to-head comparisons of the surgical techniques.

Results: A total of 1165 studies were identified, and a total of five studies were analyzed. 308 eyes were included in the analysis. Retinal reattachment rates were significantly higher in the combined (96.9%) and MB group (96.2%) as compared to vitrectomy (66.9%). There was no significant difference between the combined surgery group and MB ($p = 0.802$; $RR = 1.03$; 95% CI, 0.94 to 1.12), while the vitrectomy alone group did significantly worse relative to the buckle alone group ($p < 0.001$; $RR = 0.64$; 95% CI, 0.50 to 0.79). This difference was similar seen on Bayesian NMA. Macular hole closure rates were highest in the combined group but were not statistically significant between all 3 groups. At the study endpoint, BCVA of the macular buckle, combined surgery, and vitrectomy groups were logMAR 0.837, 0.908, and 1.113, respectively, and there was no significant difference.

Conclusions: MB alone or combined with vitrectomy provides better retinal reattachment rates than TPPV alone in managing MHRD.

Not for the Fainthearted

First Author: Rabia NAAZ

Co-Author(s): Aditya KELKAR, Jai KELKAR, Subhasree DUTTA

Purpose: To showcase a series of retinal complications encountered following macular hole surgery.

Methods: Retrospective review of cases involving complications such as accidental sub-retinal dye injection, dislodged soft tip incident, choroidal neovascular membrane [CNVM], formation following temporal flap technique, and accidental macular injury.

Results: Insights gained from each case which include the causes of these complications and effective preventive measures to mitigate risk in future surgeries

Conclusions: The series of encounters here reflects the recollections of a vitreoretinal surgeon involving a macular hole. With each incident, we gain insights into effective management and preventive measures for similar occurrences.

Outcomes of Epiretinal Membrane Removal With Preservation of the Internal Limiting Membrane

First Author: Ji Eun LEE

Co-Author(s): Iksoo BYON, So Hee KIM, Boosup OUM, Sung Who PARK

Purpose: During epiretinal membrane (ERM) surgery, it is frequent for the internal limiting membrane (ILM) to be at least partially removed along with ERM. Previous studies did not confirm the preservation of the ILM after the removal of the ERM, thus not providing accurate information regarding surgical outcomes when the ILM was not removed. Therefore, this study aimed to investigate the surgical outcomes when the ILM is completely preserved during ERM surgery.

Methods: During vitrectomy for idiopathic ERM, the membrane was removed, and the ILM was stained with Brilliant Blue G. If no damage to the ILM was observed, the surgery was finished without removing the ILM. We examined preoperative and postoperative visual acuity, the recurrence rate, and

the need for reoperation in eyes that were followed up for at least six months postoperatively.

Results: A total of 12 patients (12 eyes) were included in the study. The mean preoperative visual acuity was 0.25 (logMAR, range: 0.0-0.5), which improved to 0.08 (0.0-0.3) one month postoperatively ($p=0.004$). However, visual acuity decreased over time, and at six months postoperatively, it was 0.16 (0.0-0.7), showing no significant difference compared to the preoperative value ($P=0.123$). ERM recurrence occurred in 11 out of 12 eyes (91.7%) within six months, with an average recurrence time of four months (2-6 months) postoperatively. Reoperation was performed in one eye.

Conclusions: When the ILM was confirmed to be preserved and not removed during idiopathic ERM surgery, ERM recurrence was much more common compared to previous studies, although the reoperation rate was similar.

Translational Research in Ophthalmology

Curcumin as an Adjunct in Treatment of Thyroid-Associated Ophthalmopathy

First Author: Swati GOYAL

Purpose: The author wishes to enhance the literature by assessing diffusion-weighted MRI of orbital muscle after administering 200 mg oral curcumin, to prove its role in TAO.

Methods: After institutional ethical clearance, prospective interventional data analysis was conducted on 17 cases of varying severity of thyroid-associated ophthalmopathy over 6 months. Radiological reduction in the apparent diffusion coefficient (ADC) was the outcome parameter. ADC of extraocular muscles (EOM) was analyzed at the presentation. Oral curcumin-containing turmeric extract (100mg), eucalyptus oil (6.4mg), and methanol (6.3 mg) were administered twice daily to the patients. Follow-up for radiological parameters was done at 6 months. Statistical analysis was performed using IBM SPSS 2.0. To analyze the variation of ADC of EOM, the paired student-t-test was used. A p-value

of <0.05 was taken as significant. Pre-readings of ADC of the patients acted as a control for knowing the effectiveness of the drug.

Results: At the end of 6 months, a significant reduction (p -value <0.05) in ADC of extra orbital muscles was noted.

Conclusions: Objective evidence of reduced ADC was found in our study, proving curcumin as an effective adjunct modality in the treatment of thyroid-associated ophthalmopathy.

Visual Sciences

Changes of Ocular Parameters in Healthy Adults Moving to High Altitudes for Longer Than 1 Year

First Author: Yunzhu KONG

Purpose: The paper aimed to explore the changes in ocular parameters in healthy subjects after being exposed to low pressure and hypoxia at high altitudes for longer than 1 year.

Methods: All healthy adults with long-term exposure (>12 months) to high altitude environment underwent ocular examinations, including intraocular pressure (IOP), diopter (convert to spherical equivalent refraction, SER), axial length (AL), central corneal thickness (CCT), corneal curvature (CC), choroid thickness (CT), retinal nerve fiber layer thickness (RNFLT) and peripapillary retinal vascular density (VD). A generalized estimation equation was used to adjust for age, sex, and the correlation between the two eyes, then compare the changes of various ocular indicators before and after high altitude exposure.

Results: A total of 28 eyes of 14 subjects were included, with an average age of 43.79 ± 5.395 years and exposure time of 14.57 ± 3.081 months. Intraocular pressure (IOP) was significantly decreased after high altitude exposure ($p < 0.001$). The changes in SER, CT, and RNFLT were not statistically significant. VD in each retina layer had almost no change. Data on AL, CCT, and CC were collected from 18 eyes of 9 subjects, with an average age of 44.89 ± 4.106 years and exposure time of 12.67 ± 2 months. The AL, CC, and CCT did not change significantly after exposure to

high altitude. There was a significant correlation ($r=0.9359$, $p<0.0001$) between SER and AL.

Conclusions: Prolonged exposure to low-pressure and hypoxic high-altitude environments cannot significantly change eye parameters in healthy adults but can reduce IOP significantly.

Efficacy and Safety of Pilocarpine in the Treatment of Presbyopia: Systematic Review and Meta-Analysis

First Author: Amr ELROSASY

Co-Author(s): Hazim ALKOUSHEH, Kareem KHALEFA

Purpose: This meta-analysis aims to assess the safety and efficacy of pilocarpine in presbyopic patients.

Methods: We conducted a systematic review and meta-analysis following PRISMA guidelines. Four databases were searched until the 1st of July 2024 to identify articles related to the use of pilocarpine in presbyopic patients and assessing participants with a ≥ 3 -line improvement in distance-corrected near visual acuity (DCNVA) at 40 cm and no loss of ≥ 1 line in Corrected Distance Visual Acuity (CDVA) and safety outcomes. The risk ratios (RR) and mean difference (MD) of the extracted data and their 95% confidence interval (95% CI) were pooled using RevMan 5.4 software.

Results: Four studies were included in our analysis, comprising a combined total of 1023 patients. Pilocarpine demonstrated significantly better results when compared to the vehicle in patients achieving: ≥ 3 -line DCNVA at 40 cm after 3 hours and 30 days (RR = 3.30, $p < 0.00001$), (RR = 2.03, $p < 0.00001$), respectively, 20/40 or better photopic DCNVA after 3 hours (RR = 1.30, $p = 0.004$), higher mesopic NVPTQ score after 3 hours (MD = 0.84, $p < 0.00001$), and smaller pupil size in the non-dominant eye (MD = -1.75, $p < 0.00001$). For safety outcomes, pilocarpine showed a significantly higher risk of developing headache, Facial pain, and blurred vision (RR = 2.49, $p = 0.006$), (RR = 4.48, $p = 0.001$), (RR = 4.93, $p = 0.002$) respectively.

Conclusions: Despite the promising results pilocarpine demonstrated in improving the symptoms of presbyopia, it also raised concerns regarding its safety.

Patterns of Rule Similarity and Axis Symmetry in Young Individuals With Bilateral Astigmatism

First Author: Mahmood ALI

Co-Author(s): Farah AKHTAR, Farrukh MAHMOOD

Purpose: This investigation seeks to delineate the patterns of rule similarity and axis symmetry in young patients diagnosed with bilateral astigmatism.

Methods: This cross-sectional study was conducted over a period of 6 months and encompassed patients aged 15-45 years of both genders diagnosed with bilateral astigmatism. Participants provided detailed ophthalmic histories and underwent autorefractometry followed by subjective refraction. Refractive status was classified into isorule and anisorule categories for rule similarity, and into direct and mirror categories for axis symmetry. Data were analyzed using SPSS version 20.

Results: The study included 204 participants, predominantly male (128 males, 62.7%) with 76 females (37.3%). The mean age was 26.64 ± 8.44 years. Isorule astigmatism was observed in 169 participants (82.8%), while 125 participants (61.3%) exhibited a mirror pattern of axis symmetry. Under the mirror and direct symmetry models, the median absolute differences in the axis of fellow eyes were 10 and 5 degrees, respectively, from exact symmetry. No significant associations were identified between rule similarity or axis symmetry and age or gender ($p > 0.05$). However, a significant correlation was found between rule similarity and the type of astigmatism ($p < 0.001$).

Conclusions: The majority of young patients with bilateral astigmatism displayed isorule astigmatism, with mirror axis symmetry being more prevalent than direct symmetry.

The Mechanisms of Müller Cell Drainage Dysfunction Cause DME in Diabetic Retinopathy

First Author: Jingfa ZHANG

Co-Author(s): Chaoyang ZHANG

Purpose: Anti-VEGF drugs remain the first-line therapy for DME patients. However, some patients respond poorly, indicating that besides VEGF, other pathogenic factors, such as Müller cell drainage dysfunction, are also involved in the formation of DME. This study aims to explore the molecular changes of Müller cell drainage function and their involvement in the pathogenesis of DME, as well as the possible mechanisms of anti-VEGF drugs.

Methods: The diabetic rat and hypoxia-induced rMC-1 cells were used to detect the morphological and molecular changes of Müller cells. PCR, WB, and immunofluorescence methods were used to screen and detect the drainage molecules, such as aquaporin (AQP11), potassium ion channel protein (Kir4.1), and sodium-potassium ATPase. The result was validated using clinical samples.

Results: The semithin section of the retina in diabetic rats showed Müller intracellular edema, accompanied by the decreased expression of AQP4, AQP11, and Kir4.1. Anti-VEGF drugs can increase the expression of AQP4 and Kir4.1, promoting Müller cell drainage function. In addition, anti-VEGF drugs could increase the expression of sodium-potassium ATPase in the retina, further reducing the intracellular osmotic pressure. Intravitreal injection of lentivirus-mediated AQP11 overexpression can effectively reduce Müller intracellular edema in diabetic rats. In hypoxia-induced rMC-1 cells, upregulated expression of miRNAs (miR-27b/107-3p/15-5p) mediates a decreased AQP11 expression, leading to the decrease in Müller cell drainage capacity and intracellular edema.

Conclusions: The decreased expressions of Müller cell drainage-related molecules in the diabetic retina lead to the decreased drainage function of Müller cells, resulting in intracellular edema and aggravating DME.

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VIDEOS

Cataract

Cataract Surgery in Axenfeld Rieger Syndrome (ARS)

First Author: Muhammad Abdullah MAZHRY

Co-Author(s): Laiba MAZHRY, Zia MAZHRY

Purpose: The purpose of this surgical video is to highlight the challenges faced in the cataract surgery of a patient with ARS. ARS is a rare autosomal dominant disorder characterised by anterior segment dysgenesis which offers a diverse set of challenges during cataract surgery. In addition to pupil abnormalities, co-existing glaucoma, the small axial length also complexifies the procedure. Our video unveils these challenges and highlights pre-op, per-op and post-op management.

Methods: Phacoemulsification was performed using a clear corneal incision with IOL implantation in both eyes. The challenges, including small corneal diameters, thicker corneas, and limited visibility and pupillary abnormalities were successfully tackled without the use of iris hooks or pupillary expanders.

Results: Phacoemulsification with IOL implantation was performed successfully in both eyes of the patient.

Conclusions: Careful pre-op, per-op, and post-op planning of such cases during cataract surgery limits the risks and leads to predictable and successful outcomes.

Hanging by the Thread!!!

First Author: Aditya KELKAR

Co-Author(s): Harsh JAIN, Rabia NAAZ

Purpose: To demonstrate the comprehensive surgical management of a subluxated cataract in a 38-year-old female with Marfan syndrome and near 360-degree zonular weakness in both eyes.

Methods: The surgical procedure includes performing capsulorhexis using forceps, stabilizing the capsular bag with capsular hooks, and conducting phacoemulsification. A Cionni-modified capsule

tension ring is meticulously implanted and secured to the sclera using Canabrava's technique. The 6-0 prolene sutures are flanged intrasclerally, followed by the implantation of the intraocular lens into the capsular bag.

Results: The described surgical approach achieved optimal bag centration and stable intraocular lens implantation. The minimally invasive nature of the technique resulted in reduced surgical trauma and faster recovery, demonstrating effectiveness in managing complex cases of zonular weakness without the need for extensive scleral modifications.

Conclusions: This video presents an alternative technique for the management of subluxated cataracts in patients with Marfan syndrome and significant zonular weakness.

Manual Small Incision Cataract Surgery in a Hyper Mature Morgagnian Cataract With Phacodonesis

First Author: Rebecca GEEVARGHESE

Purpose: This was a case of an elderly gentleman who presented to our OPD with a hyper-mature Morgagnian cataract. On examination, phacodonesis was observed. The pupil was dilated around 5mm. In this video, I would like to showcase how I operated that case.

Methods: Manual Small Incision cataract surgery was done, rhexis was completed with forceps, and the further nucleus was gently prolapsed, and removed with wire vectis. PMMA IOL was gently placed into the bag, and the case was closed.

Results: The patient had a visual acuity of 6/9 on the first post-operative day and further had an uneventful recovery.

Conclusions: SICS is a very safe surgery and can be carried out in cases where phacoemulsification is not possible. A carefully done SICS ensures very good visual outcomes, even in difficult cases.

Opacified Intraocular Lens

First Author: Sharlene NOGUERA

Purpose: This surgical video will show an explantation of an opacified intraocular lens (IOL) and scleral fixation using the Canabrava double-flange technique.

Methods: IOL opacification can be seen on the optic, haptics, or the whole lens, such as what happened in this patient. The vision of the patient deteriorated, and he was initially diagnosed with posterior capsular opacity (PCO), and an Nd:YAG laser was performed by the referring doctor. Upon careful examination in the slit lamp, IOL opacification was noted.

Results: IOL opacification is uncommon; however, it is a serious complication of cataract surgery. In this patient, IOL explantation and exchange were done. This condition should be evaluated carefully in the slit lamp as an incorrect diagnosis of a PCO or vitreous hemorrhage, may entail unnecessary procedures such as Nd:YAG capsulotomy, or even vitrectomy.

Conclusions: IOL exchange is the only therapeutic option in symptomatic patients with opacified IOL.

Phacoemulsification in Small Pupil Cases Without Pupillary Expanders

First Author: Soumya P P

Purpose: To describe a safe method of phacoemulsification in cataracts with poor pupillary dilation, without using pupillary expanders. In developing countries like ours, due to the patient's financial constraints, it may be difficult to procure pupillary expanders during surgery. Hence, it is important to know how to deal with such cases using other safe measures.

Methods: This video demonstrates different surgical cases in which the case was successfully completed without using pupillary expanders. The basic measures include maintaining the AC depth, usage of trypan blue dye, completion of capsulorhexis under the pupillary margin, careful hydrodissection, optimal phaco parameters during emulsification such that zonular stress is avoided, and careful cortical wash.

Results: It is possible to proceed with phacoemulsification in eyes with small pupils, even if pupillary expanders are not available. Post-operative recovery is usually uneventful with good vision.

Conclusions: In developing countries, it is necessary to be familiar with alternative methods during surgery, as pupillary expanders may not be easily available. Thus, we can make cataract surgery more accessible to patients in high-volume setups.

Premium IOLs in Posterior Capsular Rent-Rescue Techniques

First Author: Jeewan TITIYAL

Co-Author(s): Manpreet KAUR, Sridevi NAIR

Purpose: Posterior capsular rent may be encountered in cases planned for premium IOL implantation, and we highlight a spectrum of cases wherein careful surgical manipulations allowed the placement of premium IOLs (toric or multifocal IOLs) in the bag placement in the presence of a PCR.

Methods: Premium IOL may be safely placed in the bag in cases with small central PCR that occurs after nuclear emulsification with intact vitreous phase; PCR may be converted into PCCC. Toric IOL implantation in larger PCR may be challenging, as the haptics need to be aligned in a specific axis as well. Anterior optic capture of the IOL optic was performed in a case with a rotationally stable IOL till 1 month of follow-up. Large PC dehiscence in a posterior polar cataract was observed in a case; multifocal IOL was implanted in the bag with anterior optic capture.

Results: All cases achieved UDVA of 20/25-20/20 at 1 month of follow-up. Toric IOLs implanted in cases with PCR maintained rotational stability till the last follow-up.

Conclusions: Posterior capsular rent may occur during phacoemulsification, and proceeding with premium IOL implantation may be challenging in these cases. We describe rescue techniques that may allow toric and multifocal IOL implantation in selected cases with PCR, with optimal visual and anatomical outcomes.

Restoring Stability: Capsule Anchor Implantation for Post-Traumatic Subluxated Cataract

First Author: Magdalena FUTYMA - ZIAJA
Co-Author(s): Dariusz HASZCZ

Purpose: To describe the surgical technique for the management of subluxated cataract using the AssiAnchor device.

Methods: This video provides a comprehensive visual guide to the surgical technique, illustrating each crucial step in using the AssiAnchor device to achieve optimal outcomes in a patient with posttraumatic subluxated cataract. An anterior vitrectomy is performed to remove the vitreous from the anterior chamber. Then, the capsulorexis is performed. The next steps present the creation of the Hoffman pockets, capsular anchor installation with scleral sutures, followed by phacoemulsification, capsular tension ring, and intraocular lens implantation.

Results: The use of the AssiAnchor device resulted in successful outcomes with no intraoperative or postoperative complications observed. The intraocular lens (IOL) remained well-centered throughout the procedure and postoperatively, ensuring optimal visual acuity.

Conclusions: The AssiAnchor is an effective tool for the stabilization of a subluxated lens during and after the surgery. The device enables the preservation of the capsular bag and allows safe IOL implantation into the capsular bag with good centration and stabilization. This technique helps to preserve the most physiological conditions within the eye by maintaining the anatomical integrity of the capsular bag.

Cornea, Dry Eyes, External Eye Diseases and Eye Banking

Corneo-Scleral Patch Graft With Amniotic Membrane in a Case of Chemical Injury

First Author: Jai KELKAR
Co-Author(s): Harsh JAIN, Aditya KELKAR

Purpose: To detail the treatment journey and challenges encountered in managing a lime-induced corneal alkali burn in a 3-year-old girl.

Methods: This case study follows the clinical course of a young patient who sustained a severe corneal alkali burn due to lime exposure. Initial interventions included thorough eye irrigation, patch graft, and application of an amniotic membrane. Despite these measures, complications arose eight weeks post-surgery, necessitating additional surgical intervention.

Results: Despite aggressive and timely treatment, the child's long-term visual prognosis remains uncertain, with the potential for significant vision loss. The case highlights the complexities and multifaceted nature of managing lime-induced corneal injuries in pediatric patients.

Conclusions: This case underscores the importance of preventive strategies and community education to reduce the incidence of such injuries. Public health initiatives must focus on raising awareness and promoting safer practices to prevent these potentially devastating injuries, particularly in vulnerable populations like children. The emotional impact on the family further highlights the need for comprehensive support and advocacy in addressing this public health issue.

DSEK: Manual Donor Preparation

First Author: Sharlene NOGUERA

Purpose: In this video, a technique of donor lenticule preparation for manual DSEK will be shown.

Methods: The graft tissue was prepared manually using the Devers-Terry straight and curved lamellar dissectors, and artificial chamber. The Fogla marking technique of cutting the anterior cap at the edge and reflected, with F marking on the stromal bed, and the anterior cap reflected back into position was done.

Results: The graft tissue can be prepared either manually or automatically using a microkeratome. The use of an automated microkeratome facilitates donor preparation. However, it will add to the cost of surgery. The manual DSEK donor preparation is feasible using the lamellar dissectors and artificial chamber.

Conclusions: The manual DSEK donor preparation is a low-cost, accessible alternative in a resource-limited setting.

EDTA Chelation for Band Keratopathy – In-House Preparation and Surgical Techniques

First Author: Allie LEE

Co-Author(s): Alex KAN, Phoebe LAM

Purpose: EDTA chelation is the least invasive yet very effective surgical option for the treatment of symptomatic band keratopathy. However, most EDTA preparations are not readily available and are difficult to obtain. Alternatively, K2-EDTA and K3-EDTA, used as anti-coagulants in blood collection tubes, are in abundance in most healthcare settings and laboratories. This video aims to demonstrate the steps in preparation of EDTA from blood collection tubes and the surgical techniques of band keratopathy removal using EDTA chelation.

Methods: The choices of EDTA, calculations in EDTA concentrations, and steps in preparing EDTA from blood collection tubes will be presented in detail. A case of band keratopathy and the surgical video will be used to illustrate the surgical procedure step-by-step. A succinct account of band keratopathy, indications for surgery, pre-operative assessment, and post-operative care will be included based on current literature.

Results: Surgical outcome of the case of band keratopathy. The video is designed and presented in a to-the-point and succinct manner so that viewers will be able to reproduce the procedures and techniques in their clinical practice.

Conclusions: EDTA can be prepared in-house from EDTA-containing blood collection tubes. It is a safe and effective option for EDTA chelation of band keratopathy.

Simple Excision of a Limbal Dermoid With Amniotic Membrane Transplantation in a Pediatric Patient

First Author: Surantha DE SILVA

Purpose: This video will demonstrate the surgical technique employed in the excision of a limbal dermoid that, while not visually significant, posed considerable cosmetic concerns.

Methods: Case Report: A 7-year-old female presented with a limbal dermoid in the right eye, spanning two clock hours from 6 to 8 o'clock. This growth, which had been present since birth, had recently enlarged, prompting cosmetic concerns from the patient and her family. The dermoid measured approximately 4 mm in its greatest vertical dimension and 2.5 mm in its greatest horizontal dimension. Preoperative evaluation revealed no significant astigmatism and an unaided visual acuity of 6/6. The excision was performed solely to address cosmetic issues. Following comprehensive preoperative counseling, the patient underwent surgical excision of the limbal dermoid under general anesthesia. A limited periotomy was performed, extending one clock hour beyond the lesion. The dermoid was excised flush with the sclera and cornea. An amniotic membrane was then sutured over the resulting defect, anchoring it to the cornea and the recessed conjunctiva.

Results: Postoperatively, the patient retained an unaided visual acuity of 6/6 with no induced astigmatism. Scarring was present in the excision area, but did not impair vision. No recurrence of the dermoid was observed at the one-year follow-up.

Conclusions: The simple excision of a limbal dermoid, in conjunction with amniotic membrane transplantation, is a viable technique for addressing cosmetic concerns while preserving visual function. This method yields a favorable cosmetic outcome, minimizes the risk of recurrence, and ensures stable postoperative visual acuity.

Tailor Bird Suturing Technique in Extreme Positive Pressure During Penetrating Keratoplasty

First Author: Ashok SHARMA

Purpose: Meticulous suturing of the donor cornea to the host is the key to the success of penetrating keratoplasty. Unexpected extreme positive pressure during surgery makes suturing nearly impossible.

Methods: Authors adopted the tailor bird technique to tide over the suturing crisis. Tailor bird sutures leaf in the area of the least gap first and with a wide gap later.

Results: The authors chose to pass sutures close to the cardinal sutures on either side, which decreased the gap. Normally we pass the suture in the centre of the two cardinal sutures where the gap is maximum. Once a suture is passed, the compression effect decreases the wound gap and allows the passage of the next suture. We applied the same technique in all the quadrants to complete the suturing effectively.

Conclusions: The tailor bird suturing technique is effective in eyes with extreme positive pressure during corneal grafting.

Tenons Patch Graft + Conjunctival Flap for Large Corneal Perforation

First Author: Jessica DAZA

Co-Author(s): Mark Gerard ACEBEDO

Purpose: To demonstrate the effectiveness of the combination of tenons patch graft and conjunctival flap in a case of severe corneal perforation.

Methods: The patient presented with loss of vision, hand motion vision in the affected eye, large corneal perforation covered with descemetocoele, and a flat anterior chamber. A history of prior eye redness and discharge was noted. Conjunctival flap surgery was planned due to the non-availability of corneal tissue and the poor prognosis with keratoplasty. To add tensile strength, tenon's tissue was planned to be dissected and used with the conjunctival flap. During surgery, the conjunctival flap retracted and was insufficient to cover the area of perforation. Therefore, a separate Tenon's patch graft was harvested and placed underneath the flap to ensure adequate coverage.

Results: The conjunctival flap, supplemented with the Tenon's patch graft, effectively stabilized the globe. More than 3 months post-surgery, the patient's eye remained stable with no further complications. The approach successfully managed the corneal perforation and addressed the issues caused by the lack of available corneal tissue.

Conclusions: The surgical intervention using a conjunctival flap and Tenon's patch graft was effective in stabilizing the patient's eye and managing the corneal perforation. Despite initial complications with the conjunctival flap retraction, the added Tenon's tissue provided the necessary support and coverage. The patient's globe stability over a 3-month period indicates a positive outcome and successful management of the severe corneal condition.

Glaucoma

3-1-1 Knot Technique of Baerveldt Drainage Device Tube Occlusion

First Author: Suria SUDHAKARAN MANNIL

Purpose: There are a number of methods to block the free flow of aqueous through a non-valved drainage tube, including two-stage implantation, occlusive ligatures, and internal blockage with a stent. This video demonstrates the 3-1-1 knot occlusive ligature to regulate the aqueous flow.

Methods: Step-by-step instructions for occlusion of the Baerveldt drainage device tube. Step 1: Inspect the Device: Examine the glaucoma drainage device under a microscope to ensure there are no manufacturing defects. Inject BSS (Alcon Laboratories, Inc., Fort Worth, TX) through the cannula of an irrigating syringe and the tip of the tube to confirm it is unobstructed. Step 2: Prepare the Suture: Cut a straight piece of 7-0 biodegradable suture, approximately 6 cm long, without the needle attached. Step 3: Position the Suture: Thread one end of the suture under the tube and secure it beneath the manufacturer's 9-0 anchoring platform suture. Step 4: Knot Formation: Loosely loop the first three passes of a 3-1-1 knot around the tube. Step 5: Remove the Anchoring Suture: Cut the anchoring platform suture with microscissors and remove it.

Step 6: Secure the Knot: Snugly tie the first throw of the 3-1-1 knot around the tube, approximately 2 mm anterior to the surface of the plate, ensuring no fluid flow is detectable through the posterior aperture of the Baerveldt plate. **Step 7: Complete the Knot:** Finish tying the 3-1-1 knot. **Insert the Device:** Insert the Baerveldt glaucoma drainage device into the patient's eye using your preferred technique.

Results: Demonstrating the 3-1-1 technique of occlusive ligation of Baerveldt implant.

Conclusions: An effective technique for the occlusive ligation of a Baerveldt drainage tube using 3-1-1-knot.

Management of Congenital Glaucoma and Overcoming Crisis During Surgery

First Author: Shams NOMAN

Purpose: To show my own technic managing congenital glaucoma and to present my procedure for managing intra-operative complications

Methods: A baby of 6 months came to me with severe photophobia, watering, and cloudy cornea since birth. His parents had a consanguineal marital history. He was the first valuable child after a long time of infertility and repeated abortion. On examination, I observed a large eyeball and cloudy cornea. I diagnosed the case as congenital glaucoma in both eyes, and I planned to do EUA followed by Trabeculectomy and trabeculotomy in both eyes under general anesthesia. I did it accordingly. I did trabeculectomy with triangular scleral flap and trabeculotomy with Harms Trabeculotome. During surgeries, I experienced false passage during trabeculotomy and shallow anterior after filling AC at the end of surgery. I managed those complications, which are shown in the video.

Results: On examination under anesthesia, I found the corneal diameter of both eyes was 14 mm. Cloudy and hazy cornea through which iris and pupil detail were not seen clearly. Haab stria was present in both eyes. Intra-ocular pressure was 26 mmHg in the right eye and 28 mmHg in the left eye, measured with the Perkins tonometer. The baby came after 7 days, and he was doing very well. Watering and photophobia were gradually decreasing. After one month, the cornea was clear and the baby was absolutely playful with good vision.

Conclusions: A good surgery for congenital glaucoma can give an immediate good result. Complications should be managed on the OT table to avoid repeated anesthesia.

Pars Plana Filtration for the Treatment of Secondary Glaucoma in Patient After Boston Type II Keratoprosthesis

First Author: Xiaojie WANG

Co-Author(s): Yuanbo LIANG

Purpose: Introduce Pars Plana Filtration (PPF) as a novel therapeutic approach for managing post-Boston type II keratoprosthesis-induced secondary glaucoma.

Methods: A 42-year-old female patient presented with a chief complaint of pain, swelling, and vision loss in the right eye for one month. The patient has a past medical history of Stevens-Johnson syndrome affecting both eyes for over 30 years. Two years ago, she underwent Boston type II keratoprosthesis and lens extraction in the right eye. Specialized examination: OD: 1/3 of the temporal eyelid adhesions, conjunctival congestion, transparent and in place Boston type II keratoprosthesis, covered by ear cartilage around the optical prism, unable to observe the angle of the eye and iris structure, absence of lens, transparent and light red disc boundary on the fundus, C/D approximately 0.7; OS: Corneal opacity with a large number of new blood vessels growing in, and faintly visible lens opacity. Other structures cannot be clearly observed. After a comprehensive consultation between the glaucoma surgeon and the patient, the patient underwent PPF.

Results: Surgeries were performed by an experienced glaucoma surgeon. Relevant surgical procedures can be found in the accompanying video for comprehensive details. The patient has been followed up for 18 months post-surgery, exhibiting consistent intraocular pressure levels, no deterioration in visual acuity, and absence of discomfort or complaints.

Conclusions: PPF is a feasible procedure for treating secondary glaucoma in patients after Boston type II keratoprosthesis.

Simultaneous Bilateral Combined Trabeculotomy-Trabeculectomy in Primary Congenital Glaucoma

First Author: Anil MANDAL

Purpose: To highlight the surgical technique and outcome of simultaneous bilateral combined trabeculotomy and trabeculectomy (CTT) on a 3-month-old child from IRAQ with primary congenital glaucoma (PCG).

Methods: Simultaneous bilateral primary CTT was performed under general anaesthesia. In brief, the Schlemm's canal was dissected under a partial thickness limbal-based triangular scleral flap, and trabeculotomy ab externo was performed on both sides of the radial incision with the help of Harm's trabeculotome. Subsequently, trabeculectomy and iridectomy were performed. The scleral flap was sutured back with one suture at the apex using 10-0 nylon. Conjunctiva and tenon's capsule was closed with a running suture of absorbable material using 6-0 vicryl.

Results: Two months postoperatively, on EUA, the child had normal IOP and regained corneal transparency. The child completed 6 months of follow-up and is enjoying age-appropriate normal visual function.

Conclusions: Primary CTT is safe and successful in this child with PCG.

Ophthalmic Trauma

Every Eye Deserves the Best

First Author: Prashant BAWANKULE

Co-Author(s): Shilpi NARNAWARE

Purpose: Management of cases of trauma along with iris repair.

Methods: Two cases of trauma with iris disinsertion with posterior segment involvement were managed by vitrectomy along with Iris Pupillary diaphragm construction.

Results: Both patients had attached retina with anterior pupillary diaphragm construction

Conclusions: Iris pupillary diaphragm repair is essential not only to prevent corneal decompensation & glaucoma but also to have support for iris-supported lenses besides its role in preventing photophobia, glare & cosmesis.

Surgical Iris Defect Repair

First Author: Adeel CHAUDHRY

Purpose: The purpose of this video is to show the technique of repairing an iris defect that was causing glare and decreased vision in a patient.

Methods: It was a surgical procedure done with a 10-0 prolene suture under local anesthesia.

Results: Successful repair was done, and vision and symptoms of glare improved in the patient.

Conclusions: It is an effective method to repair an iris defect to improve patients' comfort.

Orbital and Oculoplastic Surgery

A Case of Recurrent Eyelid Granuloma: Benefits of Autologous Fascia Lata Over Silicone Rod in Frontalis Suspension Surgery

First Author: Vanessa Naseem MASNSURALI

Co-Author(s): Rongkai TAN

Purpose: This video describes a case of recurrent right upper eyelid granuloma secondary to frontalis suspension surgery with a silicone rod and the advantage of autologous fascia lata over a silicone rod in frontalis suspension surgery.

Methods: Video presentation.

Results: A 6-year-old boy presented with the complaint of recurrent erythematous swelling over the right upper eyelid with purulent discharge. He underwent frontalis suspension surgery with a silicone rod for right upper eyelid ptosis correction 4 months prior to presentation. The swelling recurred despite being given steroid injections. His right eye visual acuity was 6/12, while the left eye was 6/9, tested with a Snellen chart. Anterior segment and fundus examinations of bilateral eyes were

unremarkable. Intraocular pressure for both eyes was within normal limits. A granuloma-like lesion was seen over the lateral aspect of the right upper eyelid, over the lid crease, and foreign material (silicone rod) was felt. Hence, the silicone rod was removed, and a triamcinolone injection was given over the right upper eyelid. The granuloma completely resolved post-procedure. Subsequently, a frontalis suspension surgery using autologous fascia lata was performed to correct his right eye ptosis. Post-operatively, his right upper eyelid was well elevated, with no signs and symptoms of prolonged inflammation, infection, or occurrence of granuloma.

Conclusions: Fascia lata graft has the advantage over silicone rods as synthetic materials have the tendency to cause a foreign body reaction, infection, or granuloma formation. Frontalis suspension with fox pentagon and forehead anchoring is safe and effective for the correction of ptosis with poor levator function.

Non-Surgical Periocular Rejuvenation Using Radiofrequency

First Author: Preethi JEYABAL
Co-Author(s): Stephanie YOUNG

Purpose: To present a video demonstrating a minimally invasive bipolar radiofrequency-based soft tissue coagulation procedure for periorbital rejuvenation in bilateral lower eyelids.

Methods: A 50-year-old female with moderate fat herniation in her lower lids with no lid laxity and no previous eyelid surgery was chosen for the procedure. Markings were made in the bilateral tear trough region with the patient upright. The bilateral periocular region was cleansed with Chlorhexidine and draped in a sterile manner in the supine position. Local anaesthesia (lignocaine 2% with adrenaline 1:80,000 + bupivacaine 0.25%) was infiltrated using a 30G needle in the lower lids. After adequate compression, the entry point was made about 1 cm lateral and inferior to the lateral canthus with a 21 G needle. The internal cannula of the bipolar radiofrequency device (Accutite™) was introduced into the lower lid via the entry site. Treatment settings: External cut-off temperature: 40 deg C, Internal cut-off temperature: 58 deg C,

Treatment Time: 120 s, and Total Energy: 0.4 kJ (per side). Multiple passes were made with lower eyelid tissue sandwiched between the internal and external probes in withdrawal patterns in different vectors. The same procedure was repeated for the other side. Post-procedure, cold compresses, and avoidance of UV exposure were advised for 2 weeks.

Results: The patient had minimal swelling in lower lids for 1-week post-procedure with nil bruising. She showed significant improvement in skin redundancy and achieved tightening of lower lids with fat contouring about 6 weeks post-procedure.

Conclusions: Bipolar radiofrequency is a minimally invasive alternative to surgical blepharoplasty for mild-moderate lower-lid fat herniation with less downtime.

One-Step Reconstruction of a Bilateral Upper Eyelid Coloboma Using the Sandwich Technique

First Author: Justine May TORREGOSA

Purpose: This video presentation aims to exhibit the effectiveness and outcome of the sandwich technique for eyelid reconstruction, which involves advancing and layering autologous tissues to achieve optimal structural and functional repair.

Methods: We present the case of a 5-month-old infant diagnosed with bilateral upper eyelid central coloboma that was symmetrical and caused significant corneal exposure. The eyelid reconstruction involved creating a composite flap using the orbicularis oculi muscle and a full-thickness graft taken from the ipsilateral lower eyelid. A bipedicle muscle flap was first done by making an incision on the orbicularis parallel to the defect. The muscle flap was then advanced over the defect and secured with an absorbable suture. A full-thickness wedge-shaped graft was then harvested from the ipsilateral lower lid. The orbicularis oculi of the said graft were excised, and the skin and tarsoconjunctival layers were placed to "sandwich" over the bipedicle muscle flap. The graft and flap were then meticulously secured with vicryl 6-0 sutures.

Results: The reconstruction resulted in good functional and cosmetic outcomes. There was a slight asymmetry noted at 1 week to 3 weeks post-

op. The right eye showed notching at the junction between the medial graft and host site grafts. However, at 1 month post-op, lid margins showed contour with well-integrated grafts. **Conclusions:** The sandwich technique is an effective method for the reconstruction of bilateral upper eyelid coloboma. It can provide a well-vascularized graft that can ensure optimal functional and aesthetic results. This technique is proven to be a good option for the repair of large eyelid defects.

Pediatric Ophthalmology and Strabismus

Corectopia With Overlying Corneal Opacity With High Myopia: Redesigning the Refractive and Anterior Segment Status

First Author: Rajesh SINHA
Co-Author(s): Vaibhav NAMDEV, Manasi TRIPATHI

Purpose: To modify the position of pupillary aperture and correct anisometropia in an eye with corectopia with corneal opacity.

Methods: A nine-year-old boy presented with corectopia with an inferotemporal displacement of the pupil with overlying corneal opacity in the right eye. The uncorrected visual acuity was 20/800. Cycloplegic refraction revealed a refractive error of -14.0 D sphere & -2.0 D cylinder at 180 degrees with an improvement to 20/200. The left eye was within normal limits with an uncorrected distance visual acuity of 20/20. A surgical plan was made. A phakic IOL was implanted in the ciliary sulcus. The pupillary aperture underneath the corneal opacity was closed with a 9-0 prolene suture by single pass four throw pupilloplasty technique. The pupil was enlarged towards the centre using a vitrector, thereby shifting the pupil centrally.

Results: Postoperatively, on day 7, UCVA was 20/80, and at 3 months with amblyopia therapy, the visual acuity improved to 20/40. He has been continued on amblyopia therapy. **Conclusions:** Redesigning the anterior segment, relocating the pupil centrally and away from the corneal opacity, and correcting

unilateral refractive error provide appropriate visual rehabilitation. The presence of a phakic IOL allows manipulation of the iris without causing damage to the crystalline lens.

Pulled-in-Two Syndrome: An Important Complication During Strabismus Surgery

First Author: Amar PUJARI
Co-Author(s): Sudarshan KHOKHAR

Purpose: To describe the unusual complication that is the pulled-in-two syndrome (PITS) during strabismus surgery.

Methods: Two patients with sixth nerve palsy were posted for forced duction test guided medial rectus muscle recession followed by vertical rectus transposition to the lateral rectus muscle. However, a sudden inadvertent pull from the assistant led to the separation of the rectus muscle fibers along its length.

Results: The complication was identified immediately, and the proximal and the distal fibers were sutured, followed by an appropriate amount of recession. The vertical recti transposition was abandoned in both cases. Post-operatively, both patients had mild adduction limitation. However, both of them remained orthophoric in primary gaze. **Conclusions:** PITS is an important complication during strabismus surgery which one must anticipate beforehand. In case of occurrence, resuturing of the residual rectus muscle followed by postponement of the remaining rectus muscle transposition procedure seems beneficial.

Pupilloplasty Surgery for Managing Type-1 Thick Persistent Pupillary Membrane- a Minimally Invasive Procedure

First Author: Sidratul Muntaha NAZMIN
Co-Author(s): Mohammad Mostafa HOSSAIN

Purpose: To report an easy, economical, minimally invasive technique for the management of type-1 persistent pupillary membrane (PPM), which proceeds to vision reduction and amblyopia.

Methods: This technique was applied to a six-year-old girl with thick PPM. She has been suffering from PPM at the central visual axis since birth, which leads

to vision deprivation and amblyopia. She had multiple small (less than 0.5 mm) openings at the central pupillary aperture, resulting in diffraction. To manage this condition, a pupilloplasty operation was done. In this surgical technique, at first, the sclerocorneal side port was made at the 9 o'clock position by a side port knife. The viscoelastic gel was given through a side port to protect the corneal endothelium. The main port was formed at the 12 o'clock position by a clear corneal incision. Viscoelastic was given through a small pupillary opening towards the undersurface of the iris to protect the crystalline lens. The superficial, thin central pupillary membrane was cut gently by Vannas scissors. The peripheral thick membrane was drawn outward through the main port and cut. The remaining membrane over the iris was excised gently by scissors. The main port was closed by 6-0 vicryl. At the final step, AC was completely cleaned out and formed, and subconjunctival injection of antibiotic was given.

Results: Following the operation, an approximately 4 mm pupil was formed, which was enough for light transfer, the vision was improved to 6/36, intraocular pressure was normal, and no cataract was formed. Then, she was given amblyopia therapy, which gradually improved her vision to 6/9. Now this world become visible and beautiful to her.

Conclusions: This economical, minimally invasive technique is simple enough to be performed safely by surgeons of varying skills.

Refractive Surgery

Cortical Stimulation: Perceptual Therapy After Refractive Surgeries

First Author: Lionel Raj DANIEL RAJ PONNIAH

Purpose: To demonstrate with an educational video on the comprehensive approach of treating eyes and improving visual pathways by cortical stimulations as a better-together concept.

Methods: Pooled analysis of two RCTs in which cortical stimulation employing computerized visual perceptual therapies using Gabor patches in cases

of post-CXL Keratoconus and MF-IOLs with visual deficiencies were analyzed.

Results: With no other alternate therapeutic options available in treating patients suffering from visual deficiency and reduced contrast sensitivity associated with post-CXL stable keratoconus status and in subjects with multifocal IOLs, the Perceptual learning computer-based therapy improves both BCVA and Contrast Sensitivity Functions (CSF). The video demonstrates this approach as a better together concept.

Conclusions: The key to optimizing visual functions lies in addressing the eyes as well as training the brain and visual pathways.

Retina (Surgical)

Bouquet of Diabetic Vitrectomies

First Author: Rohan CHAWLA

Purpose: To demonstrate vitreo-retinal surgical maneuvers which aid in tackling complicated cases of diabetic tractional detachments and vitreous haemorrhage.

Methods: The surgeries were performed using the Zeiss Lumera microscope and Alcon Constellation vitreo-retinal surgery platform. Instrumentation used were 25G disposable Alcon trocar/ cannula and vitreo-retinal forceps/scissors. A contact wide-angle visualization system (Miniquad XI by VOLK) was used for the visualization of the peripheral retina. For the central retina, a flat handheld contact lens was used. For visualizing retina beyond the arcades with high magnification a contact Volk Central lens was also used. In some cases, bimanual surgery was performed and the Alcon 25G chandelier was used for illumination. The surgeries were performed under peribulbar local anaesthesia.

Results: The importance of correctly identifying the posterior hyaloid is demonstrated. In some cases, vitreo-schisis may be seen, and this must be addressed. In complicated tractional detachments, chandelier illumination helps in performing bimanual surgery. The fibrovascular tissue is grasped with

an ILM forceps with one hand, and using curved scissors in the other. This tissue is slowly segmented and delaminated. An attempt is made to clear the fibrovascular membranes without crating retinal breaks, however, in these cases with thin retinal tissue, breaks can occur and must be managed appropriately.

Conclusions: Meticulous vitreo-retinal surgery can help in retinal re-attachment in complicated retinal detachments associated with diabetes. Performing bimanual surgery helps in reducing iatrogenic complications such as large retinal breaks and helps in achieving haemostasis. In many such one-eyed, desperate situations, even a modest visual gain can help preserve navigable vision.

Combined Cataract Extraction With Vitrectomy for Retained Intraocular Foreign Body (RIOFB)

First Author: Vineet BATWANI

Co-Author(s): Vidit BANSAL, Avilasha MOHAPATRA

Purpose: To demonstrate surgical management of retained intraocular foreign body with retinal detachment following penetrating injury through combined cataract extraction with vitrectomy.

Methods: These videos demonstrate 2 cases which came to our clinics with retained intraocular foreign body (IOFB). Case 1 was a 10-year-old male who presented with a vague history of penetrating trauma with sharp object OD about 10 days back. On examination, a self-sealed corneal perforation with anterior capsular defect with cataractous lens was noted. Radiograph and CT scan were suggestive of retained Intraocular foreign body. The patient was planned for combined cataract extraction with pars plana vitrectomy with Foreign body removal. Intraoperatively lens aspiration was done, followed by pars plana vitrectomy, followed by removal of IOFB using intraocular magnets, followed by laser photocoagulation and implantation of 3 piece IOL in sulcus with optic capture. Case 2 was a 45-year-old male who presented with OD diminution of vision for 2 weeks. On examination, the patient was found to have a cataractous lens with inferior Rhegmatogenous Retinal Detachment with retained IOFB. The patient was planned for OD cataract extraction with pars plana vitrectomy with IOFB removal with SOI.

Results: Both the patients had attached retinas and good gain of vision following surgery at 1-week post-op.

Conclusions: Combined cataract extraction with PPV along with IOFB removal along with PCIOL implant is a safe and effective method of managing retained intraocular foreign body with or without retinal detachment. Optic capture of 3-piece IOL prevents displacement during FAX.

Intraocular Light Emitting Diode Foreign Body Removal With 27 Gauge Pars Plana Vitrectomy System

First Author: Amer AWAN

Purpose: To remove intraocular light emitting diode (LED) foreign body with 27 gauge three ports pars plana vitrectomy (3PPV) system.

Methods: A twenty-year-old male had an injury to the right eye while an LED-lit balloon exploded in a party. His visual acuity was 6/18, and there was an intraocular foreign body (IOFB) impacted at 3 disc diameter away from the disc nasally in the retina and choroid.

Results: 27 gauge 3PPV was performed, and IOFB was removed safely. Infusion pressure was raised to 40 mmHg to avoid bleeding from choroid, and diathermy was done. Laser was applied around the site of impaction after removal. 25% sulphur hexafluoride was used as a gas tamponade. After removal, VA improved to 6/6, and the retina remains attached.

Conclusions: IOFB can be safely removed with the 27 gauge 3PPV system, and we need to be careful in parties while using LED-lit balloons.

Never Say Never: A Two-Stage Surgical Technique for Management of Giant Retinal Tear With Severe Proliferative Vitreo-Retinopathy

First Author: Bhuvan CHANANA

Purpose: To describe a two-stage technique for the management of giant retinal tear (GRT) with severe proliferative vitreo-retinopathy (PVR).

Methods: A 20-year-old male patient presented with 270-degree GRT with an inverted flap and extensive PVR following a penetrating injury 1 month

back. Vitreo-retinal surgery was performed with the removal of proliferative membranes and relaxing retinotomies. The fovea was also displaced below the optic disc due to severe traction by PVR. At the end of the surgery, PFCL was decided to be retained to prevent slippage of GRT and redetachment. A second surgery was performed after 10 days, in which PFCL was replaced by silicone oil.

Results: With this 2-stage surgical technique, successful anatomical outcomes were achieved. The vision improved from PL+ve pre-operatively to 20/200 at 8 weeks post-operative. PFCL tamponade for a few days not only prevented slippage of the GRT flap and re-detachment but also helped the retina regain its normal healthy state.

Conclusions: In certain poor prognosis cases like GRT with extensive PVR or chronic retinal detachments, this two-stage technique might help to salvage some eyes.

Patience & Persistence – Thy Name Is Surgeon

First Author: Prashant BAWANKULE
Co-Author(s): Shilpi NARNAWARE

Purpose: Bad media, unstoppable intraoperative bleeding, and non-pliable retina secondary to bad PVR are the cause of more iatrogenic problems & failure of surgery.

Methods: Case 1: Primary tear repair with lensectomy vitrectomy was being done. Unstoppable bleed with choroidals developed. PFCL was put. Ten days later, resurgery was done. Case 2: Poor visualization because of blood-stained corneal scar. Intra-op persistent vitreous haem with non-pliable retinal PVR was managed with PFCL, which was left for 10 days. Further steps could be completed during the second surgery.

Results: Both cases achieved visual gain with anatomical success.

Conclusions: PFCL (Short-term tamponade) limits bleeding & prevents sub-macular creep of blood. The immiscibility of blood allows better viewing and limits the progression of PVR, while the second procedure has better haemostasis, clearer media, and make PVD/membrane peels easy pliable retina.

Retinal Revival: Triumphs in Managing Complex Detachments

First Author: Ashish MARKAN

Purpose: To highlight the successful management of three unique surgical scenarios - membrane dissection under silicone oil, management of subretinal bleed, and management of subretinal air.

Methods: The first case highlights the management of retinal detachment under oil. The second case reveals the successful management of a retinal detachment characterized by substantial rigidity and the presence of multiple subretinal bands. After the removal of subretinal bands, a surprising challenge emerges during the fluid-air exchange as subretinal air complicates the procedure, necessitating a skillful execution of a 360-degree relaxing retinectomy. The third case highlights the management of extensive subretinal bleeding occurring during the removal of subretinal bands. In response to this intraoperative challenge, the surgeon adeptly performs a posterior retinotomy to remove the bleed.

Results: The video highlights the successful management of the above intra-operative challenges encountered by the surgeon. In all three cases, the retina was well attached during the post-operative period. The best corrected visual acuity improved to 4/60 in the first case, 2/60 in the second case, and 3/60 in the third case.

Conclusions: Vitreoretinal surgeries can sometimes be challenging in the view of sudden intra-operative complications. Timely and successful management of intra-operative complications can result in successful anatomical and functional outcomes.

Shot at a Second Chance – Rapid Fire Video by a Retina Fellow on Secondary IOL Without Capsular Support

First Author: Christopher GO

Purpose: An overview and tips of common secondary IOL techniques without capsular support from a fellow learning perspective.

Methods: Video presentation of 5 common secondary IOL types (angle-supported ACIOL, iris-clawed retropupillary Artisan IOL, sutured scleral-fixated IOL, sutureless scleral-fixated IOL (Yamane and Carlevalle) completed during retina fellowships from 2022-2024.

Results: Edited video of each summarising the main steps, advantages, disadvantages, and tips for each surgical technique during retinal fellowship. ACIOL - Large Corneal wound (~6mm) (or scleral tunnel), which is quick and easy to learn, can be performed with poor corneal clarity. Complete PPV is not required. It is great for patients who are not suitable to return to OT, or are unable to tolerate long operating time. PI is needed to reduce the risk of pupil block, risks of corneal oedema, UGH, and glaucoma. Artisan - Similar profile to ACIOL, less corneal oedema as further away from the endothelium. It can be placed in AC or PC. It needs healthy iris. Large Corneal Wound (~5.5mm) (or scleral tunnel), specific equipment is needed (IOL forceps + enclaving equipment). Small/irregular pupil post-op Scleral Sutured - Able to adjust tension, hence better centration, less inflammation (less iris irritation + full vitrectomy) but more intraocular manipulation, suture-related complications (exposure, breakage). Sutureless scleral-fixated - Smaller gauge sclerostomies, scleral dissection not required, No suture-related complication, risk of IOL tilt, steeper learning curve, and haptic damage.

Conclusions: Each technique has its own profile of advantages and disadvantages. Some are quicker and have a flatter learning curve (i.e. ACIOL, Artisan), whilst posterior chamber IOLs have fewer anterior segment complications.

Surgical Technique of Chronic Traumatic Large Macular Hole in Children: A Surgical Video Presentation

*First Author: Supanat THANOMTEERANANT
Co-Author(s): Ratima CHOKCHAITANASIN, Nicha JARUPANICH, Duangnate ROJANAPORN*

Purpose: To demonstrate the anatomical and functional outcomes of surgical technique for chronic traumatic large macular hole (MH) in a pediatric patient.

Methods: The video presentation demonstrated the surgical technique used to treat a chronic, large MH with a minimum linear diameter (MLD) of 2,150 microns measured by spectral-domain optical coherence tomography (SD-OCT) for an 8-year-old boy patient who had blunt traumatic globe injury six months prior. The surgical techniques involved

conventional 3-port pars plana vitrectomy (PPV), with triamcinolone acetonide used for posterior hyaloid staining, followed by Brilliant Blue G dye staining to facilitate inverted internal limiting membrane (ILM) flap. A fluid-air exchange and air-gas exchange with 10% octafluoropropane was administered. After the procedure, the patient was required to maintain a face-down position postoperatively. The primary outcome measurements were anatomical closure of the MH and postoperative SD-OCT characteristics, along with postoperative best corrected visual acuity (BCVA) at 3 months.

Results: A postoperative follow-up eye examination at 2 weeks showed a full-thickness macular hole with decreased anatomical MLD (1,420 microns), followed by complete hole closure at 1 month. Postoperative follow-up at 3 months showed BCVA improvement from counting fingers at 1 foot to 20/150, and SD-OCT showed complete MH closure, with the filling tissue that interrupted the normal foveal layered anatomy (type2 macular hole closure pattern).

Conclusions: The combination of 3-port PPV, inverted ILM flap technique, and gas tamponade provided an effective surgical technique for the management of chronic large MH in a post-traumatic pediatric patient.

Surprises During Pars Plana Vitrectomy

First Author: Sara RIAZ

Purpose: To emphasize the importance of thorough history, examination, and investigation of each and every patient who is undergoing retinal surgery and how to manage surprises during pars plane vitrectomy.

Methods: A 65-year-old female hypertensive patient was admitted to the eye ward for pars plana vitrectomy for vitreous hemorrhage. The patient had a history of intravitreal anti-VEGF 2 months ago from some village far from Lahore. On the dilated fundus exam, this eye had no view, and the other eye showed hypertensive changes. B-scan showed vitreous hemorrhage with a flat retina with no intraocular foreign body. During pars plana vitrectomy, a pointed, sharp object was noted hanging from superiorly. Chandelier light was introduced from 6 o'clock and bi-manually the sharp object was removed with the help of a

25-gauge needle as it was engaged easily in the tip and removed without any further damage through the supro-temporal port. The sharp object turned out to be a needle, which was most probably broken and left over while giving intravitreal anti-VEGF 2 months ago. The rest of the procedure was completed as per routine, including complete vitrectomy, endolaser, and silicon oil insertion at the end.

Results: After a complete vitrectomy and careful removal of IOFB, the patient's vision was improved. This IOFB was missed on B-Scan, and was not known to the surgeon before surgery.

Conclusions: Timely decision and careful removal of IOFB can save vision. And we all should be very careful while injecting intravitreal anti-VEGF or any other intravitreal injection.

The Second Battle of Redetachment

First Author: Vineet BATWANI
Co-Author(s): Vidit BANSAL, Ayushi SACHAN, Rajpal VOHRA

Purpose: To demonstrate the surgical management of Redetachment in a case of previously operated Vitreoretinal Surgery which presented 10 years after primary surgery with a temporal GRT.

Methods: A 30-year-old gentleman presented with complaints of diminution of vision in OD for the past 15 days. He had a history of OD pars plana vitrectomy for Retinal detachment 10 years back, with previous documents available. On examination, OD was found to have redetachment with advanced PVR changes with Temporal Giant Retinal Tear. The patient was subsequently planned for OD pars plana vitrectomy. Intraoperative residual vitreous removal was done, and all epiretinal membranes were thoroughly removed. Then, an attempt was made to flatten the retina, but we were unable to do so due to the taut retina, so it was decided to create a large nasal relaxing retinectomy followed by a fluid-air exchange. Silicone oil was injected at the completion of surgery and advised prone positioning with standard post-operative care.

Results: At postoperative day 7, the retina was well attached. However, improvement in visual acuity was minimal.

Conclusions: Late redetachments may present even 10 years after primary surgery and are associated with multiple challenges including extensive proliferative vitreoretinopathy.

Transscleral Sub-Retinal Gliosis (SRG) Removal in Chronic Retinal Detachments (RD) – ‘The Wide Approach’

First Author: Nishant Vijay RADKE
Co-Author(s): Liu JIAXING, Miaoli LIN, Snehal Nishant RADKE

Purpose: To demonstrate the steps and outcomes of trans-scleral SRG removal in an eye with failed previous retinal detachment surgery.

Methods: A traditional approach in managing SRG has been to create a retinotomy and segment the SRG or to remove it by pulling or spaghetti rolling it out. Ab-interno SRG removal often leads to an extension of retinotomies, resulting in an increased risk of failure, Proliferative vitreo-retinopathy (PVR), and scotomata. An Ab-externo approach using the transscleral route is shown in this video, where we place a valved cannula about 8 mm from the limbus in the sub-retinal space, and then the SRGs are gradually peeled out. SRF drainage is also possible through the same route gradually to achieve more flattening of the retina before internal procedures are resumed. The method described has been given the name 'The Wide Approach' as an analogy to the small clip from Cricket where the bowler cleverly goes wide to dismiss the batsman.

Results: Although not so popular, the trans-scleral SRG removal resulted in a cosmetic-looking retina with mitigation of the sub-retinal PVR component. There were no large iatrogenic retinal breaks. Two small suspicious areas at the location of epicentres of sub-retinal starfolds were barraged for safety, and laser was completed elsewhere followed by endotamponade. Post-operatively, the patient recovered well, with vision improving from 20/400 to 20/60.

Conclusions: Ab-externo, or trans-scleral SRG removal, is an effective method to address tenacious and troublesome sub-retinal PVR and results in good anatomical and functional outcomes.

The 5th Asia Pacific Society of Imaging in Ophthalmology (APOIS) Meeting
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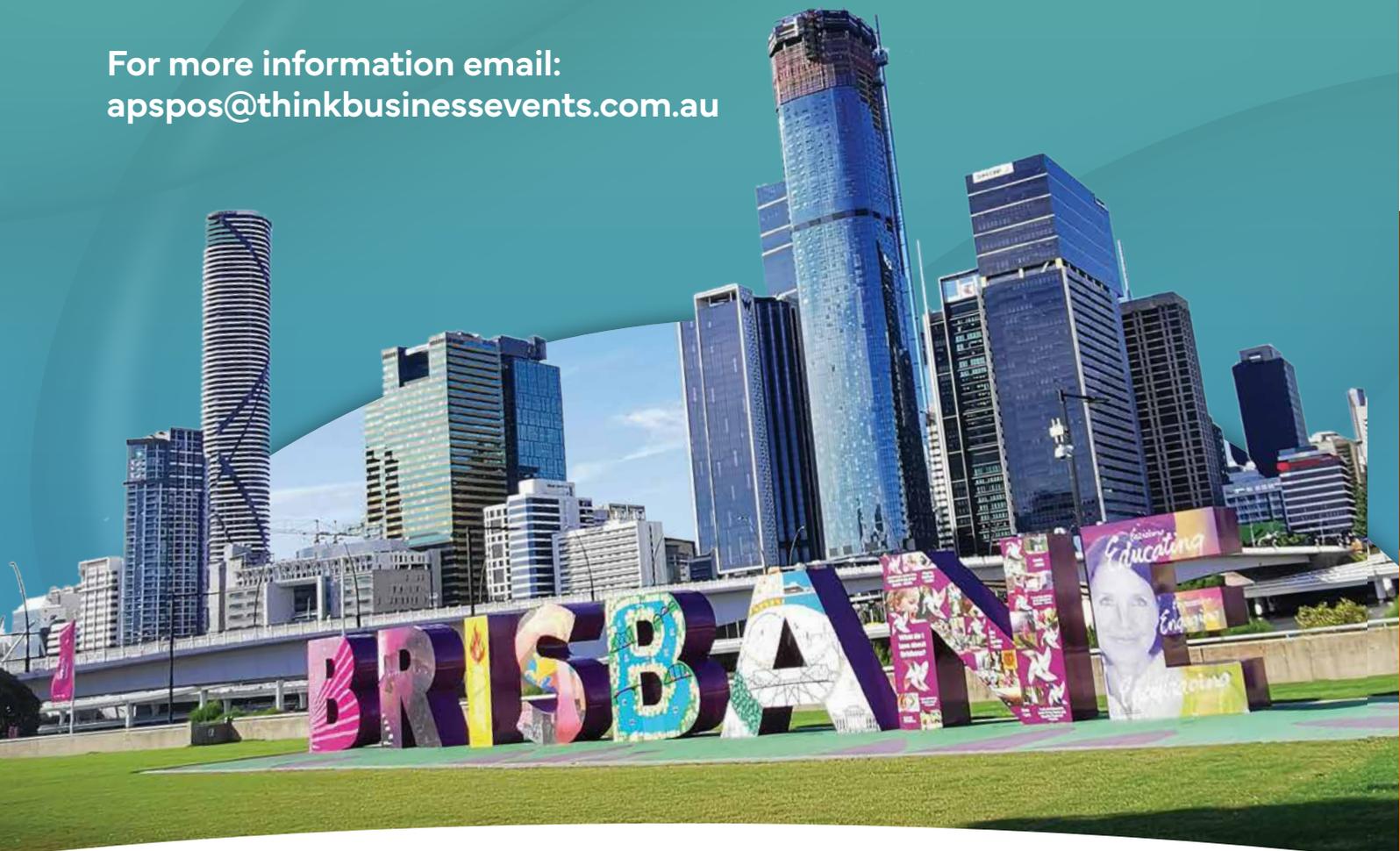
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- Cultivate a **culture of service** for ophthalmology society

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- A qualified eye doctor
- Highly proficient in English
- Agree to participate in all elements of the LDP

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