magnus Group

3rd Edition of International

OPHTHALMOLOGY Conference

10-12 March, 2025

Rome, Italy

Venue: NH Villa Carpegna, Via Pio IV, 6,
00165 Roma RM, Italy

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3rd Edition of

International Ophthalmology Conference

MARCH

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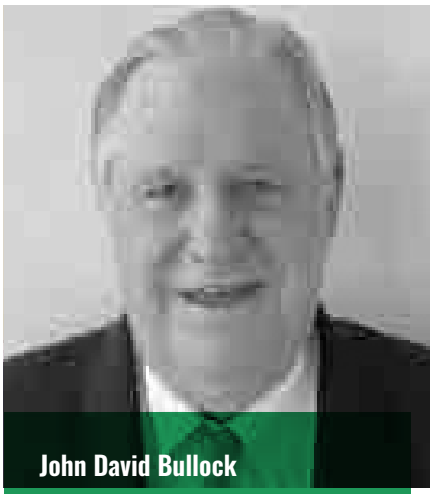

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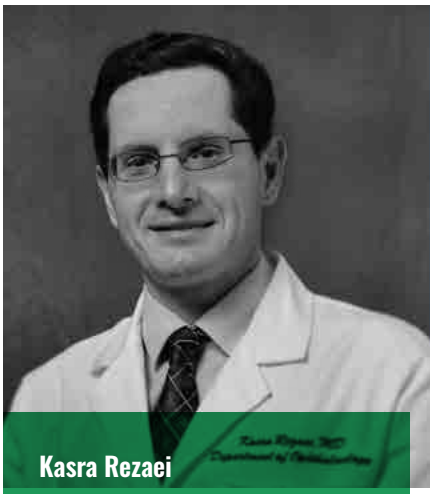

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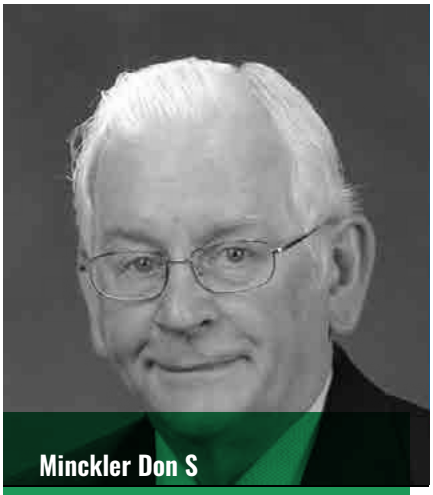

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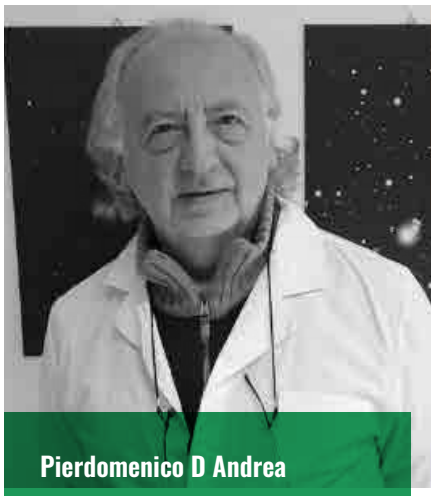

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University "G. D'Annun, Italy

Pio Conti

University of Chieti, Italy

Shadrokh Nabili

University Hospitals of Morecambe Bay NHS Foundation Trust, United Kingdom

Simon John

Columbia University, United States

Tim Jackson

King's College London, United Kingdom

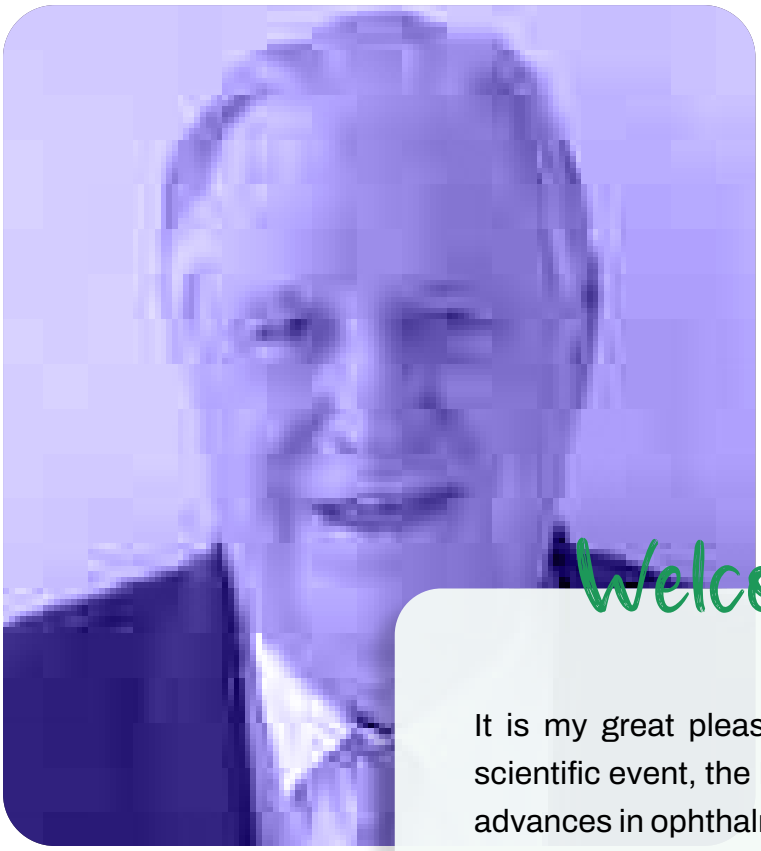
Thank You All...

Welcome Message

I am delighted to participate in the 2025 International Ophthalmology Conference. My presentation on axonal transport block in abusive head trauma suspects is intended to increase awareness among physicians of the importance of axonal transport in optic nerve disorders including the consequences of child abuse, shaken baby syndrome and glaucoma. Clinically appreciable manifestations of axonal transport alterations include disc swelling in hypotony and increased intracranial pressure and disc recovery following glaucoma surgery.

Don Minckler, MD, MS

UCI Gavin Herbert Eye Institute, United States



Welcome Message

It is my great pleasure to welcome you to this important scientific event, the IOC 2025 meeting in Rome. The recent advances in ophthalmology have been breathtaking and this congress will highlight many of these new developments. Shakespeare wrote: “What’s past is prologue,” indicating for us that even newer drugs, procedures, and diagnostic capabilities are on the distant horizon. We must also recall prior ophthalmological events and be able to now discern them with our current knowledge.

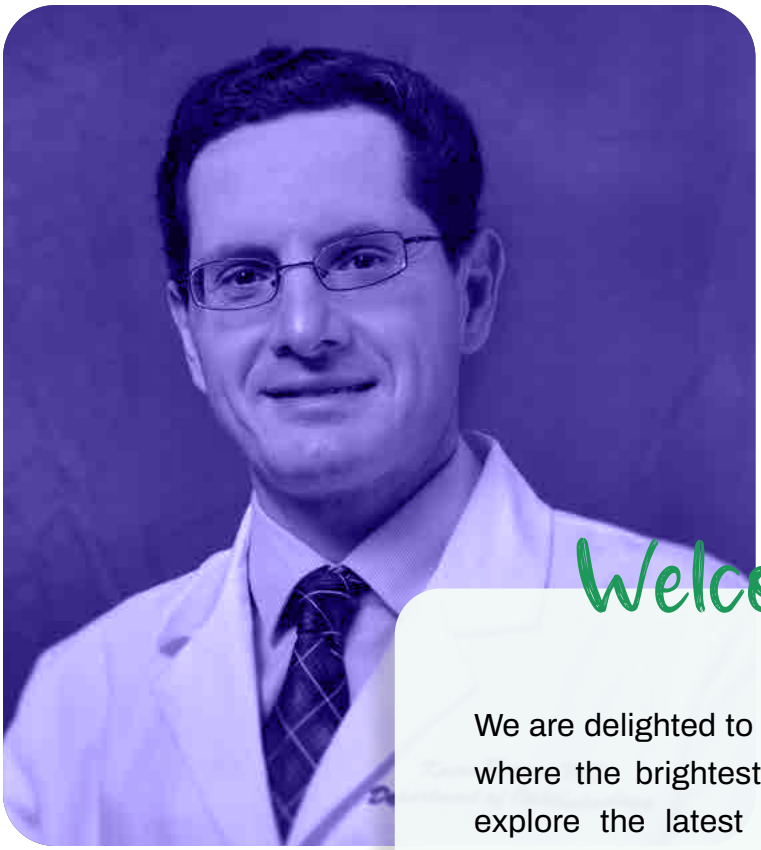
John D. Bullock, MD, MPH, MSc

Forensic Medical Historian

Emeritus Professor and Chair of Ophthalmology

Wright State University Boonshoft School of Medicine

Dayton, OH USA



Welcome Message

We are delighted to have you join us for this premier event, where the brightest minds in ophthalmology converge to explore the latest advancements and breakthroughs in eye care. At IOC, you'll have the chance to engage with leading experts, participate in cutting-edge workshops, and collaborate with peers who share your dedication to improving vision health.

We hope to see you in Rome.

Kasra Rezaei

University of Washington, United States

Welcome Message

Dear Colleagues,

It is my great pleasure to be invited to the prestigious International Ophthalmology Conference 2025. I am honoured to be among such a diverse and accomplished group of professionals.

This conference is a unique opportunity for me to share knowledge, exchange ideas, and collaborate on the challenges and opportunities that lie ahead in our field. We gather to explore the latest advancements and innovations in the field of ophthalmology.

As we embark on this journey together, I hope we will be able to take full advantage of the networking opportunities, engage with the presentations, and contribute to the vibrant discussions that will shape the future of ophthalmology.

I look forward to a productive and enlightening conference.

Dr. (Mr) Shadrokh Nabili

MD, MRCSED, MRCOphth, FRCOphth, FRCS(Edinburgh)

Consultant Ophthalmologist –NHS & Private

Senior Honorary Lecturer UCLAN

Welcome Message

It is a huge pleasure to welcome delegates to the third International Ophthalmology Congress, in Rome. The organisers are to be congratulated on assembling such an insightful and interesting programme, with much to offer trainee and senior clinicians, scientists, and industry. I am grateful for the invite to present a keynote lecture on the management of submacular haemorrhage. This remains a challenging condition to manage, with an expanding but still incomplete evidence base. I will explore what we know to date, to include the TAPAS, STAR and TIGER randomised controlled trials, and consider how best to manage patients presenting with this potentially blinding complication. I look forward to meeting with colleagues at the IOC, sharing ideas, and working together to advance the care that we deliver to our patients.

Professor Tim Jackson PhD, FRCOphth
Consultant Ophthalmic Surgeon, Kings College Hospital
Professor of Retinal Research, Kings College London

Welcome Message

I am most pleased to invite you to participate in a well-Dear congress attendees, it is a real privilege and such a pleasure to attend at such relevant and prestigious International Ophthalmology Conference. There is no better place to address this pressing and exciting challenge of our time than in a multi-stakeholder environment as in this Meeting to keep up to date with the latest advancements and discoveries in eye care.

Several neurodegenerative diseases, including glaucoma, diabetic retinopathy, and age-related macular degeneration all involve retinal cell death. So, neuroprotection is the most current objective and important goal for the prevention and treatment of neurodegeneration. To this end, having reliable experimental models of retinal neuronal injury is important for developing and for assessing the efficacy of novel therapeutic strategic approaches to counteract adverse effects of symptomatic treatments.

Dr. Anna Maria Bassi

University of Genoa, Italy

Welcome Message

Dear congress visitors, it is an honor and pleasure to write a few welcome notes. Ophthalmic drugs development has made tremendous progress for the last two decades. Today vision research is continually being transformed by new information and technologies. Many molecular technics, including gene therapy and mRNA technology, make unprecedented progress, to move forward to access to efficient innovative therapies to patients. Additionally, more advanced imaging modalities support our research. This opens new opportunities to prevent and treat blinding eye diseases. The IOC 2025 / Hybrid event will bring eye and vision scientists, researchers, health care professionals, advocacy groups, patients, all involved in the development of new therapies for ophthalmic diseases, and aims at promising discussions on the latest advancements in Ophthalmology. Please, join us to enrich these discussions!

Dr. Magali Taiel

Paris, France

ABOUT
MAGNUS GROUP

Magnus Group, a distinguished scientific event organizer, has been at the forefront of fostering knowledge exchange and collaboration since its inception in 2015. With a steadfast commitment to the ethos of Share, receive, grow, Magnus Group has successfully organized over 200 conferences spanning diverse fields, including Healthcare, Medical, Pharmaceutics, Chemistry, Nursing, Agriculture, and Plant Sciences.

The core philosophy of Magnus Group revolves around creating dynamic platforms that facilitate the exchange of cutting-edge research, insights, and innovations within the global scientific community. By bringing together experts, scholars, and professionals from various disciplines, Magnus Group cultivates an environment conducive to intellectual discourse, networking, and interdisciplinary collaboration.

Magnus Group's unwavering dedication to organizing impactful scientific events has positioned it as a key player in the global scientific community. By adhering to the motto of Share, receive, grow, Magnus Group continues to contribute significantly to the advancement of knowledge and the development of innovative solutions in various scientific domains.

ABOUT
IOC 2025

Welcome to the **3rd Edition of International Ophthalmology Conference (IOC 2025)**, taking place in **Rome, Italy**, and virtually from **March 10-12, 2025**. With the theme "*Visionaries Unite: Redefining Ophthalmic Excellence for a Brighter Tomorrow,*" this conference unites a global community of ophthalmologists, researchers, clinicians, and industry leaders to explore the latest innovations and advancements in ophthalmology.

Within this Abstract Book, you will find a compilation of pioneering research and clinical breakthroughs that reflect the dynamic progress being made in the field. Each abstract presents valuable insights into a wide range of topics, from fundamental vision science to the cutting-edge application of AI in ophthalmology, along with advances in diagnostic methods, treatment options, and surgical techniques.

This year's program provides a unique opportunity to engage with experts and peers, whether you are participating in person or virtually. We encourage you to explore these abstracts and join the conversations that are shaping the future of ophthalmology. We are excited for your involvement in this transformative event and the contributions you will make to the ongoing evolution of vision care.

Exhibitor

Beijing Microkpro Medical Instrument Co., Ltd. was established in 1997, setting up a research and production base in Beijing, China, focusing on artificial vision to restore sight for the blind. Its developed MIOK Keratoprosthesis received the national Class III innovative medical device registration certificate in 2021 and is currently applied in over 50 hospitals in China, having helped more than 300 patients regain their sight, with a post-operative blindness rate of 100%.

The product is made from pure synthetic materials, requiring no donor cornea during use, with minimal rejection and complications, addressing the issues of limited corneal donors and low transplant success rates. It has a wide range of indications, suitable for patients with bilateral corneal blindness where corneal transplantation is difficult, providing a new pathway for patients who are contraindicated for traditional corneal transplantation, offering hope for corneal blind patients worldwide and alleviating the burden on society and the nation.

For more details, visit: https://www.microkpro.com/en/

ABOUT

CPD Accreditation

Continuing Professional Development (CPD) credits are valuable for IOC 2025 attendees as they provide recognition and validation of their ongoing learning and professional development. The number of CPD credits that can be earned is typically based on the number of sessions attended. You have an opportunity to avail 1 CPD credit for each hour of Attendance.

Some benefits of CPD credits include:

Career advancement: CPD credits demonstrate a commitment to ongoing learning and professional development, which can enhance one's reputation and increase chances of career advancement.

Maintenance of professional credentials: Many professions require a minimum number of CPD credits to maintain their certification or license.

Increased knowledge: Attending IOC 2025 and earning CPD credits can help attendees stay current with the latest developments and advancements in their field.

Networking opportunities: Ophthalmology Conference provide opportunities for attendees to network with peers and experts, expanding their professional network and building relationships with potential collaborators.

Note: Each conference attendee will receive 24+ CPD credits.

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KEYNOTE PRESENTATIONS

Anna M. Bassi[1,2*], Sara Tirendi[1,2], Stefania Vernazza[1,2]

[1]Department of Experimental Medicine, University of Genoa, Genoa, Italy

[2]Inter-University Center for the Promotion of the 3Rs Principles in Teaching & Research (Centro 3R), Genoa, Italy

An innovative in vitro human-based millifluidic platform as useful tool to underlying mechanisms of neurodegeneration in glaucoma

Several neurodegenerative diseases, including glaucoma, diabetic retinopathy, and age-related macular degeneration all involve retinal cell death. Neuroprotection is an important goal for the prevention and treatment of neurodegeneration. To this end, having reliable experimental models of retinal neuronal injury is important for developing novel therapeutic strategies and for assessing the efficacy and adverse effects of symptomatic treatments.

Glaucoma occurs slowly and gradually through the progressive loss of retinal ganglion cells and the injury of the optic nerve. Among glaucoma types, Primary Open Angle Glaucoma is the most common and is usually characterized by an elevated Intraocular Pressure (IOP) resulting in damage to RGCs.

However, the underlying mechanisms of glaucoma are still not fully clear, and IOP should be considered only one piece of a multi-faceted neurodegenerative disease.

To define the key events of glaucoma onset, our team set up an in vitro 3D-innovative human-based model (IVOM) of Human Trabecular Cells (HTMC) on an IvTech-millifluidic platform equipped with a pressure modulator. We

Biography

Dr. Anna Maria Bassi currently Contract Professor and Assistant Professor at the School of Medical and Pharmaceutical Sciences, University of Genoa. With a rich background in promoting the 3R principles, she is co-founded Italian Centro3R and has received several awards, including the AnimaLAV Prize for Researchers and Innovators, the LUSH Prize. Her research team is involved in setting up a 3D-in vitro human-based innovative millifluidic platfprm to identify key events underlying the pathogenesis of glaucoma and to screen neuroprotective therapeutic strategies and more recently to implement such platform by using retinal organoids, derived from human pluripotent stem cells, to investigate the early steps involved in the neurodegenerative cascade. These efforts underscore Dr. Bassi's commitment to advancing medical research while reducing reliance on animal testing.

demonstrated that, during the prolonged exposure (72 hrs) to oxidative stress and intraocular pressure elevation, HTMC underwent an adaptative response. 3D-HTMCs were analyzed in term of viability, senescence, apoptosis, pro-inflammatory and pro- fibrotic cytokines, mitochondrial function and reactive oxygen species production. The potential usefulness of this platform for high-throughput screening of drug formulations to treat POAG was verify by analysing the therapeutic effects of two known glaucoma-treatments, iTRAB® and Citicoline, on proposed human advanced 3D platform and we confirmed that the selected biomarkers can be potentially useful for an POAG-targeted therapeutic strategy.

Moreover, to investigate if IVOM it can be a useful tool for check the occurrence of neuronal damage, human 3D-neuron-like cells (retinoic acid-differentiated SH-SY5Y) were exposed to stressed HTMC-conditioned medium and, it was observed an impairment of neural cell behavior by way of a cellular cross-talk.

Currently, the only therapeutic target for medical and surgical treatment is to slow down the progression of the disease by IOP management, but these approaches often fail to deliver a positive outcome.

Although many molecular targets, potentially involved in neuronal death and deterioration, have been proposed and tested, to date, there are no approved neuroprotective drugs for Retinal Ganglion Cells (RGC), highlighting the need for new experimental approaches for studying glaucoma.

So, we considered enhancing our IVOM platform by adding retinal organoids obtained from human pluripotent stem cells. Our preliminary results by in-depth protein characterization of over 30-days differentiated Retinal Organoids with defined culture media (without animal reagent), have pointed out that we had actually obtained stage1-ROs, that is, the stage of early-born retinal cell types (e.g., ganglion, horizontal, cone, and certain subtypes of amacrine cells).

Further investigation is needed to standardize the methodology used in order to set up an enhanced in vitro advanced model of retinal organoids that we can then propose in the future as a useful tool for testing neuroprotective strategies.

Dr. Gowhar Ahmad

Sr Consultant Ophthalmologist, University of Kashmir, Florence Hospital, Chanapora, Srinagar, Kashmir, India

Various types of ocular injuries and highlights the significance of timely treatment to prevent visual loss

Ocular injuries are kind of common ocular disorders sndvtheur timely treatment is very important to prevent any kind of visual loss the type of ocular injuries are: Perforating, Non perforating, Blunt, Finger nail injuries, Chemical, R t a related eye injuries, Sports related, Hen peck eye injuries, Battered bay syndrome also known as shaken baby syndrome Add to list of eye injuries is pellet hit eye injuries.

Introduction: Any kind of eye injury is a kind of emergency One ocular emergency which has to be operated within 24 hours is rupture globe pellet hit eye injuries is the latest addition to eye injuries which took place in Kashmir few years ago to control mob by using pellet gun each pellet gun releases about 66 lead bodies which once stricken eye or ocular adnexa cause different types of eye injuries which can be mild moderate severe from Lid hematoma SC Hemarghe conjunctival tear corneal tear hyphae vitreous homage try cataract ret detachment retained intra or extracurricular of body.

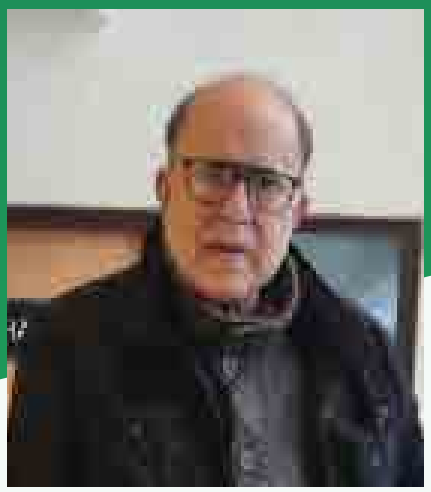
Detailed Scenarios of Blunt Trauma: Lid Hematoma: Blood collection under the eyelid. Sub conjunctival Haemorrhage: Bleeding underneath the conjunctiva.

Iridodialysis: Dislocation of the iris from its attachment.

Cyclodialysis: Disconnection of the ciliary body from the sclera.

Iridemia: Partial or complete loss of the iris.

Biography



Dr. Gowhar Ahmad is a distinguished ophthalmologist with over 45 years of experience in the field. He has completed a fellowship in Pediatric Ophthalmology from Moorfields Eye Hospital in London and a fellowship in Oculoplastics and Neuro-ophthalmology from King Khaled Eye Specialist Hospital in Riyadh, Saudi Arabia. Dr. Ahmad has served as a Senior Consultant Ophthalmologist and Head of Department at Qateef Central Hospital in Dammam, Eastern Province, Saudi Arabia, and also as a Senior Consultant Ophthalmologist at GMC Srinagar, Kashmir. A renowned national and international speaker, Dr. Ahmad has contributed extensively to the field through numerous publications in prestigious journals. He is recognized as an influencer on platforms such as Purify, Icicon, and Curofy for 2021-22. Dr. Ahmad also serves as the Editor-in-Chief of the International Journal of Scientific Research and is a member of the Scientific Committee of the World Congress of Clinical Paediatrics and Neonatology. He is actively involved in the international academic community, holding memberships in the International Journal of Ophthalmology and Advances

Traumatic Mydriasis: Dilation of the pupil due to trauma.

Traumatic Meiosis: Constriction of the pupil due to trauma.

Iris Sphincter Rupture: Partial or total tear of the iris sphincter muscle.

Wasius Ring: A ring-shaped deposit on the cornea from blunt trauma.

Implantation Cyst of the Iris: A cyst formed by implanted epithelial cells.

Iris Atrophy: Thinning or degeneration of the iris.

Traumatic Polycoria: Multiple pupils in the iris due to trauma.

Traumatic Cataract: Clouding of the lens due to injury.

Rosette Cataract: A star-shaped cataract that can form early or late after trauma.

Vitreous Hemorrhage: Bleeding into the vitreous humor of the eye.

Choroidal Rupture: A tear in the choroid layer.

Retinal Detachment: The retina detaches from the underlying tissue.

Macular Edema: Swelling in the central part of the retina (macula).

Chemical Burns: Alkaline burns are more severe compared to acid burns due to their ability to penetrate deeper into the tissues.

Keywords: Perforating, Non Perforating, Blunt Eye Trauma, Finger Nail Eye Injuries Acid and Alkaline Eye Burns, Pellet Hit Eye Injuries.

Biography

in Optometry and Ophthalmic Research. Furthermore, he reviews for and is a board member of various renowned international journals. Dr. Ahmad has been invited to speak at numerous international webinars and conferences. He was awarded the Most Outstanding Ophthalmic Teacher of India at the 6th National Annual Assembly Forum at the Regional Institute of Ophthalmology in Rohtak, Haryana, on April 2, 2023, and again at the 7th National Annual Assembly Forum at the RP Center for Ophthalmic Sciences, AIIMS New Delhi, on January 6, 2024. He is an active member of various professional organizations, including the All India Ophthalmological Society (AIOS), All India Conference of Ophthalmologists (AICON), the Delhi Ophthalmological Society (DOS), and the Agra Ophthalmic Society. Additionally, Dr. Ahmad is the General Secretary of the Kashmir Ophthalmological Society (KOS).

Biography

John David Bullock

Wright State University, United States

Why was Leonhard Euler blind?

Leonhard Euler was one of the most eminent mathematicians of all time. In 1735, he developed right periocular swelling, partial loss of vision, and the onset of lifelong recurrent fevers from a heretofore-unknown affliction. Three years later, he developed an infection in the right eye area resulting in right eye blindness, a drooping right upper eyelid with a smaller right pupil, and a right vertical eye muscle imbalance. In 1771, complications from a left cataract operation rendered him almost totally blind now in both eyes. On 18 Marchember 1783, Euler lost the remaining vision in his left eye, and later that day died suddenly from a presumed brain hemorrhage. For centuries, an essential part of the Russian diet had been raw milk, the consumption of which is a significant risk factor for brucellosis (undulant fever) which was endemic in Russia in the eighteenth century (and still is today). Given the history of an acute recurrent infectious febrile illness with ophthalmic and neurological complications and having the probable terminal event being a hemorrhagic stroke, Euler's most likely posthumous diagnoses are ocular, systemic, and neuro-brucellosis with a cerebral hemorrhage from a ruptured Brucella-infected aneurysm.

Dr. Bullock is a forensic medical historian who was previously an ophthalmologist, microbiologist, and infectious disease epidemiologist. He held a clinical faculty position at Stanford University before coming to Wright State University in Dayton, Ohio, where he served as professor and chair of the Department of Ophthalmology, associate professor of microbiology and immunology, professor of mathematics and statistics, professor of physiology and biophysics, clinical professor of community health, clinical professor of population and public health sciences, and was named the Brage Golding Distinguished Professor of Research. He is a graduate of Dartmouth College, Dartmouth Medical School, and Harvard Medical School, and completed an internship in internal medicine at Washington University in St. Louis before serving as a medical officer in the United States Navy. After residency training in ophthalmology (and plastic surgery) at Yale University, he completed fellowships at the University of California, San Francisco, and the Mayo Clinic. He received a Master of Science degree in Microbiology and Immunology from Wright State and a Master of Public Health degree (emphasizing quantitative epidemiology) from the Harvard School of Public Health. He also completed additional training from the Armed Forces Institute of Pathology at the Walter Reed Army Medical Center in Washington, D.C., the Centers for Disease Control and Prevention in Atlanta, the London School of Hygiene and Tropical Medicine, and the Pasteur Institute in Paris. He is the author/co-author of more than 260 scientific publications, predominantly related to infectious diseases, toxicology, trauma, and medical history and has given over 500 lectures throughout the world. He discovered three new causes of blindness and elucidated

the etiology and/or description of ten different retinal disorders. Dr. Bullock (and co-workers) investigated a worldwide epidemic of infectious blindness which they traced to an improperly bottled and stored over-the-counter contact lens solution. Their subsequent ten peer-reviewed research papers, including one in the New England Journal of Medicine, documented that, at high temperatures, the plastic containers absorbed the solution's preservative, allowing fungal growth, leading to ocular infections, visual impairment, and blindness. His current research interests relate to the history of medicine. His historical publications have included investigations of the blindnesses of Louis Braille, Dom Perignon (the credited inventor of champagne), and the Biblical St. Paul, among others. He published a new theory to explain the origin of the anthrax spores during the sixth plague of Egypt and is currently researching the famous aviators, Wilbur and Orville Wright, and their genetic predisposition to typhoid fever. In his retirement, he resides in Massachusetts and Florida.

FuPeng Wang[3], Steven S Saraf[1], Qinqin Zhang[2], Ruikang K Wang[2], Kasra A Rezaei[1*]

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Ultra-widefield protocol enhances automated classification of diabetic retinopathy severity with OCT angiography

Purpose: To assess the diagnostic usefulness of retinal nonperfusion to classify eyes based on Diabetic Retinopathy (DR) severity on OCT Angiography (OCTA) and determine whether wider Field of View (FOV) OCTA protocols enhance the diagnostic usefulness of retinal nonperfusion in the classification of DR severity.

Design: Retrospective cross-sectional study.

Participants: Diabetic patients undergoing Ultra-Widefield (UWF) OCTA imaging at 1 academic retina practice.

Methods: Ultra-widefield OCTA images with 100° FOV were obtained from 60 eyes. Eyes were grouped as those with Diabetes Without Retinopathy (DWR), those with Nonproliferative Diabetic Retinopathy (NPDR), or those with Proliferative Diabetic Retinopathy (PDR). The Ratio of Nonperfusion (RNP) was expressed as the percent area of capillary nonperfusion within the FOV. The RNP was obtained in the FOV 100° image and concentric sectors encompassing 10°, 10° to 30°, 30° to 50°, and 50° to 100°.

Biography

Dr. Rezaei completed his vitreoretinal fellowship at the Associated Retina Consultants in Phoenix, Arizona. He performed his residency at the Department of Ophthalmology, Vanderbilt University. Dr. Rezaei has an extensive research background in macular degeneration from both the University of Chicago and Vanderbilt University. His research has resulted in publications in prestigious peer-reviewed journals and was presented at national meetings. Dr. Rezaei's clinical interests include the management of complex retinal detachments, diabetic retinopathy, retinal vascular occlusions, and age-related macular degeneration. In addition to his interest in taking care of patients and medical research, Dr. Rezaei is an avid athlete and has finished multiple marathons in the past few years.

Main outcome measures: Mean RNP among DR groups, mean RNP measured among FOV sectors, and Area Under the Curve (AUC) of the receiver operating characteristics when using RNP as a cutoff value to distinguish between DR groups.

Results: Mean RNP from the FOV 50° to 100° sector was different among all groups: DWR, 14.6±5.1%; NPDR, 27.5±7.5%; and PDR, 41.5±19.1% ($P<0.01$). Within each DR group, field of view from 50° to 100° measured higher RNP than all other sectors ($P < 0.01$). Field of view from 50° to 100° showed the highest optimal sensitivity and specificity to distinguish NPDR from DWR with an RNP cutoff value of 21.2% (89.5% and 88.2%; AUC, 0.944) and PDR from NPDR with an RNP cutoff value of 31.6% (79.2% and 78.9%; AUC, 0.752).

Conclusions: Ratio of nonperfusion on average is higher in more severe DR. The most peripheral sector of the widefield OCTA (FOV 50°-100°) showed on average higher RNP and showed more diagnostic usefulness in determining DR severity compared with more central sectors and the FOV 100 image as a whole.

Magali Taiel

Chief Medical Officer, GenSight Biologics, Paris, France

Lumevoq gene therapy in leber hereditary optic neuropathy

Leber Hereditary Optic Neuropathy (LHON) is a rare, maternally inherited mitochondrial genetic disease with a high unmet medical need. Three primary point mutations in the mtDNA are responsible for LHON in 90% of subjects: G3460A, G11778A and T14484C, located respectively in the ND1, ND4 and ND6 genes. The m.11778G>A ND4 mutation causes the most severe clinical form of LHON, and is also the most frequent mutation (75% of LHON). Lenadogene nolparvovec (Lumevoq) is a recombinant Adeno-Associated Viral Vector, serotype 2 (rAAV2/2), containing a cDNA coding the human wild-type mitochondrial NADH Dehydrogenase 4 protein (ND4), which has been specifically developed to treat ND4 LHON subjects, and is targeting the root cause of the disease. Restoring the expression of the ND4 protein could correct the deficiency due to the m.11778G>A ND4 mutation, leading to the improved activity and assembly of Complex I of the mitochondrial respiratory chain, helping to protect retinal ganglion cells, eventually halting and reversing the disease. The three Phase-3 multi-center clinical trials RESCUE, REVERSE and REFLECT showed sustained bilateral improvement of Best-Corrected Visual Acuity (BCVA) following unilateral or bilateral intravitreal injection of lenadogene nolparvovec gene therapy for the treatment of LHON caused by the m.11778G>A mitochondrial DNA mutation in the MT-ND4 gene. Overall, 189 ND4 patients were treated with lenadogene nolparvovec in clinical trials. Early expanded access programs have been granted in the US and Europe. Lenadogene nolparvovec brings a novel and efficacious treatment option, fulfilling an ongoing unmet medical need whilst restoring visual function in ND4 LHON patients.

Biography

Dr. Taiel completed her doctorate in Medicine with board certified in Ophthalmology from Lariboisiere Saint Louis University, Paris, France, and her Associate Professor degree. Dr. Taiel has been engaged in the Pharma Industry for 25 years. She hold international and management positions in various therapeutic areas at Servier, Pfizer and Eli Lilly. Then, she led the development of antisense oligonucleotides in Inherited Retinal diseases at ProQR Therapeutics. Since 2018, she leads Gene Therapy programs in Inherited Retinal diseases, as the CMO of GenSight Biologics. Dr. Taiel brings extensive years of experience from both academic medicine and pharma industry.

Don Minckler MD, MS

Recall Professor for teaching Departments of Ophthalmology and Pathology University of California Irvine, Gavin Herbert Eye Institute, 850 Health Science Road, Irvine CA, USA

Optic nerve orthograde axonal transport in abusive head trauma suspects

Two autopsy studies of optic nerves from 76 eyes of Abusive Head Trauma (AHT) suspects demonstrated block of orthograde axonal transport in the Lamina Cribrosa (LC) in 94% of cases by APP-A4 Immunohistochemistry (IHC).

APP-A4 is the only currently available IHC marker for orthograde axonal transport for use in human surgical or autopsy tissues. APP-A4 is a fragment of a large complex molecule generated in the cytoplasm of neurons including retinal ganglion cells that is transported in the rapid orthograde system to axon injury sites, presumably to aid in tissue repair. This IHC marker has been long used by neuropathologists to document shearing myelinated tract brain injury where sausage-like swellings are found microscopically. In non-myelinated LC axonal bundles, block in orthograde axonal transport results in end-bulb swellings, relatively easily distinguished from background staining.

Biography

Dr. Don Minckler, MD, MS, earned his B.A. from Reed College (1962) and M.D. Cum Laude University of Oregon in 1964. He completed an internship at San Diego Naval Hospital, USN Aviation Medicine, Pensacola, Florida 1966, General and Neuropathology 1969-70 University of Washington (UW) Seattle. Ophthalmology UW, 1970-73. He persued Ophthalmic Pathology (AFIP) Washington, D.C. 1973-75. ABO 1975 and Anatomic Pathology in 1978; 53 Visiting Professorships, 218 Peer-reviewed publications, 132 abstracts, Coauthor 18 published symposia, 30 chapters, 37 editorials, 8 manuals. His research interest Pathogenesis of Glaucoma Optic Nerve Injury Editor-in-Chief Ophthalmology 1995-2003. He retired from Gavin Herbert Eye Institute faculty & Laboratory Medicine at UCI in 2020, Reappointed as Recall Professor for Teaching in 2021.

Dr. (Mr) Shadrokh Nabili

Ophthalmology Department, University of Morecambe Bay NHS Trust, Kendal, United Kingdom

Monovision cataract surgery made simple

Background: The demand for presbyopia-correcting IOLs (Intraocular Lenses) at the time of cataract surgery is increasing. An alternative to implanting these lenses is monovision cataract surgery. Although it has limitations, it may be offered to patients as an option. This is particularly important in public services with financial constraints.

Definition: Monovision is simply defined as using one eye for distance and the other eye for near vision. Monovision is also referred to as Blended Vision. The dominant eye is chosen for distance, and the non-dominant eye for near.

Alternative Options: During history taking and consultation, the ophthalmologist discusses the patient's needs for daily activities, hobbies, and expectations. If the patient is prepared to wear glasses, then monovision cataract surgery is not indicated. On the other hand, if the patient seeks spectacle independence, options including Trifocal IOL, EDOF IOL, and Monovision IOL are discussed.

Benefits: The advantages of monovision IOLs over Trifocal or EDOF lenses include good contrast sensitivity, lower dysphotopsia, and independence from pupil size. Centralization of IOLs does not affect the outcome. These lenses can be utilized without considering angle kappa measurements.

Limitations: There are several limitations to utilizing the monovision concept: a. As a principle, the non-dominant postoperative UDVA is not as good as the dominant UDVA when the patient compares them after surgery since monovision is designed for this type of vision. This should be highlighted to the patient to avoid disappointment. b.

Biography

Mr. Nabili had accredited basic, higher specialist, and advanced subspecialty ophthalmology training in UK. He achieved fellowships from the Royal College of Ophthalmologists, the Royal College of Surgeons of Edinburgh and completed an Advanced Sub-Specialty Fellowship (ASTO) in Cornea. In 2009, he was appointed as a consultant at Morecambe University Hospitals to establish cornea services. He was awarded an NHS Clinical Excellence Award for his services in 2019. He is also a Senior Honorary Lecturer at UCLAN and the Clinical Lead in Ophthalmology at The Lancaster Hospital. Mr. Nabili holds the prestigious Cardiff University Bond Solon Expert Witness Civil Certificate.

Absolute spectacle independence cannot be guaranteed. The patient may still require backup glasses. c. Stereovision may be affected. This is critical for some patients with occupations such as pilots or surgeons who require good stereo vision.

Preoperative Workup: History taking is the most important component preoperatively. Paying attention to the patient's needs and expectations for their professional and social life, including hobbies, is an unparalleled strategy for success.

Identifying the dominant and non-dominant eye is important to avoid crossed monovision, which may result in further problems. Extraocular movement assessment and a monovision contact lens trial may be recommended to simulate blended vision. Plus lenses can also be used in the clinic as a guide. Comprehensive slit lamp examination is essential to identify any comorbidities such as age-related macular degeneration and corneal opacities, which affect the outcome in achieving spectacle independence. Astigmatism detection and planning to correct it would be necessary to achieve the best outcome.

Monovision Strategies: Monovision can be planned in different ways: mini-monovision, moderate monovision, and full monovision. This should be tailored according to the patient's needs and requests. Therefore, it is critical to take a history including occupation, hobbies, and habitual reading and working distances.

Tips for Beginners: The best candidates are patients with no ocular comorbidities and high motivation. If they are already wearing monovision glasses or contact lenses, monovision cataract surgery may suit them best.

Pierdomenico D'Andrea [1*], Carla Enrica Gallenga [2], Pier Enrico Gallenga [3,4]

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Results of a photobiomodulation treatment in patients with macular degeneration age-related (ADM) with a new low-fluence, multifrequency wearable device: Positive medium-term effects (6 months) of visual function

Introduction: In our previous study, we demonstrated the efficacy and short-term safety of low-fluence photobiomodulation (LF-PBM) for atrophic macular degeneration (AMD) using a newly developed wearable multifrequency device. In this study, we report the six-month follow-up results obtained with the same device.

Aim: To assess visual function in patients with AMD receiving LF-PBM delivered through a wearable device over six months of maintenance therapy.

Materials and methods: In this single-blind, placebo-controlled study, we prospectively enrolled patients with AMD (Early, Intermediate, Late-Non Neovascular) according to the classification AREDS. Treatment group underwent an induction phase of 10 sessions, each lasting 12 minutes and administered every 15 days, followed by a

Biography

Pierdomenico D'Andrea, MD Degree in Medicine and Surgery -University of Chieti, 1983 and specialized in Ophthalmology, 1987, University of Naples. Works as Ophthalmologist. Expert in advanced ocular diagnostics (Confocal Biomicroscopy, OCT, Corneal Topography), refractive surgery, anterior segment surgery and Glaucoma. Collaborator at: Faculty of Dentistry, University of L'Aquila for the study of the relationship between Extrinsic Ocular Motility, Stomatognathic Occlusion and Posture. Institute of Ageing Sciences at the Faculty of Medicine of the University of Chieti for studies on the effects of electromagnetic fields on biological tissues. He is the inventor of low-fluence photobiomodulation devices.

maintenance phase of three weekly 12-minute sessions over six months. Treatment was delivered using a photobiomodulation device equipped with three low-fluence LEDs emitting at 605, 630, and 660 nm. The placebo group underwent the same number of sessions with an inactive device. The following parameters were assessed: best-corrected visual acuity (BCVA) at 4 m using Early Treatment Diabetic Retinopathy Study (ETDRS) charts at baseline (T0) and after six months (T2), microperimetry (MP) at T0, after one month (T1), and at T2 and Optical Coherence Tomography (OCT) at T0 and at T2. All statistical analyses were performed using PRISM 10

Results: A total of 45 patients—21 female—with a mean age of 78 (±10) years, accounting for 67 eyes, were enrolled. Of these, 41 eyes were assigned to treatment group. At T2, MP values were significantly different between the placebo group [15 ± 5.6 dB] and the treated group [19 (13–23) dB; $p = 0.0405$].

Within the treated group alone, MP improved significantly from 17 (12–21) dB at T0 to 19 (13–23) dB at T2 ($p < 0.0001$). BCVA also improved significantly over six months, from 0.4 (0.3-0.6) to 0.3 (0.2-0.4) logMAR (p-value<0.0001) and compared to placebo ($p = 0.0303$). Conversely, no differences were detected in OCT measurements at both T0 and T2 between treated and placebo groups. No sides effects were reported in treated group.

Conclusions: Stimulation in the red band of the electromagnetic spectrum (600–660 nm) interacts with retinal mitochondria—particularly cytochrome c-oxidase—to reduce oxidative stress, support retinal cell repair, and thus enhance cell efficiency and survival. Over a six-month follow-up, LF-PBM significantly improved visual function without any reported side effects or OCT alterations. These benefits are likely attributable to decreased ROS levels and reduction of “inflammaging”. Our MD proved to be easy to use, without side effects and the adherence to the therapy was optimal.

Pio Conti

University of Chieti, Italy

Mast cells in infllammation: Role of cytokines

Mast Cells (MCs) originate from CD34+/CD117+/CD13+ pluripotent hematopoietic stem cells and they express the c-Kit Receptor (c-Kit-R) which regulates their proliferation and sustains their survival, differentiation, and maturation. MCs are immune tissue cells derived from bone marrow that are present in all vascularized tissues and play active roles in processes and reactions relating to infection and inflammation. Mast cells are abundant in tissues such as the conjunctiva, uvea, and eyelids, making them critical cells in various ocular diseases. MCs are also involved in innate and adaptive immunity, autoimmunity, and cancer. These cells have a dual role in infection; they can be beneficial for infection by acting as immune cells, or they can cause harm by producing inflammatory cytokines such as Tumor Necrosis Factor (TNF), IL-1, and IL-6. Since MCs release an exaggerated amount of pro-inflammatory cytokines in inflammation, inhibiting the production of MC compounds may represent a promising approach and a new therapeutic strategy that can be complementary to the traditional procedures used today. In infection, MCs can be activated through mRNA and release inflammatory cytokines, without degranulation. MCs can be recruited into inflamed tissue by diverse chemotactic molecules, including Vascular Endothelial Growth Factor (VEGF), Stem Cell Factor (SCF), and several CC and CXC chemokines produced by activated immune cells. MCs are known to mediate endothelial cell activation, resulting in inflammatory disorders. The role of MCs in infectious diseases has been extensively studied and reported in the scientific literature and it is of great clinical interest. Here, we report the role of MCs and their generation of

Biography

Professor Pio Conti began scientific research in London in 1977 where he worked in the laboratory of Prof. D.A. Willoughby,studying the mechanisms of chronic inflammation. From 1981-1983, he worked in the USA in Washington D.C. at the Immunology Center at Georgetown University, directed by Prof. J.A. Bellanti. In this lab, he studied the eicosanoids and the effect of lymphotoxin on neutrophils in vitro, in collaboration with Prof. Peter W. Ramwell and Dr. Terry W. Williams, the collaborator of G.A. Granger (University of California), the discoverer of lymphotoxin, which was later named tumor necrosis factor (TNF). In 1985, P. Conti and T.W. Williams published an interesting article highlighting that lymphotoxin damages human neutrophils, causing vacuolization and increasing thromboxane. Later, this discovery proved to be the basis for myocardial infarction. In 1984, P. Conti was invited to Boston (USA) to carry out research on the cytokine IL-1 in the laboratory of Prof. Charles A. Dinarello, the purifier and cloner of IL-1 and the discoverer of various cytokines (IL-18, IL-33, IL-37, IL-38, IL-1RA). His work here led to the

inflammatory cytokines in infections and suggest that blocking MC cytokine production by anti-inflammatory cytokines could be a new strategy for therapy.

Biography

publishing of a pioneering article on the effects of IL-1 on natural killer cells and tumor killing with J.W. Mier (who discovered IL-2 with Robert Gallo from NIH). From 1985-86, Prof. Conti worked at Harvard Medical School in Boston, where he collaborated with Dr. C.N. Serhan (collaborator of Prof. Bengt I. Samuelsson, Nobel Prize winner), the discoverer of Lipoxins A and B, and published an original paper on the stimulation of lipoxin A on the release of thromboxane by neutrophils. From 1986-2022, he studied the pathophysiology of mast cells at the Molecular Pharmacology and Drug Discovery Laboratory at Tufts University in Boston, directed by Prof. T.C. Theoharides. The studies done in this research center led to the publication of a significant number of articles in the best international scientific journals. From 2009 to today, he has collaborated with Dr. Susan E. Leeman (former Nobel Prize candidate), discoverer of the neuropeptide neurotensin and purifier of substance P. In 2020, during the pandemic, Professor Conti published an article on the damage effects of cytokines released in COVID-19 which obtained many citations (over 2,000).

Simon WM John

Department or Ophthalmology and Zukerman Mind Brain Behavior Institute, Columbia University, New York, USA

Developing resilience-based treatments for glaucoma

We use mice to determine molecular mechanisms that contribute to Intraocular Pressure (IOP) elevation and glaucoma. Glaucoma is a common neurodegenerative disease that kills retinal ganglion cells. Elevated IOP is an important, causative risk factor for developing glaucoma. I will discuss genome-wide gene expression studies (RNA sequencing) that provided new mechanistic ideas that were then functionally tested. For these studies, we used two human relevant mouse models (DBA/2J mice, develop a form of pigmentary glaucoma caused by mutations in melanosomal protein genes as is a subset of human pigmentary glaucoma; and Lmx1bV265D mutant mice that directly model glaucoma caused by the orthologous human gene LMX1B). In DBA/2J mice, we characterized very early stages of glaucoma that follow IOP elevation but precede neurodegeneration. This demonstrated that mitochondrial abnormalities are among the very earliest changes that are induced by high IOP. We further uncovered a decline in Nicotinamide Adenine Dinucleotide (NAD) an important metabolite for mitochondrial health and function. Treating DBA/2J mice with nicotinamide, a form of vitamin B3 and important NAD precursor, was profoundly neuroprotective against glaucoma. We also detected disturbance in pyruvate metabolism, an important metabolite that links glycolysis to the tricarboxylic acid cycle and so is central in cellular biosynthesis and energy metabolism. Treatment with pyruvate also protected from glaucoma. This led to the Resilience Concept for treating glaucoma. Under this

Biography

Dr. John studied Zoology and genetics at University College Cardiff, Wales before completing his PhD at McGill University (Montreal, Canada, with Drs. Rima Rozen and Charles Scriver). After a postdoctoral position (with Nobel laureate Dr. Oliver Smithies), he started his independent research group at The Jackson laboratory (Bar Harbor, Maine). He remained in Maine for >24 years with promotion to Professor. In 2019, he joined the Department of Ophthalmology at Columbia university, New York. His research has largely focused on glaucoma and his team's research has been honored with a variety of national and international awards.

concept, we use dietary nutritional factors to support cellular bioenergetics and improve cellular functions and resources. Cells with improved energy and other molecular supplies are in a more resilient cellular state that can better fend off the stresses of aging and disease. An initial clinical trial using a combination of nicotinamide and pyruvate improved visual performance in POAG patients. We also discovered metabolic abnormalities in trabecular meshwork cells in the Lmx1b mutant mice. These abnormalities primarily occur in a specific subtype of trabecular meshwork cell that we characterized using single cell resolution RNA sequencing. Treating Lmx1b mutant mice with the resilience factors, nicotinamide and pyruvate, protects trabecular meshwork cells, lessens IOP elevation and strongly protects from glaucoma. In conclusion, orally administered, nutritional, resilience factors have great promise for glaucoma prevention and treatment. As their mechanisms of action is distinct to all current glaucoma therapies, they are expected to complement and augment existing treatments.

Timothy L Jackson PhD, FRCOphth

Faculty of Life Sciences and Medicine, King's College London, London, UK

Submacular haemorrhage due to wet age-related macular degeneration: What to do?

Aim: To consider the presentation, management options, and randomised controlled trials investigating Submacular Haemorrhage (SMH) secondary to neovascular Age-Related Macular Degeneration (AMD), with a focus on the use of Tissue Plasminogen Activator (TPA) and pneumatic displacement, delivered via intravitreal injection or vitrectomy.

Methods: Systematic review of the literature, and appraisal of a 24-participant pilot Randomised Controlled Trial (RCT) comparing intravitreal TPA and gas versus surgery (both groups received bevacizumab), a 56-participant factorial RCT (TAPAS) comparing intravitreal TPA, gas, TPA+gas, and sham (all four groups received ranibizumab), and a 90-participant superiority RCT (STAR) comparing intravitreal TPA and gas versus surgery (both groups received ranibizumab). A 210-participant superiority RCT (TIGER) is also underway, comparing surgery plus aflibercept versus aflibercept monotherapy.

Results: The systematic review revealed three main treatment strategies: intravitreal anti-Vascular Endothelial Growth Factor (VEGF) monotherapy; intravitreal TPA, gas and anti-VEGF therapy; vitrectomy, subretinal TPA, gas and anti-VEGF therapy. All three options gave Visual Acuity (VA) results much better than the natural history. Patients undergoing surgery tended to have larger SMH with worse presenting VA. The pilot RCT was not designed to establish superiority, but found both intravitreal treatment and surgery were very effective in reducing SMH size at

Biography

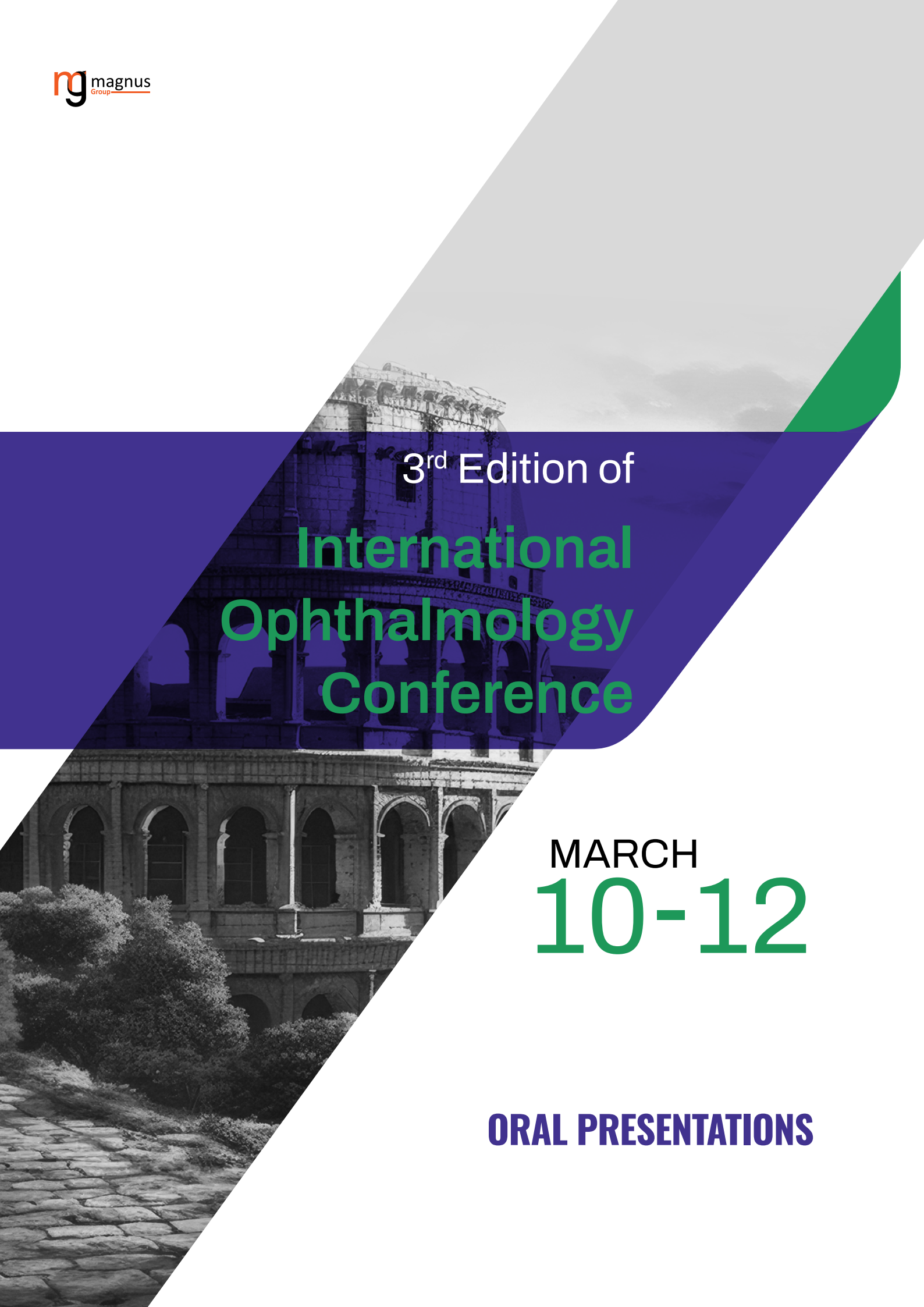
Professor Jackson is consultant ophthalmic surgeon at King's College Hospital and professor of retinal research at King's College London. He completed his medical degree in New Zealand, a retinal PhD at St Thomas' Hospital, London, and his ophthalmology residency based in Moorfields Eye Hospital, where he completed his vitreoretinal fellowship. He has about 150 PubMed publications, is author of the Moorfields Manual of Ophthalmology, and has an approximately 6M Euros research portfolio.

week 6. On factorial analysis, TAPAS found that the combined intravitreal TPA groups had significantly better month 3 mean logarithm of the minimum angle of resolution VA than those not receiving TPA: 0.66 vs 0.98 (95% confidence interval, -0.58 to -0.07; P=0.02). Gas did not significantly improve VA versus no gas. STAR did not establish superiority of surgery over intravitreal treatment (p=0.77), with the surgery group gaining +16.8 letters at month 3, versus +16.4 letters with gas. Although the intravitreal and surgery primary outcomes were similar, the results and study design did not establish equivalence (95% confidence interval of difference between groups -14.9 to +11.0 letters). TIGER is past the midpoint of recruitment.

Conclusions: SMH is treated in a variety of ways, ranging from anti-VEGF monotherapy to vitrectomy. Although there is no direct comparison, historic series suggest the natural history is much worse than anti-VEGF therapy. It is not known if surgery or intravitreal TPA is better, but it is hoped that TIGER will establish how surgery compares to anti-VEGF monotherapy.

BOOK OF ABSTRACTS

magnus Group



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ORAL PRESENTATIONS

Dr. Adeel Mushtaq

Liverpool Heart and Chest Hospital, Liverpool Heart and Chest Hospital NHS Foundation Trust, Liverpool, Merseyside

Systematic review on the use of scleral lenses and soft contact lenses in the management of keratoconus

Introduction and Aims: Keratoconus is the most common primary ectasia, progressive corneal ectasia in which central or paracentral thinning of the corneal stroma occurs, leading to steepening of the corneal surface and irregular astigmatism. Management of this condition is largely dependent on the severity of disease; with mild cases being managed with glasses, moderate cases with contact lenses and severe cases requiring surgery and corneal transplantation. Most cases are being managed with contact lenses, and with the development of more techniques in contact lens engineering has allowed for customizable lenses to be developed. In this systematic review, we will be reviewing the literature on the performance of Scleral Contact Lenses and Soft Contact Lenses, to aid in clinical decision making.

Materials and Methods: A literature search was performed in both PubMed and Ovid MEDLINE databases for studies investigating either visual outcomes or patient reported comfort outcomes of Scleral Contact Lens use or Soft Contact Lens wear. Exclusion criteria were: Retrospective studies, Studies not available in English language, Non-peer reviewed articles, Presentation Abstracts and Publications accepted before 2000. Data extraction and thematic analysis was performed to identify comparative themes on the included literature.

Results: A total of 307 articles were returned from both databases. Through abstract screening and full text screening, a total of 4 publications were included: 3 investigating the performance of Scleral Lenses and 1 investigating the performance of Soft Contact lenses. It was shown that the use of scleral lenses significantly improved subjective Quality of Life (QoL) of patients and objective Visual Acuity as well as improvements in High Order Aberrations in vision. Evidence for soft contact lens use was comparatively weaker, with no statistically significant increase in measured visual acuity in its use vs habitual contact lenses.

Conclusion: This review confirms the efficacy of Scleral Contact Lenses in the management of moderate keratoconus. However there is a need for more investigation in the performance of Soft Contact Lenses in the mild-to-moderate keratoconus population as there is sufficient evidence to suggest this to be both easier to insert on the eye surface and more comfortable whilst in use.

Biography

Dr. Adeel Mushtaq studied Medicine in the Hull and York Medical School and graduated in 2022. During this time, he obtained a First-Class Honors degree in Imaging Sciences in King's College University of London, with focus on the implementation of novel polymers in chest wall reconstruction. He then continued his training and completed his Foundation Training in the South London region. He is currently a Radiology Resident training in the prestigious North West School of Radiology.

Dr. Alhumam Alkhusheh[1]*, Dr. Robert Charles Nam[2]

[1]Foundation Doctor, NHS, Kent, UK
[2]GP, NHS, Mansfield, UK

Reviewing the outcomes of ophthalmology referrals secondary to optician advice in a GP surgery

Background: In this GP surgery in the past, patients were seen by both a GP doctor and optician prior to an ophthalmology referral. Due to the increased workload, referrals were then sent based purely on optician advice. The project was carried out to assess whether this pathway is effective or whether patients should also be seen additionally by a GP doctor before referral.

Objectives: The primary aim of this project was to assess the effectiveness of referring patients based entirely on optician advice and whether the referral was warranted.

Methods: A dataset of 61 patients was generated using SystmOne. This included all patients who were referred to ophthalmology secondary to optician advice, from 01.10.22→01.10.23. Each referral result was then organised into the following categories: referred but didn't attend appointment, seen once and discharged, seen and retained under treatment, seen and referred for surgery, lost to follow up and no information found on what happened post referral.

Results: 42/61 patients were either referred for surgery or retained under secondary care (68.9%). 14/61 patients either were discharged back to GP care after the first consultation or didn't attend a first consultation (23.0%). 2/61 (3.3%) patients were lost to follow up and 3/61 (4.9%) patients had no information found on what happened post referral.

Conclusions: No literature was found that had done a similar study, as such there are no standards to attempt any comparison. Therefore, the GP surgery decided to stay with the current system as the numbers seem to be encouraging and imply it may not be worth booking an extra 60+ appointments a year, where there is already a vast lack of appointments. Recommendations included to provide patients with an additional copy for their appointment letter to minimise patients lost to follow up.

Keywords: SystmOne, Ophthalmology.

Biography

Dr. Alkhusheh graduated recently from the University of Nottingham in 2024 with a BMBS (Hons) and has started work as a foundation doctor in the NHS within the Maidstone and Tunbridge Wells Trust. He also graduated with a first-class distinction in his Bachelor of Medical Sciences degree (BMedSci Hons) in 2022. He has had an interest in ophthalmology since medical school and this project is one of which he undertook during that time.

Amin Otmani

Department of Clinical Neuroscience, Division of Eye and Vision, Karolinska Institutet, Stockholm, Sweden

Prophylactic nicotinamide treatment protects from rotenone-induced neurodegeneration by increasing mitochondrial content and volume

Leber's Hereditary Optic Neuropathy (LHON) is driven by mtDNA mutations affecting Complex I presenting as progres-sive retinal ganglion cell dysfunction usually in the absence of extra-ophthalmic symptoms. There are no long-term neuroprotective agents for LHON. Oral nicotinamide provides a robust neuroprotective effect against mitochondrial and metabolic dysfunction in other retinal injuries. We explored the potential for nicotinamide to protect mito- chondria in LHON by modelling the disease in mice through intravitreal injection of the Complex I inhibitor rote- none. Using MitoV mice expressing a mitochondrial-tagged YFP in retinal ganglion cells we assessed mitochondrial morphology through super-resolution imaging and digital reconstruction. Rotenone induced Complex I inhibition resulted in retinal ganglion cell wide mitochondrial loss and fragmentation. This was prevented by oral nicotinamide treatment. Mitochondrial ultrastructure was quantified by transition electron microscopy, demonstrating a loss of cris-tae density following rotenone injection, which was also prevented by nicotinamide treatment. These results demon-strate that nicotinamide protects mitochondria during Complex I dysfunction. Nicotinamide has the potential to be a useful treatment strategy for LHON to limit retinal ganglion cell degeneration.

Biography

Since 2022, Amin has worked as a clinician at Sankt Erik Eye Hospital, focusing on glaucoma and neuro-ophthalmology. He earned a Master's in Immunology and Development from Aix-Marseille University in 2012 and conducted research on genomic instability in hemopathies at Harvard Medical School and Karolinska Institutet. After completing his Medical degree in 2018, he joined the Pete Williams Lab in 2019 to study mitochondrial and metabolic changes in glaucoma, exploring novel therapeutic approaches. Now pursuing a PhD, Amin combines clinical practice with research, aiming to advance glaucoma understanding and treatment through innovation and international collaboration.

Rusanovskaia Anna*, Farkhutdinova Angel, Abbas Zghaib

State Budgetary Healthcare Institution, “City Clinical Hospital №52 of Moscow Healthcare Department”, Moscow, Russia

Surgical treatment of chronic macular hole by hydraulic mobilization of the central parts of the retina

Objective: to evaluate the safety and effectiveness of the technique of hydraulic mobilization of the central parts of the retina in the surgical treatment of chronic macular ruptures.

Materials and Methods: 11 patients (11 eyes) with chronic macular rupture were under observation. All patients underwent a standard 3-port seamless 25-gauge vitrectomy with removal of the cortical layers of the vitreous body to the equator. After staining, the inner boundary membrane was removed according to the standard procedure. To mobilize the retina around the rupture, subretinal injections of a balanced saline solution were performed within the maculorexis area using a PolyTip 25/38 subretinal cannula connected to a syringe filled with BSS. Subretinal injections were performed using a four-point method. The criterion for the end of the injection was the appearance of a wave of liquid from the injection site to the edge of the rupture. All four waves should be connected 360 degrees around the gap. During this procedure, the infusion pressure was temporarily reduced to 15 mmHg. Next, the fluid was replaced with air with drainage of subretinal fluid through a macular rupture. The operations were completed either by tamponade of the vitreal cavity with air, or 16% hexafluoroethane (C2F6) After surgery, the patients were in the "face down" position for 3 days.

Results and Discussions: Complete anatomical closure of the macular rupture was achieved in all cases. The closure of the gap was stable throughout the entire observation period. There were no complications associated with retinal mobilization. The average value of the maximum corrected visual acuity (CMOS) in the affected eye before the intervention was 0.05±0.01. The postoperative mean CMOS was improved to 0.4±0.23. CMOS values after surgery were significantly increased in all cases (P=0.001).

Biography

Dr. A. Rusanovskaia graduated from Medical University in 2006 and completed her PhD at 33 from S.N. Fedorov NMTC "MNTK" Eye Microsurgery in Russia, focusing on vitreoretinal surgery and early macular pathology treatment. Since 2015, she has worked at City Clinical Hospital #52 in Moscow. Dr. Rusanovskaya is the author or co-author of over 20 publications in renowned journals and has participated in more than 30 national and international congresses. She is also a co-author of two Russian Federation patents. Her main research areas include retinal diseases such as diabetic retinopathy, age-related macular degeneration, and vitreoretinal surgery.

Rusanovskaia Anna*, Farkhutdinova Angel, Abbas Zghaib

State Budgetary Healthcare Institution, “City Clinical Hospital №52 of Moscow Healthcare Department”, Moscow, Russia

The effectiveness of surgical treatment of Terson syndrome

Terson's syndrome (hemorrhagic oculocerebral syndrome) is a vitreal, preretinal, subgialoid or subretinal hemorrhage associated with acute subarachnoid, intracerebral hemorrhage, or traumatic brain injury. The clinical picture is characterized by a sharp mono or bilateral loss of vision in the background of intracranial hemorrhage. The main method of treatment is timely vitrectomy. According to the literature, this type of surgical treatment is effective in 81% of cases. Terson syndrome is a serious complication of intracranial hemorrhage, leading to a significant reduction in vision and disability of patients. However, with timely and reasonable surgical treatment, a complete restoration of visual functions is possible, because Terson's syndrome is rarely accompanied by ischemic angioretinopathy. A case report. A 42-year-old woman was taken to the intensive care unit in a coma. The diagnosis was established: subarachnoid hemorrhage, rupture of the giant aneurysm of the right carotid artery. Surgical treatment was performed: osteoplastic craniotomy in the right fronto-temporal-parietal region, clipping of the aneurysm of the right carotid artery. On return of consciousness, the patient was diagnosed with reduced vision to correct light projection of both eyes. After stabilization of the physical condition, 25-gauge vitrectomy was performed on both eyes. During vitrectomy, a dense adhesion of the posterior hyaloid membrane to the retina, vitreal and subhaloid hemorrhage (at the stage of fibrosis) were detected. Best-Corrected Visual Acuity (BCVA) with Snellen was 20/25 on the first day after surgery, and the BCVA was 20/20 in both eyes in one year and in two years after surgical treatment. Fields of vision were in the normal range. Spectral domain Optical Coherence Tomography (OCT) of the macular region and optic nerves were within normal limits. There were no signs of optic atrophy.

Biography

Dr. A. Rusanovskaia graduated from Medical University in 2006 and completed her PhD at 33 from S.N. Fedorov NMTC "MNTK" Eye Microsurgery in Russia, focusing on vitreoretinal surgery and early macular pathology treatment. Since 2015, she has worked at City Clinical Hospital #52 in Moscow. Dr. Rusanovskaya is the author or co-author of over 20 publications in renowned journals and has participated in more than 30 national and international congresses. She is also a co-author of two Russian Federation patents. Her main research areas include retinal diseases such as diabetic retinopathy, age-related macular degeneration, and vitreoretinal surgery.

Burak Ozturk[1*], Elif Erdem[1], Ibrahim Inan Harbiyeli[1], Ebru Esen[1], Selcuk Sizmaz[1], Sevinc Puren Yucel[2], Begum Sulanc[1], Meltem Yagmur[1], Nihal Demircan[1]

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Diagnostic ability of optical coherence tomography angiography vessel density parameters in primary open-angle glaucoma cases

Purpose: To evaluate the findings of Optical Coherence Tomography Angiography (OCTA) vessel density parameters in patients with Primary Open-Angle Glaucoma (POAG) and investigate both diagnostic performance of OCTA and correlations between control group and patients at different stages of glaucoma.

Methods: This cross-sectional study included POAG patients and healthy volunteers as a control group. All subjects underwent a complete ophthalmological examination and computerized perimetry (GP, [Octopus 900]). Structural characteristics in the macular and peripapillary regions were evaluated using OCT (Cirrus HD-OCT 5000), and vascular parameters were assessed with OCTA (Optovue, RTVue XR100-2) with Split-Spectrum Amplitude-Decorrelation Angiography (SSADA) algorithm. Additionally, the relationship between glaucoma stage and OCTA findings was analyzed in patients classified based on the global perimetry mean deviation value.

Results: The mean age of the POAG group (27 patients, 51 eyes) was 54.5±11.9 years, while it was 45.1±9.7 years in the control group (54 patients, 54 eyes) (p=0.008). There were no significant differences between the two groups in terms of other demographic characteristics (all p>0.05). Twenty-four eyes (47%) were classified as early-stage, 12 eyes (23.5%) as moderate-stage, and 15 eyes (29.5%) as advanced-stage glaucoma. OCTA Radial Peripapillary Capillary (RPC) Vessel Density (VD) analyses revealed that peripapillary VD (ppVD) area's under the receiver operating characteristic curve (AUC) of the inferior Hemi [AUC: 0.796(0.665-0.927)] and average ppVD [AUC: 0.790(0.658-0.921)] parameters had the best AUCs for the detection of early glaucoma. The parameter with the lowest diagnostic performance was the fovea. The correlation analysis revealed that OCTA RPC and EM vessel density parameters were significantly correlated with VF indices MD, RNFL and GCC in different stages of glaucomatous eyes. Average ppVD-RNFL correlation was the best AUC [AUC: 0.833(p<0.001)]. Additionally, when glaucoma patients were analyzed together, SMV density measurements showed that vessel density parameters were lower in advanced-stage POAG eyes compared to early-stage eyes (all p<0.05).

Conclusion: OCTA revealed vascular damage in the macular and peripapillary regions of POAG patients. Radial peripapillary capillary vessel density proved useful for detecting early-stage glaucoma, while more significant vascular damage was observed in the macular region as glaucoma progressed to advanced stages.

Keywords: Macular and Peripapillary Vessel Density, Optical Coherence Tomography Angiography, Primary Open-Angle Glaucoma.

Biography

Dr. Burak Ozturk has been graduated from Dokuz Eylul University Faculty of Medicine, Izmir, Turkey. He immediately started his ophthalmology training at Cukurova University Hospital Ophthalmology Department. He has worked with Prof Dr. Elif Erdem and Prof Dr Selcuk Sizmaz who are and expert in Glaucoma and Vitreoretinal Surgery respectively. He then decided continue his career in the UK. He is currently living in Birmingham.

Chan Zhao[1]*, Chaoran Xia[2], Chuan Li[2], Dawei Zhao[2], Feiyue Xiao[1], Wubi Li[1], Yuhan Wu[1]

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A novel resistance sensing mechanical suprachoroidal injector: Development and potential applications

We invented a novel resistance sensing mechanical principle which enables precise injection of flowable material into the superachoroidal space. Based on this principle, after three generations of iterative enhancements, the latest device has been optimized to administer with ease a liquid or viscoelastic substances into the suprachoroidal space of rabbit, porcine and donated human cadaver eyes. Building on this, we further propose a novel procedure of viscoelastic sheath protected suprachoroidal cannulation and subretinal injection. We can use the device to inject a viscoelastic material into the suprachoroidal space to facilitate dissection of the choroid from the sclera, further expanding the suprachoroidal space. Subsequently, a flexible cannula is introduced into this expanded space and carefully navigated toward the posterior segment of the eye. Using a microneedle housed within the cannula, targeted delivery of a therapeutic composition into the subretinal space could be achieved with precision, avoiding retinal penetration or vitreous removal. We have also developed a novel ab-externo suprachoroidal aqueous humor drainage MIGS implant. This implant, protected by the viscoelastic material, can be positioned into the supra-cilliary space with its anterior end located at the anterior chamber angle, forming a drainage canal between the anterior chamber and the superachoroidal space. In a rabbit model of steroid-induced glaucoma, our device demonstrated a promising effect on lowering intraocular pressure, along with an excellent safety profile. A subsequent design was developed to enhance the stability of this MIGS implant. Additionally, the use of our novel superachoroidal injector for suprachoroidal viscopexy in cases of acute rhegmatogenous retinal detachment represents a potential future application.

Biography

Dr. Zhao completed his M.D. degree at Peking Union Medical College (PUMC) in 2007, after which he joined the Department of Ophthalmology at PUMC Hospital. He advanced through the ranks to secure a professorship in 2023. Dr. Zhao possesses a keen interest in the integrative research of ophthalmology and medical engineering, an passion that has earned him numerous national and international patents. He has spearheaded the development of several innovative medical devices, earning him the Clinical Medicine Gold Award at the inaugural National Health Industry Youth Innovation Competition. Dr. Zhao has published over 30 peer-reviewed research papers as the primary or corresponding author.

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Accuracy of multimodal interpretation by large language models for ophthalmology clinical vignettes

Purpose: Large Language Models (LLMs) can accept text and image prompts as multimodal input. With implications for ophthalmology as a field, we evaluated the performance of several LLMs on relevant clinical vignette questions.

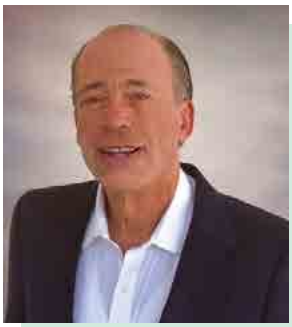
Methods: We collected 100 cases of JAMA Ophthalmology Clinical Challenges from July 2021 to August 2024, where each case had a case description, medical image, and associated multiple-choice questions options. To assess the contribution of clinical images in improving performance of LLMs, we compared the accuracy of multimodal LLMs such as GPT4o, GPT4o-mini, GPT4o-Turbo, and Gemini 1.5 with text-only vs. text- and image-based input. Furthermore, we also determined the accuracy of unimodal LLMs such as GPT-3.5 and LLaMA 3 with text-only input. For accuracy, we calculated the percentage of correct responses in answering clinical vignettes for each LLM and compared across LLMs using Chi-Square analysis.

Results: For text-only input, GPT-4o had an accuracy of 69.5% (95% CI 64.0%-74.5%) vs. 50.7% (95% CI 45.0%-56.3%) for GPT-4o Mini, 56.9% (95% CI 51.2%-62.4%) for Gemini-1.5, 63.1% (95% 57.5%-68.5%) for GPT-4 Turbo, 56.9% (95% CI 51.2%-62.4%) for GPT-3.5, and 52.5% (95% CI 46.6%-58.4%) for LLaMA 3. For image- and text-based input, GPT-4o had an accuracy of 66.3% (95% CI 60.8%-71.5%) vs. 45.9% (95% CI 40.4%-51.6%) for GPT-4o Mini, 55.6% (95% CI 49.9%-61.1%) for Gemini-1.5, 56.0% (95% CI 50.3%-61.6%) for GPT-4 Turbo. For comparing text-only vs. image- and text-based input in multimodal LLMs, there was no significant difference in GPT-4o (69.5% vs. 66.3%, p=0.46), GPT-4o Mini (50.7% vs. 45.9%, p=0.29), Gemini-1.5 (56.9% vs. 55.6%, p=0.80), or GPT-4 Turbo (63.1% vs. 56.0%, p=0.095). Comparing multimodal and unimodal LLMs for text-only input, GPT-4o performed significantly better than GPT-3.5 (p=0.03), LLaMA (p<0.001), GPT-4o Mini (p<0.001), and Gemini-1.5 (p=0.03), but was equivalent to GPT4-Turbo (p=1.00). Comparing multimodal LLMs for text- and image-based input, GPT-4o performed significantly better than GPT-4o Mini (p<0.001) and Gemini 1.5 (p=0.049) but was also equivalent to GPT-4 Turbo (p=0.07).

Conclusions: Multimodal LLMs did not improve substantially with the inclusion of imaging data when answering ophthalmology clinical vignettes. GPT-4o outperformed all other LLMs except for GPT-4 Turbo for text-only and text- and imaging-based inputs. These results suggest that off-the-shelf LLMs can reasonably assess clinical presentations in ophthalmology, even without the inclusion of clinical images. This impressive performance highlights the possible utility of LLMs as adjuncts for clinical decision-making in ophthalmology.

Biography

Dhruva Drew Gupta is a MD candidate at Harvard who will graduate in May 2025. He earned his BS in Neuroscience from Yale College and served as a Gliklich Healthcare Innovation Fellow at Massachusetts Eye and Ear where he led a project on identifying reversal of vision loss in glaucoma. He currently works at Mass General Brigham to understand the applications of large language models in ophthalmology.



Frederick H. Silver[1,2*], Dominick Benedetto[3], Tamay Deshmukh[2]

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Use of vibrational optical coherence tomography to characterize corneal biomechanics in health and disease

Vibrational Optical Coherence Tomography (VOCT) is a new non-invasive technique that provides an image based upon infrared light reflections from ocular components and simultaneous analysis of acoustic sound vibrations. The technology provides information to study the structure and mechanical properties of the cornea and other ocular tissues. Using this method, optical coherence (OCT) images are separated into low (green), medium (blue), and high pixel (red) intensity images to study the qualitative cellular (green) and collagen (blue and red) concentrations. In this manner the locations of cellular and collagenous components in diseased corneas can be visually observed. Pixel intensity versus depth plots can be obtained by scanning the green, blue, and red images providing quantitative data on the location and relative concentration of tissue components. OCT images of control corneas and subjects with Keratoconus (KC) demonstrate differences in their distribution of cellular and collagenous components. KC corneas demonstrate a loss of collagen fibrils in the central part of the lamellae in the anterior and posterior stroma. The apparent loss of collagen fibrils in the anterior KC central stroma results in decreased infrared light reflections midway between Bowman's layer and Descemet's membrane. The loss of collagen and cellular reflections is associated with a decrease in the elastic modulus of the central portion of the cornea while the elastic modulus of the lower cornea is found to increase. Results of a simplified finite element analysis of control and stage IV KC corneas suggests that the strain is maximized in the central portion of the corneas where the stress concentration and resulting strain is highest. Elastic modulus and strain calculations suggest that the strain in the central region of Stage IV KC corneas is about 1.4 times the strain for the central portion of the controls. We hypothesize that the increased strain associated with a decreased modulus (stiffness) leads to cone formation in the central or paricentral region of KC corneas. We conclude that slippage in the collagen fibrils near the corneal-limbus junction leads to cone formation at or near the central cornea. The curvature as well as the stress concentration and strain are maximized at the central cornea promoting cone formation. The use of VOCT to evaluate changes in the structure of the anterior and posterior segments of the eye may provide a better understanding of the pathogenesis of ocular diseases such as glaucoma and macular degeneration.

Biography

Dr. Frederick H. Silver is a Professor of Pathology and Laboratory Medicine at Robert Wood Johnson Medical School, Rutgers, the State University of New Jersey. He did his Ph.D. in Polymer Science and Engineering at M.I.T. with Dr. Ioannis Yannas, the inventor of the Integra dermal regeneration template, followed by a postdoctoral fellowship in Developmental Medicine at Mass General Hospital in Boston, MA with Dr. Robert L. Trelstad, a connective tissue pathologist. Dr. Silver invented vibrational optical coherence tomography (VOCT) in his lab at Rutgers. US and European patents have been granted on a VOCT instrument and on vibrational evaluation of materials and tissues.

George HH Beiko[1*] BM BCh FRCS(C), Samantha Orr[2] MD

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Belt loop scleral suture fixation of dislocated in-the-bag IOLs; retrospective review of consecutive cases

Purpose: To review consecutive cases of dislocated in the bag IOLs managed by the belt loop scleral fixation technique.

Methods: Retrospective review of 71 consecutive cases managed using the belt loop scleral fixation scleral fixation technique.

Results: 71 consecutive cases were identified since 2021; 58% involved a single piece IOL. There were 71 eyes of 61 patients. The age at presentation was 81.46+/-8.68 years of age (range 51-95). These cases presented 11.23+/-7.03 years after surgery (range 1 week-29 years). These cases were followed for 9.63+/-9.51 months (range 1 day-36 months). Logmar vision improved from 0.69+/-0.32 (range 0.2–1.0) to 0.34+/-0.27 (range 0-1.0). Post-op findings of transient vitreous hemorrhage in 4 eyes, CME in 8 eyes and one eye had prolonged corneal edema. Only one eye had recurrent dislocation of the iol following significant blunt trauma to the eye.

Conclusions: Belt loop scleral suture fixation using 9-0 prolene is an effective and safe method of managing dislocated in the bag IOLs.

Biography

George H.H. Beiko is a medical graduate of Oxford University and completed his ophthalmology specialty training at Queens University in Canada. He has published over 30 peer-reviewed articles and authored 20 book chapters. He has given over 800 scientific presentations. He has been awarded four best papers of session at the ASCRS annual meeting, Winning Video in Cataract Implant Surgery in the ASCRS Film Festival, 5 video awards in team competitions, 2 Best Poster Awards at AAO, Best Paper of Session (Cataract) at APAO-AAO Joint Meeting and the Best Original Paper in Cataract Surgery at AAO. He is on the review panel or editorial board of over 30 ophthalmology journals.

Hiranmoyee Das
Nazareth Hospital, India

Maintaining optimal oxygen saturation-the key to reduce both severe ROP & neurodisability

Introduction: History has shown that restricted use of oxygen leads to higher mortality and neuro disability, whereas liberal usage is linked to ROP. With the upgradation of Neonatal Intensive Care Unit (NICU) of a tertiary health care unit, the number of premature infants surviving with severe ROP was increased. So, we tried to develop some strategies to maintain optimal O2 saturation in premature infants.

Methods: Structured quality improvement method i.e. plan-do -check-act cycle.

Results: A retrospective review of 80 premature infants (gestational age <32 weeks) with low birth weight (<2000 grams) admitted to NICU of a tertiary health care unit in 2023 was done. 16 patients developed ROP (7 stage 1, 5 stage 2, 3 stage 3 & 1 stage 4). Among them 5 required intravitreal injection & laser therapy, 2 of whom developed blindness despite treatment. Lack of appropriate recommendations and a lack of knowledge were found to be the main causes of increased ROP during staff evaluation. We developed a protocol and tracking tools: Spo2 target range chart (Stenson BJ) was prepared & placed on each patient's clipboard as visual reminder, Alarm limits were adjusted and set, SpO2 trend & alarm limits were monitored & frequent audits were done. We educated both new and existing personnel about SpO2 targeting protocol & developed an algorithm for titrating Fraction of Inspired Oxygen (FIO2). Following the intervention, there were fewer newborns with severe ROP who needed treatment & there was no discernible rise in the death rate.

Conclusion: Severe ROP can be prevented by implementing simple improvements in caregiving procedures. This study will throw some light on the importance of targeting SpO2 in the prevention of severe ROP.

Biography

Dr. Hiranmoyee Das did her medical schooling & post-graduation in ophthalmology from Gauhati Medical College. She passed MS Ophthalmology in 2007. Since then, she is working in a 460 bedded multi-specialty charitable hospital in North eastern part of India as a lone ophthalmologist.

Jamshid Mamatov[1,2*], Nodira Makhmudova[1], Mokhiryam Aliyeva[1,2], Dildora Nabiyeva[1,2,] Shakhnoza Babamukhamedova[1], Darya Khristovski[1], Durdona Yokubova[1], Charos Parpijalilova[1]

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Anti-inflammatory properties of omega-3 fatty acids and its clinical significance in the treatment of dry eye syndrome

Purpose: to evaluate the effectiveness of nutritional omega-3 fatty acid supplementation in the management of Dry Eye Disease (DED). We focused on the anti-inflammatory properties of omega-3 and its impact on the symptoms and signs of DED, especially in patients with Meibomian Gland Dysfunction (MGD).

Methods: We conducted a comprehensive systematic review and meta-analysis of Randomized Controlled Trials (RCTs). Selection criteria was based on inclusion of omega-3 supplementation, implementation of the Tear Break-Up Time (TBUT), Schirmer's test, Ocular Surface Index (OSDI) scores and improvement of symptoms as objective and subjective assessments. respectively.

Results: 34 Randomized Controlled Trials (RCTs) with a total 0f 4,314 participants from 13 countries were included in the study. Reasonable confirmation was found for improvements in production of aqueous tear and tear film stability,especially with long-chain omega-3 supplementation.Nonetheless,the clinical relevance of these improvements remains uncertain. The Tear Break-Up Time (TBUT) demonstrated clinically relevant improvement,though the reduction in symptoms on the OSDI scale and findings from the tear osmolality test were less noticeable.Moreover patients with meibomian gland dysfunction and dry eye may experience positive effect from omega-3 fatty acids,nevertheless the number of studies and participants was constrained.

Conclusions: Regardless of the observation of statistically important improvements,Omega-3 fatty acids demonstrated potential therapeutic worth in managing dry eye disease,especially in cases related to meibomian gland dysfunction. On the other hand,confirmations regarding its effectiveness are erratic,and further research studies are required to obtain the optimal dosage,long-term effects and particular patient population that may experience the greatest benefit from omega-3 supplementation. These observations propose that omega-3 supplementation could be used as an adjunct to other treatment options in dealing with dry eye disease,although current evidence does not support it as a sole remedy..

Biography

Dr. Jamshid Furkatovich Mamatov is the Head of the Ophthalmology Department and a practicing ophthalmologist with extensive experience in clinical care and ophthalmic surgery. He has pursued advanced training in small-incision cataract surgery and fundus interpretation in India, as well as participating in international conferences and workshops, including those in Turkey, Uzbekistan, and the United States. He is committed to advancing ophthalmic care through his clinical expertise and continuous learning.

Javokhirbek Ravshanbekov[1]*, Jamshid Mamatov[2], Aliyeva oxiryam[2]

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Effect of combination of anti-vegf and corticosteroid use in two patients with early-onset central retinal vein occlusion

Purpose: Central Retinal Vein Occlusion (CRVO) is an uncommon condition in young adults that can lead to severe visual impairment if untreated. This study evaluates the treatment outcomes of two young male patients with CRVO who underwent a combination of intravitreal anti-VEGF and corticosteroid therapy, demonstrating significant improvements following management.

Methods: Two male patients, aged 35 and 38, presented with sudden vision loss in one eye and were diagnosed with CRVO. Fundoscopic evaluation revealed retinal hemorrhages and macular edema, confirmed by Optical Coherence Tomography (OCT). Both patients were treated with monthly intravitreal injections of anti-VEGF (Aflibercept 0.4 mg) combined with corticosteroid therapy (Triamcinolone). Treatment was administered over six months with regular follow-ups to monitor Best-Corrected Visual Acuity (BCVA) and macular thickness.

Results: Both patients showed marked improvements in visual acuity and resolution of macular edema after six months of treatment. OCT findings demonstrated significant reductions in macular thickness, correlating with better structural outcomes. The improvements were more pronounced in the patient with an active lifestyle, who experienced faster recovery compared to the patient with a sedentary lifestyle. Both patients tolerated the treatment well, with no adverse events reported.

Conclusions: The combination of anti-VEGF and corticosteroid therapy is effective in managing CRVO in young adults, leading to substantial improvements in visual function and macular structure. The findings underscore the importance of early intervention and personalized management strategies, taking systemic health and lifestyle factors into consideration.

Biography

Javokhirbek Ravshanbekov is a medical student at Central Asian University in Tashkent, Uzbekistan, expected to graduate in 2025. He is deeply passionate about ophthalmology, with a particular focus on vascular disorders of the eye. Javokhirbek believes that integrating cutting-edge research with a multidisciplinary approach is essential for advancing the diagnosis and treatment of retinal and choroidal vascular diseases, ultimately improving patient outcomes and quality of life.

Keerthiveena Balraj

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Application of deep learning techniques for the detection of ocular health: Challenges and opportunities

Recent developments in Artificial Intelligence (AI), in particular Machine Learning (ML) and Deep Learning (DL), have demonstrated promising outcomes in various fields, including the internet of things, automated machinery, and healthcare. DL techniques are dominating medical image analysis for the early detection of ophthalmic diseases namely diabetic retinopathy, glaucoma, and age-related macular degeneration. This study discusses the overall potential of ML and DL techniques to automatically grade, recognize, and assess the abnormal features that will empower ophthalmologists to provide accurate diagnoses and facilitate personalized health care. In this study, a brief overview of the analysis of traditional and advanced techniques was discussed. Further, this study highlights the images of transfer learning techniques on the early detection and diagnosis of ocular health. Publically available datasets such as Digital Retinal Images for Vessel Extraction (DRIVE), High Resolution Fundus (HRF), and one public dataset are used to validate the proposed system in terms of accuracy, precision, specificity and F1-score. This study may help clinicians to early progression with high accuracy for timely interventions and utilization of advanced DL technology, with a specific focus on its applications in ocular imaging techniques.

Biography

Dr. Balraj is interested in developing AI-driven diagnostic tools for the early detection of cancer. She earned her Ph.D. in Electrical Engineering from Anna University in 2021, where she specialized in computer-aided diagnosis for ocular health. Following her doctoral studies, she served as a postdoctoral researcher and Coordinator of the Data Analytics Division at the Centre of Excellence in Biopharmaceutical Technology, IIT Delhi. In this role, she led research initiatives on pancreatic cancer, brain tumor identification, and video-based cardiac function monitoring. Recently, Dr. Balraj joined UIUC, where she is focused on developing cutting-edge AI protocols to analyze infrared data and create innovative tools for the early detection of liver cancer.

Andrii Ruban, Lesia Parkhomchuk*

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Case report of lyme disease associated proliferative vitreoretinopathy, challenges in diagnostic and treatment

A woman 30 y. with complains of gradual bilateral visual loss and headache during 6 months. Vis OD=0.25, Vis OS=0.04. Anterior eye segment without changes, IOP normal. On the eye fundus–massive proliferative changes and partial hemophthalmia. Serology negative for Tuberculosis, Sarcoidosis, Lues, Antiphospholipid syndrome and Rheumatologic spectrum. Serology positive for Lyme disease. She was consulted and treated by infectionist. Previous weeks the patient was taken oral steroids and admitted short time improvement and then the new portion of hemophthalmia appeared. In our clinic was performed Fluorescent angiography, where the presence of neuro vasculitis was confirmed, with massive peripheric fibrovascular proliferation and wide avascular zones. We started with intravitreal injections of anti-VEGF and laser coagulation of avascular zones. Few weeks later her visual acuity was Vis OD=0.9, Vis OS=0.7. As there were residual vitreoretinal tractions and local tractional retinal detachment, we performed vitrectomy with gas endo tamponade. And now her vision is 1.0 on both eyes.

Biography

Dr. Lesia Parkhomchuk graduated in 2007 in Ivano-Frankivsk University, Ukraine. Then she joined the Internship in the Eye Microsurgery Center, at the Academy of postgradual study in Kyiv. Then in 2013 she entered clinical ordinature at the same institution at the vitreoretinal department. In 2016 she obtained the position of Retinal laser specialist in private ophthalmological clinics. Now she works in the Center of clinical Ophthalmology with Professor and vitreoretinal surgeon Andrii Ruban.

Mehul Shah[1*], Shreya Shah[2]

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Toddlers ocular trauma score - New predictive model for ocular trauma in toddlers

Purpose: Herein, we compared the efficacy among the Ocular Trauma Score (OTS), Toddlers Ocular Trauma Score (TOTS), and Pediatric Ocular Trauma Score (POTS) for prognosis prediction in Indian children who had mechanical ocular conditions causing traumatic cataract.

Methods: This prospective, interventional study recruited consecutive children undergoing operation for traumatic cataracts caused by mechanical eye injuries at Drashti Netralaya. The following details were obtained from their medical files: the circumstance and time of injuries, penetrating injury type, initial and final Visual Acuity (VA), time of operation, and associated eye diseases. Specific variables were employed to determine the OTS, TOTS, and POTS. For all patients, the final and predicted VA determined using all scores were compared using Fischer's exact test. Accuracy, specificity, and sensitivity were evaluated for all the scores by using the area under receiver operating characteristic curve.

Results: We enrolled 124 eyes. Patients' mean value for age was 4.6±1.29 years; 44 (35.41%) and 74 (64.5%) were female and male patients, respectively. Visual outcomes significantly improved after operation, and the outcomes did not differ between closed and open globe injuries (P=0.162). The actual and predicted VA did not exhibit a statistically significant difference among the three scores. TOTS and POTS were more suitable for evaluating low risk injuries, whereas the OTS could more efficiently examine high risk cases.

Conclusion: TOTS and POTS were more accurate than the OTS in VA prediction after operation in toddlers with traumatic cataracts caused by mechanical globe injury. TOTS and POTS were more suitable for evaluating low risk injuries, whereas the OTS could more efficiently examine high risk cases. All the examined scores can be helpful in estimating VA following treatment.

Biography

Secretary of ocular trauma society of INDIA, Founder Director & HOD vireo retinal and ocular trauma deparments, Drashti Netralaya, Dahod Qualification: MS, fellowships vitreoretina Sankar Netralaya Publications: 117 publications(peer reviewed), reviewer 10 int. Journels Written chapters in 10 books- (lead author in 2 books) Images published (peer reviewed): 208 images of the week in American society-4 Presentations: international-145 and National-1134 Field of Interest: virero retaina, ocular trauma and clinical research Education initiatives- have trained 46 DNBS, long term fellows 46 and short term 169, NPCB fellow-30 and BSc opthometrists- 121 Awards and Achievements : 26 awards including national eye health.

Mohammad Zeyad Mohammad Ayoub[1*], Ahmed Al-Nahrawy[2]

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Procedures in primary open-angle glaucoma: A review of outcomes of preserflo microshunt compared to trabeculectomy

Introduction: This study compared the outcomes of the Preserflo microshunt to trabeculectomy in patients diagnosed with Primary Open-Angle Glaucoma (POAG). The primary outcomes analyzed were post-operative Intraocular Pressure (IOP) and the medication burden following each surgical intervention. POAG is characterized by elevated IOP, which can lead to progressive optic nerve damage and subsequent vision loss. While trabeculectomy is considered the gold standard for treating moderate to severe glaucoma, the Preserflo microshunt represents a potential alternative approach that warrants consideration.

Methods: A literature search was conducted utilizing Medline and Embase to identify studies comparing the efficacy of the Preserflo microshunt and trabeculectomy. The analysis focused on data regarding the reduction in Intraocular Pressure (IOP) and the decrease in medication burden following these surgical procedures.

Results: In a two-year Randomized Controlled Trial (RCT), the PreserFlo group experienced a decrease in pre-operative Intraocular Pressure (IOP) from 21.1±4.9mmHg to 14.3±4.3mmHg at one year, with a reduction in medication usage from 3.1±1.0 to 0.6±1.1. In the trabeculectomy group, IOP reduced from 21.1±5.0mmHg to 11.1±4.3 mmHg, and medication usage decreased from 3.0±0.9 to 0.3±0.9.

A retrospective study reported that mean IOP decreased from 24.09±1.15mmHg to 11.37±1.13mmHg and from 21.67±0.77mmHg to 15.50±1.54 mmHg in the trabeculectomy and PreserFlo groups, respectively. The mean number of IOP-lowering medications decreased from 3.25±0.14 to 0.53±0.14 in the trabeculectomy group and from 3.51±0.14 to 1.06 ±0.43 in the PreserFlo group.

In another prospective interventional cohort study over one year, IOP in the PreserFlo group decreased from 16.2 (13.8-21.5) to 10.5 (8.9-13.5) mmHg, and in the trabeculectomy group from 17.6 (15.6-24.0) to 11.1 (9.5-12.3) mmHg, with both groups achieving these reductions without additional medications. The number of medications used decreased from 4 to 0 in both groups.

In a prospective study of 300 patients, 12-month post-operative IOP averaged 12.89±3.4mmHg in the PreserFlo group and 11.39±4.5mmHg in the trabeculectomy group, both significantly lower than baseline (23.47±8.36mmHg and 22.03±5.2mmHg, respectively). Medication usage reduced to 0.4±0.8 in the PreserFlo group and to 0 in the trabeculectomy group, from baseline values of 2.5±1.2 and 2.7±0.9, respectively.

Conclusion: A review of studies comparing PreserFlo and trabeculectomy across various publications indicate that, although trabeculectomy alone is capable of significantly reducing Intraocular Pressure (IOP) in moderate to severe glaucoma cases, PreserFlo also achieves significant IOP reduction, albeit to a lesser extent than trabeculectomy. However, the reduction in medication burden was more pronounced in patients receiving PreserFlo.

Biography

Dr. Ayoub completed his MBBS from Dhaka Medical College, Bangladesh, in 2021. He subsequently pursued and completed an MSc in Ophthalmology at the UCL Institute of Ophthalmology in 2024. Currently, he serves as a Clinical Fellow at Croydon University Hospital. Dr. Ayoub is preparing to enter the UK Ophthalmology Training Program.

Mokhiryam Aliyeva[1,2*], Nodira Makhmudova[1], Jamshid Mamatov[1,2], Dildora Nabiyeva[1,2,] Shakhnoza Babamukhamedova[1], Darya Khristovski[1], Durdona Yokubova[1], Charos Parpijalilova[1]

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Atopy and its role in the development and progression of keratoconus: A systematic review and meta-analysis

Purpose: Progressive condition which is characterized by corneal thinning,distorted astigmatism and impaired vision is called Keratoconus (KC). Development of a disease is often associated with genetic predisposition and environmental factors. This study seeks to investigate the relation between keratoconus and allergic eye disease,specifically Allergic Rhinitis (AR),eye rubbing, and atopy while exploring the influence of these factors on the progression of the disease.

Methods: Meta-analysis and comprehensive systematic review were performed to assess the associated risk factors and prevalence of keratoconus in connection with allergic diseases,eye rubbing and atopy. Relevant data was obtained from associated studies observed through PubMed,Web of Science,Scopus and Cochrane databases. Moreover,clinical records from 670 eyes belonging to 434 Keratoconus (KC) patients were analyzed,with patients divided into groups regarding the presence of atopic syndromes such as allergic asthma,atopic dermatitis and allergic rhinitis.

Results: The meta-analysis identified important correlations between eye rubbing (OR=5.22), family history of keratoconus (OR=6.67),and allergies (OR=2.21) with the occurrence of keratoconus. The group of patients with atopic syndrome,which involve patients with allergic rhinitis and/or asthma,demonstrated an earlier age of onset in contrast to the control group. Additionally,atopic group revealed higher corneal density in the anterior 120 µm in comparison with non-atopic keratoconus patients (P=0.016).Regardless of no considerable changes were observed in topographical features,these results advocate that atopy and eye rubbing could contribute notably to the preliminary development and progression of keratoconus.

Conclusions: This research study validates the hypothesis that allergic disorders,especially atopic syndromes and eye rubbing, plays a key role as a risk factor in the early onset and progression of keratoconus. The outcomes emphasize the significance of managing allergic reactions and eye rubbing in order to prevent the onset and progression of keratoconus,specifically in high-risk populations. Additional research is required to analyze the underlying mechanism of these correlations and to identify potential preventive strategies.

Biography

Dr. Aliyeva Moxiryam Takhirovna is an experienced ophthalmologist currently practicing at AKFA Medline University Hospital since November 2022. In addition to her clinical practice, she is passionate about teaching and actively mentors medical students. Dr. Aliyeva constantly works on self-improvement and is dedicated to providing high-quality care while advancing her expertise in the field.

Nada Omar Taher[1,2*], Abdullah A Ghaddaf[1,2], Sarah Al-Ghamdi[3] MD, Jumanah Homsi[3] MD, Bandar Al-Harbi4 MD, Lugean Alomari[1,2], Hashem Almarzouki[1,2,5] MD

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Intravitreal anti-vascular endothelial growth factor injection for retinopathy of prematurity: A systematic review and meta-analysis

Background: Laser photocoagulation and/or intravitreal anti-Vascular Endothelial Growth Factor (anti-VEGF) injections constitute the current standard treatment for Retinopathy of Prematurity (ROP). This systematic review and meta-analysis aimed to assess the efficacy and safety of anti-VEGF monotherapy for ROP treatment using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach.

Methods: We searched the Medline, Embase, and Cochrane Central Register of Controlled Trials (CENTRAL) databases. We included Randomized Controlled Trials (RCTs) that compared intravitreal anti-VEGF monotherapy (e.g., bevacizumab, ranibizumab, aflibercept, and pegaptanib) with laser photocoagulation in preterm infants with ROP. We evaluated the rates of recurrence, treatment switching, retreatment, adverse events, and mortality. The Risk Ratio (RR) was used to represent dichotomous outcomes. Data were pooled using the inverse variance weighting method. The quality of evidence was assessed using the GRADE approach. Risk of bias was assessed using the Revised Cochrane risk of bias tool for randomized trials.

Results: Seven RCTs (n=579; 1,158 eyes) were deemed eligible. Three RCTs had an overall low risk of bias, three had some concerns, and one had an overall high risk of bias. The pooled effect estimate showed a statistically significant reduction in adverse events in favor of anti-VEGF monotherapy [RR=0.17, 95% Confidence Interval (CI) 0.07–0.44]. The pooled analysis showed no significant difference between the anti-VEGF and laser groups in terms of recurrence rate (RR=1.56, 95% CI 0.23–10.54), treatment switching (RR=2.92, 95% CI 0.40–21.05), retreatment (RR=1.56, 95% CI 0.35–6.96), and mortality rate (RR=1.28, 95% CI 0.48–3.41).

Conclusion: Overall, intravitreal anti-VEGF monotherapy was associated with fewer adverse events than laser therapy, rated as high quality of evidence according to the GRADE criteria. Pooled analysis revealed no significant difference between the two arms with respect to the recurrence rate, treatment switching, retreatment, and mortality rate, with quality of evidence ranging from moderate to very low as per the GRADE approach.

Biography

Nada Omar Taher is a teaching assistant in ophthalmology and a graduate of King Saud bin Abdulaziz University for Health Sciences (KSAUHS) in Jeddah, Saudi Arabia. She earned a Bachelor of Medicine, Bachelor of Surgery (MBBS) degree with first honors and was included on the dean's list. Her research is focused on ophthalmology, with numerous publications in prestigious journals such as Health Science Reports, BMC Ophthalmology, International Ophthalmology, and the Saudi Journal of Ophthalmology. Nada has presented her work at several international conferences, receiving recognition for her contributions. She is deeply committed to advancing ophthalmic research, with ongoing studies in areas including dry eye disease, retinopathy of prematurity, and other eye conditions.

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Amniotic membrane transplantation and conjunctival autograft combined with mitomycin c for the management of primary pterygium: A systematic review and meta-analysis

Background: Pterygium is a common ocular surface disease. Recurrence is the greatest concern in the treatment of pterygium. Thus, a standardized and effective treatment modality with minimal risk for complications is needed for the management of pterygium. The aim of this systematic review and meta-analysis was to evaluate different tissue grafting options, including Conjunctival Autograft (CAG) with Mitomycin C (MMC), CAG alone, and Amniotic Membrane Transplantation (AMT), for the management of primary pterygium.

Methods: We searched the MEDLINE, EMBASE, and Cochrane Central Register of Controlled Trials databases for relevant studies. We included Randomized Controlled Trials (RCTs) in which CAG + MMC and AMT were compared with surgical excision with CAG alone for the treatment of primary pterygium. The rates of recurrence and adverse events reported in the studies were also evaluated. Risk Ratio (RR) was used to represent dichotomous outcomes. The data were pooled using the inverse variance weighting method. The quality of the evidence derived from the analysis was assessed using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach. Risk of bias was assessed using the revised Cochrane risk- of-bias tool for randomized trials.

Results: Twelve RCTs (n=1144) were deemed eligible and included for analysis. Five RCTs had a low risk of bias, five had some concerns, and two had a high risk of bias. Subgroup analysis showed a statistically significant reduction in the rate of pterygium recurrence after CAG + MMC (RR=0.12; 95% confidence interval [CI], 0.02–0.63). This outcome was rated as high-quality evidence according to the GRADE criteria. There were insignificant differences between the rates of recurrence after AMT and CAG (RR=1.51; 95% CI, 0.63–3.65). However, this result was rated as low-quality evidence. Regarding adverse events, patients treated using AMT showed significantly lower rates of adverse events than those treated using CAG (RR=0.46; 95% CI, 0.22–0.95). However, this finding was rated as low-quality evidence as well. CAG+ MMC showed a safety profile comparable to that of surgical excision with CAG alone (RR=1.81; 95% CI, 0.40–8.31). This result was also rated as low-quality evidence.

Conclusion: A single intraoperative topical application of 0.02% MMC during excision of pterygium followed by CAG has significantly shown to decrease the rate of pterygium recurrence to 1.4% with no severe complications.

Biography

Nada Omar Taher is a teaching assistant in ophthalmology and graduated with first honors from King Saud bin Abdulaziz University for Health Sciences (KSAUHS) in Jeddah, Saudi Arabia, She earned a Bachelor of Medicine, Bachelor of Surgery (MBBS) degree and being included on the dean's list. Her research focuses on ophthalmology, with multiple publications in journals such as Health Science Reports, BMC Ophthalmology, International Ophthalmology, and the Saudi Journal of Ophthalmology. She has presented her work at various international conferences, receiving recognition for her contributions. She has a strong interest in advancing ophthalmic research, with ongoing studies in dry eye disease, retinopathy of prematurity, and other eye conditions.

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Daily artificial tears as a preventive measure for dry eye syndrome in medical students: A systematic review and meta-analysis

Purpose: To determine the efficacy of the daily artificial tears usage as a dry eye syndrome prophylaxis among medical students, who are at increased risk due to lifestyle factors.

Methods: We performed a systematic review and meta-analysis following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Guidelines. A comprehensive search through the PubMed, Web of Science and Medline databases was conducted to identify any studies exploring Dry Eye Disease (DED) in medical students, with a focus on various lifestyle factors like screen time, stress levels and quality of sleep. Moreover, we studied the effectiveness of daily artificial tear use in patients with dry eye symptoms using the relevant clinical trials and observational studies.

Results: Of 55 relevant studies, 10 studies enrolling medical students were included. It was shown that poor quality of sleep, increased screen time, higher psychological stress levels. Additionally, female students in early years of medical education were at the highest risk for dry eye syndrome. There was significant relief of dry eye symptoms within 1 month of regular artificial tears usage at least 4 times daily especially with lipomimetic and preservative free formulations.

Conclusions: We would recommend medical students to use preservative-free artificial tears daily to minimize the risks of DED or decrease the symptoms of dry eye. However, adherence poses a significant challenge, as regular use may be difficult to maintain due to the high academic demands and the increased screen time associated with studying. Of course, this method will not eliminate the root causes of dry eye in this population, such as prolonged screen exposure and environmental factors, but they at least can provide symptomatic relief and improve the overall comfort of students. The most effective results in management of DED would be seen in combination with lifestyle modification.

Biography

Nodira Makhmudova is a medical student at Central Asian University in Tashkent, Uzbekistan, graduating in 2025. She is focused on advancing her knowledge of corneal and conjunctival disorders and believes a multidisciplinary approach is essential for optimal ophthalmological outcomes.

Nour Abou Shousha[1,3*], Alexander Miller[2], E. Arrieta[1], G. Mijares[1], M Matosas[1], R Kashem[2], G. Gameiro[1], John McSoley[1]

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Quantification of ocular tropia using a novel software application downloadable on commercially available virtual reality headset

Purpose: To evaluate the use of a novel software application downloadable on commercially available Virtual Reality (VR) headset in measuring ocular tropia.

Methods: This study included 20 patients with ocular tropia. A masked ophthalmologist quantified the tropia using near and distant manual cover tests. Subsequently, each patient received a near and distant digital cover test using the Heru cover test software application (Heru, Inc, Miami) that was downloaded on a VR headset equipped with an infrared pupil tracker (Pico Neo 3 Pro Eye, ByteDance, Beijing, China). In the digital cover test, patients were instructed to maintain fixation on visual targets presented on the screen of the VR headset in front of each eye in an alternating manner, while the pupil tracker recorded the resulting eye movements. The ocular tropias measured clinically were correlated to the clinically measured ocular tropias.

Results: The clinical and digital near cover tests detected near tropia in 12 patients, while the clinical and digital distance cover tests detected distance tropia in 8 patients. The mean deviation measured clinically was 17 prism diopters (PD, ±13 PD), while that measured with the digital cover test was 13 PD (±10 PD). Tropia measured using the digital cover test very strongly correlated with the clinical diagnosis ($r=0.813$; $P<0.001$, Pearson Correlation).

Conclusion: The digital cover test in the VR headset correlates very strongly with the clinically measured ocular tropia.

Biography

Nour Abou Shousha, an ophthalmology student intern, has extensive research experience, including internships at Bascom Palmer University of Miami and Massachusetts Eye and Ear Harvard Medical School. At Bascom Palmer, she worked on stem cell therapy for visual pathway regeneration and evaluating ocular misalignment using novel software on a virtual reality headset. At Massachusetts Eye and Ear, she worked on a project investigating the demographic of the diabetic retinopathy clinical research studies. Her work earned her multiple awards, including 1st place at the Broward Regional Science and Engineering Fair and recognition at the Florida State Science and Engineering Fair.

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Assessing demographic representation in diabetic retinopathy clinical research studies relative to united states diabetic population demographics

Purpose: Demographic representation in Diabetic Retinopathy Clinical Research (DRCR) studies is understudied and impacts the generalizability of results. This research aims to determine if the DRCR demographic data is representative of the United States (US) general diabetic population.

Methods: Demographics were obtained from the DRCR public datasets as well as the US Centers for Disease Control and Prevention (CDC) diabetes statistics report. A Chi-Square test and Post Hoc (Cross Tabulation) were done to compare the demographics and calculate the standardized adjusted residual between the gender (male and female), race (White, Black/African American, American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Asian, and more than one race), and ethnicity (Hispanic or Latino and not Hispanic or Latino). Ethnicity subanalysis only included DRCR studies that provided ethnicity data. Adjusted residuals that are greater than 1.96 or less than -1.96 indicate statistically significant overrepresentation or underrepresentation, respectively.

Results: We found that there is a statistically significant difference between the population distribution of the DRCR and the US diabetic population as reported by the CDC ($P<0.001$). The most underrepresented populations in the DRCR studies are American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, and Asian (adjusted residuals of -42.2, -35.8, and -24.4, respectively). The white DRCR population is the most overrepresented demographic with an adjusted residual of 75. Additionally, Black and Hispanic populations were overrepresented with adjusted residuals of 8.4 and 6.1, respectively.

Conclusion: In conclusion, the DRCR studies may not be representative of the overall diabetic demographic. Future studies in this population could aim to balance race and ethnicity to improve generalizability.

Biography

Nour Abou Shousha is an ophthalmology student intern at Massachusetts Eye and Ear Harvard Medical School. She has gained significant research experience, including research internships at Bascom Palmer University of Miami and Massachusetts Eye and Ear. At Bascom Palmer, she worked on stem cell therapy for visual pathway regeneration and evaluating ocular misalignment using a novel software on a virtual reality headset. Both projects were published in Investigative Ophthalmology & Visual Science. Her work has earned her multiple awards, including 1st place at the Broward Regional Science and Engineering Fair and recognition at the Florida State Science and Engineering Fair.

Oliwia Kamieniecka

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Visual snow syndrome: Unraveling a mysterious visual disorder

Visual Snow Syndrome (VSS) is a neurological disorder characterized by persistent visual disturbances, most notably a continuous “visual snow” or static across the visual field, which can profoundly impact quality of life. In addition to the primary symptom of visual snow, patients often experience palinopsia (afterimages), photophobia (light sensitivity), and nyctalopia (difficulty seeing in low light), as well as an array of entoptic phenomena, including floaters and photopsias. These persistent symptoms, occurring independently of any ophthalmic or neurological pathology, complicate the diagnostic process and often lead to delays in proper diagnosis and management. Despite its significant prevalence, affecting up to 3% of the population, VSS is often underrecognized, leading to challenges in timely diagnosis and management.

This presentation delves into the clinical characteristics and diagnostic criteria of VSS, focusing on the use of Pattern-Visually Evoked Potentials (VEP) to assess cortical visual processing. Findings from VEP studies indicate a heightened excitability in the visual cortex among VSS patients, suggesting cortical hyperactivity. This data supports the hypothesis that VSS may stem from disturbances in the thalamocortical visual pathway, highlighting a possible link to the cortical hyperexcitability seen in migraine disorders. Changes in neurotransmitter pathways and psychological impact are also discussed as a possible cause of VSS.

Given the limited understanding of VSS, current treatment options remain primarily symptomatic, with variable success seen in pharmacological interventions. The chronic, often debilitating nature of VSS symptoms also leads to psychological impacts, including anxiety and depression, further emphasizing the importance of early recognition and support.\

This presentation highlights VSS-specific visual symptoms with made-by-patient graphics. By increasing awareness of VSS among ophthalmologists, we can improve diagnostic accuracy and patient support. This presentation aims to enhance understanding of VSS pathophysiology, explore diagnostic advancements, and call attention to the need for further research into targeted therapies for this challenging condition.

Biography

Oliwia Kamieniecka studies at Medical University of Warsaw, Faculty of Medicine. She is currently during the sixth and last year. She is a president of Ophthalmological Student Organization in Independent Public Teaching Ophthalmological Hospital.

Dr. P Muralidhar

Associate Professor, Department of Ophthalmology, AIIMS Mangalagiri, Guntur, Andhra Pradesh, India

Roth spots serving as a clue to underlying acute myeloid leukemia

Acute myeloid leukemia is one of the causes of Roth spots. We report here a female patient in her early thirties, of Asian origin, presenting to our ophthalmology outpatient clinic with complaints of decreased visual acuity in the Right eye along with generalized weakness, palpitations, and colored stools. The best corrected visual acuity in the Right eye was counting fingers one meter and 6/6 in the left eye. Fundus examination revealed Roth spots and sub-hyaloid hemorrhages in the Right eye and Roth spots in the left eye. Peripheral smear revealed few blasts, and bone marrow showed 58% blasts, with increased cellularity suggestive of Acute myeloid leukemia. The patient is currently on an induction chemotherapy course under oncologist treatment. The presence of Roth spots in the fundus picture may require a complete blood picture examination as they may be present in Leukaemias also.

Biography

Dr. P Muralidhar graduated MBBS from Guntur Medical college, Guntur AP, India, obtained DO from Ranga Raya Medical college, Kakinada, AP, India and DNB from Aravind Eye Hospital, Madurai, Tamilnadu, India. He is currently working as Associate Professor, Department Ophthalmology, AIIMS Mangalagiri, India. He is a comprehensive ophthalmologist with expertise in managing anterior segment disorders of eye and medical Retina. He had published various research original articles in indexed journals and presented papers in conferences.

Rabeeah Zafar

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Assessing the impact of COVID-19 on pediatric ocular trauma: A retrospective analysis from a tertiary care eye hospital in Pakistan

Purpose: The purpose of this study is to compare the incidence and characteristics of ocular trauma in children presenting during pandemic to those in pre-pandemic era.

Method: In this study, we retrospectively reviewed the charts of all children with ocular injuries presenting to hospital emergency department. Data was analyzed from March 24, 2020 (the day lockdown implemented in our country) to March 23, 2021 and compared with the same study period from previous year (March 24, 2019 to March 23, 2020).

Results: In 2020 study period, ocular trauma reduced to 35% of all emergency cases (n=1140) as compared to 55% in 2019 (n=2349). In 2020, injuries due to household chemicals increased to 5.5% (n=57) than 2.9% (n=74) in 2019. Outdoor trauma was more prevalent than indoor trauma (68% in 2019; 62.3% in 2020). The commonest presentation was penetrating injury in both groups (25% in 2019; 46.3% in 2020). During pandemic, a significant reduction in road traffic accidents related ocular injuries were observed (8% n=91 vs 15.2% n=373 in 2019). There was 3-folds rise in endophthalmitis related vision loss during pandemic (9.2% vs 3.4% in 2019). A significant increase in assault related (5 times) and media inspired (3 times) injuries were observed in 2020 study group.

Conclusion: Ocular trauma is a major cause of vision loss in children, the importance of seeking timely treatment should be stressed to all caregivers to prevent ocular morbidities.

Keywords: COVID-19 pandemic, Ocular trauma, Vision loss, Endophthalmitis, Penetrating trauma.

Financial Disclosure: No financial conflict of interest to disclose.

Biography

Dr. Rabeeah Zafar graduated from University of Health Sciences in 2012. She was awarded a fellowship in General Ophthalmology by College of Physicians & Surgeons Pakistan in 2018. Later she joined Al-Shifa trust eye hospital in 2018 and completed her second fellowship training in Pediatric Ophthalmology and Strabismus in 2021. She is also fellow of International Council of Ophthalmology (FICO-2022). Currently she is working as Assistant Professor in Children Eye Hospital, Al-Shifa trust Rawalpindi. She has participated and presented in various national and international conferences and published articles in local and international journals.

Salem Almerri*, Raed Behbehani

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Vogt-koyanagi-harada presenting with papilledema in a 5-year-old–case report

Introduction: Vogt-Koyanagi-Harada (VKH) disease is rarely observed in preschool-aged children, and when it does occur, it typically presents with exudative retinal detachment during the acute phase. Treatment in this population commonly involves corticosteroids, immunosuppressants, biologic agents, or combination therapy. Here, we report a case of a 5-year-old patient with VKH presenting atypically with papilledema and refractory inflammation, leading to uveitic glaucoma and necessitating an escalation of adalimumab to 40 mg biweekly.

Case Presentation: A 5-year-old girl presented with a 3-week history of eye redness, excessive lacrimation, and photophobia. Her medical history was unremarkable. On examination, her Best-Corrected Visual Acuity (BCVA) was 20/80 in the right eye and 20/100 in the left eye, with normal Intraocular Pressure (IOP) in both eyes. Anterior segment examination revealed fine keratic precipitates, significant anterior chamber inflammation (+4 cells, +4 flare), and semi-dilated pupils with posterior synechiae. Posterior segment evaluation was limited by severe vitritis. Laboratory investigations were unremarkable except for HLA typing, which was positive for HLA-DR4, DR52, and DR53. Optical Coherence Tomography (OCT) and Retinal Nerve Fiber Layer (RNFL) analysis demonstrated papilledema and increased retinal nerve thickness, respectively. Initial treatment with corticosteroids and methotrexate failed to achieve remission. Attempts to taper corticosteroids resulted in recurrence of anterior chamber flare, prompting the introduction of adalimumab at 20 mg biweekly. Despite relative stability, persistent anterior chamber inflammation and subsequent corticosteroid tapering led to the development of uncontrolled uveitic glaucoma, which required surgical peripheral iridectomy. Following glaucoma management, adalimumab was escalated to 40 mg biweekly, enabling successful tapering of corticosteroids. Over a 9-month follow-up period, the patient remained flare-free, with BCVA improving to 20/20 in both eyes.

Conclusion: This case highlights an atypical presentation of VKH in a preschool-aged child, characterized by papilledema without exudative retinal detachment. Escalation of adalimumab to 40 mg biweekly effectively controlled inflammation, facilitated corticosteroid tapering, and preserved visual acuity.

Biography

Dr. Salem Almerri has completed his medical degree (in Royal College of Surgeons in Ireland in 2023. Following graduation, he works as a junior doctor in Kuwait and focused on research in ophthalmology.

Sarah Naveed Malik

Pediatric Ophthalmology and Strabismus Department, Al-Shifa Trust Eye Hospital, Rawalpindi, Punjab, Pakistan

Dos and donts of lensectomy in microspherophakic subluxated lens for beginner pediatric surgeon in a 2 year old child

Purpose: To educate beginner surgeons on dos and don'ts of performing lensectomy in microspherophakic subluxated lenses in children.

Setting/Venue: Pediatric Ophthalmology and Strabismus Department, Al-Shifa Trust Eye Hospital, Rawalpindi.

Method: A 2-year-old child with bilateral microspherophakic subluxated lenses underwent lensectomy in right eye, and surgery was recorded for educational purposes. Lens was located in the pupillary plane with intact zonules. Two ports were created using an MVR blade. Low fluid rate was maintained to prevent pushing the lens posteriorly in to vitreous. Cutter was used to create a hole in anterior capsule which was then carefully maneuvered through the cortical matter until reaching the other end of the equator, where another hole was created for auto hydrodissection of cortical matter. During lens matter aspiration, caution was exercised to avoid capturing the capsule. Anterior vitrectomy was performed in the pupillary plane and anterior vitreous, followed by checking for vitreous attachments. Air was injected in anterior chamber before closing the ports. Air fluid exchange was done and ports were checked to ensure wounds are watertight. Each step explained with voice-over.

Results: Surgical procedure was successfully performed by a beginner pediatric surgeon. The steps outlined were followed meticulously, resulting in safe removal of the subluxated lens without complications.

Conclusion: Lensectomy in microspherophakic subluxated lenses in children requires careful planning and execution. By following the outlined dos and don'ts, beginner surgeons can navigate the procedure safely and achieve favorable outcomes. Education through recorded surgeries are valuable resources for improving surgical skills.

Financial Disclosure: No financial conflicts of interest to be disclosed.

Biography

Dr. Sarah Naveed Malik completed her MBBS at Shifa College of Medicine and graduated in year 2013. She then completed house job in year 2015 and started fellowship in Ophthalmology in 2016. She passed her fellowship exam in 2021 along with FICO examination. She started her second fellowship in year 2022 in Pediatric Ophthalmology and Strabismus at Al-Shifa Trust Eye Hospital where She is currently working.

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Bgolden har syndrome-our experience

Introduction: Goldenhar syndrome (Oculo-Auriculo-Vertebral Dysplasia, OAVS) is a rare, congenital disease arising from the abnormal development of the first and second branchial arches. The incidence is between 1:3500 and 1:5600, with a male: female ratio of 3:2.

Method: We retrived all cases having clinical features of golden harr syndrome, we retrived data from our Hmis, exported in excel sheet and analysed with Spss 22.

Result: The study include 48 patient, the average age of individuals with the condition or being studied is 8.34 years. this ratio suggests that among the individuals studied, 45.8% are male (m) and 54.2% are female (f).

Conclusion: When compared significant difference found in pre and post operative vision (P=0.000), when compared significant difference found in pre and post operative refraction (P=0.000, P=0.007), no significant difference found in visual outcome when compared according to shape or area of cyst.

Biography

Shreya Shah is the current Treasurer of the Strabismological and Pediatric Ophthalmic Society of India. She is the Founder and Director of Drashti Netralaya, Dahod, where she also leads the Pediatric Ophthalmology and Oculoplasty departments. With 114 peer-reviewed publications and 188 images published, she has delivered 170 international and 881 national presentations. Her expertise includes pediatric ophthalmology, strabismus, oculoplasty, and refractive surgeries. Shah has trained over 400 fellows and optometrists and has received 16 awards, including national recognitions.

Xiling Wei, Yuxin Qiu, Wei Shang, Xiangling Zhang, Wenjie Yang, Chengyong Yang, Xi Chen, Huiming Li, Suofu Qin*

Drug Discovery, Centre for Research and Development, Kexing Biopharm Co., Ltd. Shenzhen 518057, China

GB10, a best-in-class antibody fusion protein targeting VEGF/Ang-2, exhibits promising therapeutic efficacy for neovascular eye diseases

In clinical practice, anti-Vascular Endothelial Growth Factor (VEGF) therapies have been successfully applied to patients with neovascular eye diseases. However, unmet clinical needs have not yet been fully addressed, as about 20% of patients do not response to anti-VEGF monotherapies, meanwhile, the high frequency of Intravitreal (IVT) injections imposes a significant burden on patients. To overcome these challenges, we developed a novel antibody fusion protein GB10 consisting of a VEGF-Trap and an anti-Angiopoietin 2 (Ang-2) Variable Heavy domain of Heavy-chain antibody (VHH) to inhibit the pro-angiogenic pathways of VEGF and Ang-2 simultaneously for enhanced and more enduring efficacy. The activity and developability of GB10 were characterized.

We first explored two categorical formats for molecular construction and selected the format that demonstrated the best activity and CMC-related properties for the generation of GB10. Subsequently, we evaluated the multi-targeting capability of GB10 using bridging Enzyme-Linked Immunosorbent Assay (ELISA) and Bio-Layer Interferometry (BLI), followed by a side-by-side comparison of the in vitro activities of GB10 and faricimab, the only marketed bispecific antibody for neovascular eye diseases, through assays such as VEGF reporter assay, Human Umbilical Vein Endothelial Cells (HUVEC) proliferation, Ang-2 blocking ELISA, and Tie-2 phosphorylation. The in vivo efficacy of GB10 and faricimab was next evaluated using a non-human primate model of laser-induced Choroidal Neovascularization (CNV). Finally, the developability of GB10 was evaluated by intraocular pharmacokinetics and stress test.

GB10 bound VEGF and Ang-2 simultaneously with high affinity, and exhibited superior activity in vitro in inhibiting the VEGF and Ang-2 signaling pathways compared to faricimab. In vivo, GB10 demonstrated greater efficacy and durability compared to faricimab in a CNV model. GB10 also possessed a longer half-life in vitreous measured in a rabbit model. Moreover, GB10 showed excellent injectability and stability at a high-concentration of 140 mg/mL.

The superb efficacy and favorable developability profile make GB10 a potential best-in-class therapy for patients with neovascular eye diseases, warranting further evaluation in clinical settings.

Biography

Dr. Qin is CSO of Kexing Biopharma, Shenzhen, China from 2020 and VP Biology of Gensci Biopharma, Changchun, China from 2016 to 2019. Before, Dr. Qin served as Principal Scientist of Allergan Inc., Irvine, California, USA from 2002 to 2015, and was employed as a Research Fellow at NIH, Bethesda, Maryland from 1998 to 2002. Dr. Qin received his PhD degree in Biochemistry in 1998 at the School of Medicine, Fukui University and Kobe University, Japan. Dr. Qin has a proven track record of scientific innovation with 55 peer-reviewed publications, 45 patents and 15 INDs.

Dr. Taha Hasan

University Hospitals Birmingham NHS Trust, United Kingdom

Refractive outcomes in phacoemulsification surgery for small eyes

Background: Cataract surgery is the most commonly performed elective surgery in the UK with more than 400,000 operations done each year. They aim to improve vision by restoring a clear intraocular lens. Patients with smaller eyes have a higher risk of intra-and post-op complications and generally pose a deeper surgical challenge to medical professionals. Consequently, postoperative refraction is more difficult to predict in short eyes using current popular intraocular lens formula. This research aims to look at the impact of axial length on refractive outcomes and provide a comparison on the results obtained from different intraocular lens formulae used.

Method: Data was collected from all cataract surgeries performed by a consultant ophthalmologist and his team in the Queen Elizabeth Hospital, Birmingham between June 2014 to June 2024. Records were retrieved from Medisight and analyzed in the department. Analysis was based on two subsets: axial length: 20-21.9mm and axial length ≥22mm. The proportions of the different intraocular lens formulae used in each subset was calculated, with a predominance of Hoffer Q and SRK/T being implemented. Data was compared to the UK benchmark standards for post-op refraction and analysed against other systematic reviews conducted.

Results: Eyes with an axial length of 20-21.9mm did not achieve the UK benchmark standard for post-op refraction of 55% within +/-0.5SD and 85% within +/-1SD. Small eyes achieved 52% within +/-0.5SD and 79% within +/-1SD. This reflects the challenges in intraocular lens calculation for small eyes. This compares to eyes with an axial length of ≥22mm that resulted in outcomes of 56% within +/-0.5SD and 88% within +/-1SD. Overall for all cataract surgeries performed the benchmark standard was met at 56% within +/-0.5SD and 87% within +/-1SD. With regard to the intraocular lens formulae used, only Hoffer Q achieved the UK benchmark at both standard deviations whereas SRK/T only achieved it at +/-1SD.

Conclusion: Overall, expected refractive outcomes in small eyes did not meet UK benchmarks for +/-0.5SD and +/-1SD. Further formula analysis is required to meet UK benchmark outcomes for +/-1SD in small eyes. Hoffer Q was the only intraocular lens formula used in the study which achieved the UK benchmark at both standard deviation intervals.

Biography

Dr. Taha Hasan recently graduated from the University of Birmingham in 2024 with a MBChB degree. He currently works as a foundation doctor at the Queen Elizabeth Hospital in Birmingham where he aims to continue his development. He has a strong interest in research and academics and recently undertook an ophthalmology elective in Washington DC where he explored the barriers to achieving successful eye care screening in children. His academic goals are to pursue speciality training in ophthalmology.

Yasmin Adelekan-Kamara*, Olayinka Williams, Adam Mapani, Luke Nicholson

Imperial College School of Medicine, Moorfields Eye Hospital NHS Trust, United Kingdom

Evaluating patient communication in the retinal unit at moorfields eye hospital: A survey-based study on intravitreal injection therapy

Background: Intravitreal Injection (IVI) therapy used in the management of exudative retinal diseases has expanded significantly following the introduction of anti-Vascular Endothelial Growth Factor (anti-VEGF) drugs. With an ageing population in the UK, the numbers of patients requiring IVI therapy are set to grow, with over 750,000 procedures1 performed in England in 2023. IVI procedures are a high-volume NHS activity2 and a key indicator in the Department of Health & Social Care 2024 Vision Profile. The aim of this study was to evaluate communication with patients pre- and post-IVI therapy and to identify strategies to maximise treatment adherence, increase patient knowledge and enhance patient wellbeing.

Method: A standardised 16-point questionnaire was developed as a survey tool with responses collected over a one-week period in the Retinal Unit (RU). Themes explored in the questionnaire included information satisfaction, symptom expectations, avenues of obtaining ophthalmic advice and patient confidence whilst undergoing IVI therapy. Demographic data including age, sex and ethnicity were collated.

Results: 198 patients participated in this study. The entire cohort were English speakers; 74% being native and the remainder speaking English as a second language. The most prevalent ocular condition for which IVIs were administered was neovascular age-related macular degeneration (53%) followed by retinal vein occlusion (16%). 48% of patients were ‘very satisfied’ with the information provided prior to IVI. 69% of patients received written information prior to the procedure. 83% of patients who received an information leaflet were aware of symptoms post-IVI requiring urgent ophthalmic review in comparison to 69% of patients who did not receive an information leaflet. 79% of patients received care instructions post-IVI. 83% of patients were confident contacting RTU if required, with the preferred mode of communication being telephone for the two-thirds of respondents. 12 patients developed an IVI related complication requiring emergency hospital attendance.

Conclusion: Providing patients with written communication on IVI therapy improves patient satisfaction and increases patient knowledge; empowering patients to make informed decisions on IVI treatment and encouraging patients to seek urgent ophthalmic advice when required.

Mahdi Sharifzadeh Kermani[1] MD, Mina Haj-mohammad Karim[1] MD, Ali Sharifi[1] MD, Mahla Shadravan[1] MD, Arash Daneshtalab[1] MD, Zahra Akbari[2*] MD, Amin Zand[1] MD

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Effects of phacoemulsification, viscosynechiolysis, and trabeculectomy on recent cases with acute primary angle closure

Purpose: To investigate the differences in the effects of phacoemulsification, viscosynechiolysis, and Trabeculectomy on cases with a recent history of Acute Primary Angle Closure (APAC).

Methods: Patients with cataracts, Peripheral Anterior Synechia (PAS), and a history of APAC in the prior six weeks, managed with medications and Laser Peripheral Iridotomy (LPI), were included. Initially, those without signs of glaucomatous optic neuropathy underwent phacoemulsification and viscosynechiolysis (i.e., the PV group), while cases with it had an additional Trabeculectomy (i.e., the PVT group). Then, the Best-Corrected Visual Acuity (BCVA), Intraocular Pressure (IOP), angle opening, PAS extension, and adverse events at baseline and six months after surgery were evaluated.

Results: The PV and PVT groups comprised 8 and 12 eyes, respectively. After six months, both groups experienced significant improvements in IOP, BCVA, and Shaffer grading scores (All $p<0.05$). Even though the latter two were not different between the two groups ($p=0.120$ for BCVA; $p=0.891$ for the Shaffer grading score), IOP was significantly lower in the PVT group (10.83 ± 1.40 vs. 13.63 ± 2.07 mmHg, $p=0.002$). Furthermore, extensive PAS (i.e., ≥180°) significantly decreased at month 6 in both groups ($p=0.008$ for PV; $p=0.002$ for PVT). However, both groups had similar frequencies of extensive PAS at baseline ($p=0.288$) and six months after surgery ($p=0.881$). In addition, no adverse events were noted in the groups during follow-up.

Conclusions: Combined phacoemulsification and viscosynechiolysis may yield similar outcomes in angle opening and extensive PAS reduction compared to an additional Trabeculectomy in patients with cataracts and a recent history of APAC.

Keywords: Acute Primary Angle Closure, Glaucoma, Phacoemulsification, Viscosynechiolysis, Trabeculectomy, Peripheral Anterior Synechiae.

Biography

Zahra Akbari graduated as a general practitioner (MD) from Kerman University of Medical Sciences in 2023 and is now focused on ophthalmological research. As an aspiring ophthalmologist, she is eager to explore cutting-edge therapies for managing eye disorders. To date, she has published 13 articles in prestigious, indexed journals.

Ali Sharifi MD, Neda Hayati MD, Zahra Akbari* MD, Amin Zand MD

Department of Ophthalmology, Kerman University of Medical Sciences, Kerman, Iran

Outcomes and complications of anterior capsule tear following phacoemulsification cataract surgery

Background: We aimed to present the outcomes and complications following phacoemulsification cataract surgery complicated by anterior capsule tears.

Methods: This study prospectively included patients who had phacoemulsification cataract surgery with anterior capsule tears. The primary outcomes evaluated were the tear stage, intraoperative capsule complications, type and placement of Intraocular Lens (IOL), visual outcomes, Surgically Induced Astigmatism (SIA), and occurrence of postoperative complications.

Results: We included 21 eyes of 21 patients who had anterior capsule tears following phacoemulsification cataract surgery. Anterior capsule tears were detected in 11 eyes (52.4%) during phacoemulsification, in 9 eyes (42.9%) during capsulorhexis, and in 1 eye (4.7%) during irrigation/aspiration. Tears extended to the posterior capsule in 8 instances (38.1%), leading to vitreous loss. Endocapsular fixation of a 1-piece acrylic Intraocular Lens (IOL) was successful in 4 eyes (19.0%), while 4 eyes (19.0%) needed a 3-piece acrylic IOL implanted in the ciliary sulcus. At 12 months post-surgery, the Best-Corrected Visual Acuity (BCVA) showed a substantial improvement compared to baseline ($P<0.001$). However, changes in BCVA after 12 months were insignificant ($P=0.098$). During the 12-month surgical follow-up, cystoid macular edema was seen in 2 eyes (9.5%) and retinal detachment in 1 eye (4.7%).

Conclusion: Anterior capsule tears can predispose individuals to further adversities if spread to the posterior capsule, particularly when the intraocular lens is positioned outside the capsular bag. This situation might result in a decreased improvement in best-corrected visual acuity (BCVA), greater chances of SIA, and increased likelihood of further postoperative treatments.

Keywords: Cataract Surgery, Phacoemulsification, Anterior Capsule Tear, Posterior Capsule Rupture, Vitreous Loss.

Biography

Graduating from Kerman University of Medical Sciences in 2023 as a general practitioner (MD), and currently delving into the wonders of ophthalmological research, she is an aspiring ophthalmologist who would like to know as much as there is about state-of-the-art therapies in managing eye disorders. She has currently published 13 articles, indexed in various highly esteemed journals.

Zhengwei Zhang

Department of ophthalmology, Wuxi No.2 People's Hospital, Wuxi, Jiangsu Province, China

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The role of en face imaging of retinal pigment epithelium alterations in rapid classification of central serous chorioretinopathy using widefield SS-OCT

Purposes: To investigate the role of wide-field en face imaging of Retinal Pigment Epithelium (RPE) alterations in rapid classification of Central Serous Chorioretinopathy (CSCR) using Swept-Source Optical Coherence Tomography (SS-OCT), in accordance with the latest novel classification system.

Methods: In this retrospective cross-sectional single-center study, eyes diagnosed CSCR were recruited. Volume scans (12-mm×12-mm square field) were obtained while SS-OCT angiographic scans for all the participants. High-quality structure en face images were automatically generated at the level of Bruch membrane by the machine. Areas with signals different from a uniform background were further evaluated by cross-sectional SS-OCT to confirm whether there were RPE alterations. Some participants underwent Fundus Autofluorescence (FAF), Fundus Fluorescein Angiography (FFA), and Indocyanine Green Angiography (ICGA).

Results: One hundred and twenty-two eyes with unilateral CSCR were included in the study, involving 122 patients (94 males and 28 females) with a mean age of 46.3±9.1 years. In 51 out of 122 cases, FAF, FFA, ICGA, and en face SS-OCT were assessed simultaneously. Among these cases, 17 were categorized as complex CSCR. Notably, FAF exhibited the highest positive rate of RPE abnormality (94.1%,). En face SS-OCT imaging closely followed, with 15 out of 17 eyes (88.2%) showing positive findings, while ICGA detected RPE abnormality in 12 out of 17 eyes (70.6%). FFA had the lowest positive rate, with only 6 out of 17 eyes (35.3%). The RPE alteration in the remaining 71 eyes with CSCR was evaluated solely through en face SS-OCT imaging. Among these, 17 eyes were designated as complex CSCR, while 54 eyes were categorized as simple CSCR.

Conclusion: FAF stands out as the most sensitive method for detecting RPE alteration. En face SS-OCT imaging of RPE alterations offers a dependable, noninvasive, and expeditious method to support the rapid classification of CSCR according to the latest novel classification system, particularly when combined with contralateral eye imaging results.

Biography

Dr. Zhengwei Zhang is a faculty member at Wuxi No.2 People's Hospital, specializing in choroidal and retinal diseases. He also tutors postgraduate students at Jiangnan University. From November 2023 to May 2024, Dr. Zhang was a visiting scholar in Yannis' Lab at the Kellogg Eye Centre, University of Michigan. He earned his MD from Nanjing Medical University and his MMed from Shanghai Jiao Tong University. He has published more than 30 peer-reviewed journal articles and two book chapters.

BOOK OF ABSTRACTS

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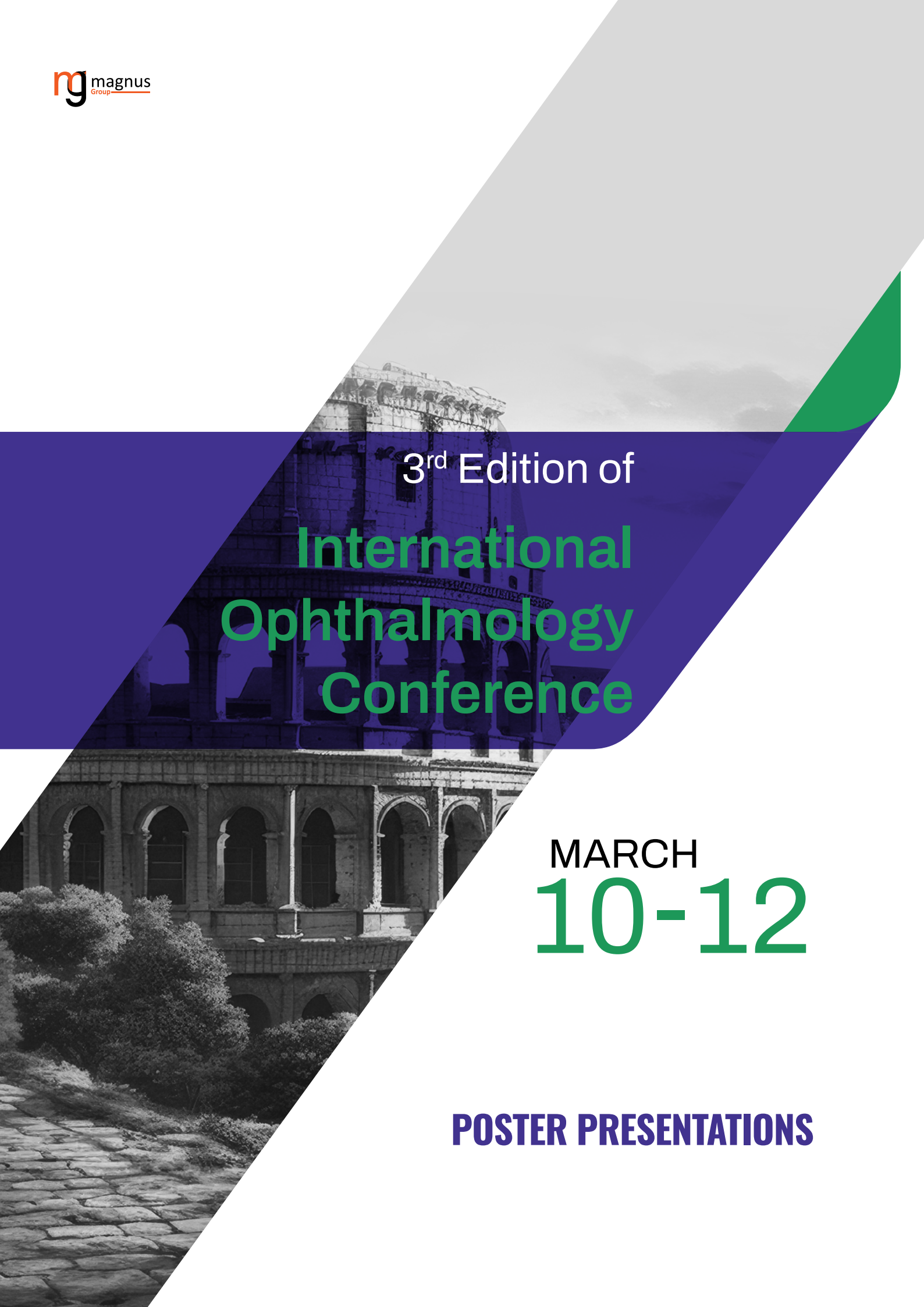

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POSTER PRESENTATIONS

Carmen N Plaza Mejías[1*] PGY-4 MD; Claudia A Mangual Suárez[2] PGY-1 MD; Lisette Lugo Calzada[2] MD; Nicole J Cantellops Cueli[2] PGY-1 MD; Sofia V Ojeda Bonilla[5] PGY-1 MD; Gabriel A Guardiola Davila[3] PGY-2 MD; Vanessa Cruz Villegas[3] MD; Tere Fidalgo[4] MD

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Hyperbaric oxygen therapy for CRAO in a pediatric patient: A case of sudden unilateral visual loss post-DSA of an arteriovenous malformation

Central Retinal Artery Occlusion (CRAO) is an ophthalmic emergency that typically presents as a sudden, profound, and painless monocular visual loss, potentially leading to permanent blindness. While rare in the pediatric population, the etiology in children can differ from that of the elderly. Causes are often multifactorial but mostly non-arteritic in origin such as embolism, hypercoagulable states, trauma, and vascular diseases like Moyamoya disease and Fabry disease. Despite the variety of proposed pharmacological and surgical treatments, their effectiveness remains limited and inconclusive. We present the case of a young girl with a left mandibular Arteriovenous Malformation (AVM) who suffered unilateral vision loss following treatment with Digital Subtraction Angiography (DSA).

This 8-year-old patient has a left mandibular AVM complicated by hemorrhagic bleeding, which required resuscitation and treatment with DSA on two occasions within six months. She presented to the ED with recurrent AVM bleeding. Despite no acute changes on MRA, DSA was performed to assess active bleeding. During the procedure, bleeding in the AVM region was noted, prompting re-embolization. However, upon arrival at the ward, the patient reported decreased vision in her left eye. Examination confirmed reduced visual acuity. A multidisciplinary team, including Endovascular Neurosurgery, Ophthalmology, Neurology, and Hematology, evaluated the patient. Aspirin and methylprednisolone were administered to address potential embolism and edema, respectively. Moreover, MRI of the head and orbits revealed post-DSA changes without evidence of acute ischemia, hemorrhage, or edema.

Dilated fundus examination revealed clear media, a cup-to-disc ratio of 0.3, a pink optic nerve without swelling, attenuated arteries, dilated veins, and a pale retina, confirming a diagnosis of CRAO in the left eye. The choroidal circulation was also affected, as no cherry-red spot was observed. A macular optical coherence tomography revealed significant hyperreflectivity and thickening of the inner retinal layers consistent with the edema typically seen in acute retinal

artery occlusions. Intravenous fluorescein angiography showed delayed retinal artery filling, arteriovenous phase, and patches of delayed choroidal filling. Based on previous adult cases showing some improvement with Hyperbaric Oxygen Therapy (HBOT), the hyperbaric service was consulted in an effort to reduce edema, improve retinal blood flow, and preserve the tissue adjacent to the ischemic area. After initial sessions, the patient showed mild improvement, being able to count fingers at 1–2 feet, whereas initially, she could only detect hand movements.

CRAO is a serious ocular emergency that is rarely seen in the pediatric population but requires prompt evaluation and intervention to potentially prevent permanent blindness. Since the retina has a high oxygen demand, placing patients in a hyperoxic state may offer some improvement. Although hyperbaric chambers have not been well studied in pediatric patients, our patient received this therapy in the hopes of improving her visual function and quality of life. This case underscores the urgency of prompt diagnosis and treatment of CRAO, the need for further research into pediatric therapies that yield consistent clinical responses, and the importance of a multidisciplinary approach when managing such complex cases.

Biography

Dra. Plaza Mejias earned her MD in 2021 from the University of Puerto Rico Medical Sciences Campus after studying Chemistry at the Mayagüez Campus. Currently, she is a PGY-4 resident in the Internal Medicine-Pediatrics Program and will begin an Endocrinology fellowship at UCLA next year. She has participated in multiple conferences, delivering both oral and poster presentations, showcasing her active involvement in academic medicine.

Dr. Gareth O'Dwyer*, Ms Aoife Doyle

Royal Victoria Eye and Ear Hospital, Dublin, Ireland

2 year outcomes of a virtual glaucoma clinic in an Irish ophthalmic hospital

The increasing workload placed on the glaucoma service in Ireland has led to the implementation of a virtual glaucoma service in the country's leading eye hospital. Briefly, those with stable glaucoma who require monitoring attend on a regular basis for visual acuity, IOP measurement, stereoscopic disc photographs and fields. These measurements are taken by a nurse trained specifically for these tasks and the results are then reviewed by a doctor. This allows for decompression of the in-person clinics and allows these clinics to be reserved for more serious cases or those in which surgical management is being considered. The virtual glaucoma service acts as a safety net for patients who may progress rapidly and require changes to treatment or transfer to the in-person clinic. This presentation will demonstrate the overall safety of this approach, the numbers of patients seen in this clinic, the effect on waiting times for the in-person clinic and the sub-types of glaucoma in patients being followed up this way.

Biography

Dr. Gareth O'Dwyer is a medical ophthalmology trainee based in Dublin Ireland. He has an undergraduate degree in Genetics (Trinity College Dublin, awarded 2009), a PhD in gene therapy in Retinitis Pigmentosa (Trinity College Dublin, awarded 2013) and a degree in Medicine (University College Dublin, awarded 2017). He was recently awarded the EBO diploma in Ophthalmology and has an interest in Glaucoma, Medical Retina and Paediatric Ophthalmology.

Ghazal Valizadeh[1*] MD; Alexandra I Manta[1,2] MD, FRCOPH; Diana Conrad[1] MBBS(Hons), BMEDSCI, FRANZCO; David Schlect[4] FRANZCR; And Timothy J Sullivan[1,2,3] MD, FRACS, FRANZCO

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Granulomatosis with polyangiitis-associated sclerokeratitis in a case of ocular adnexal B-cell lymphoma

We describe the first reported case of Granulomatosis Polyangiitis (GPA)-associated sclerokeratitis in a patient with treated Ocular Adnexal Lymphoma (OAL). The patient presented with pain and decreased vision in the left eye over several weeks. Past medical history was significant for recent bilateral relapsing OAL that was treated successfully with radiotherapy. Examination of the eyes revealed sectoral scleritis and peripheral ulcerative keratitis. Magnetic Resonance Imaging (MRI) of the orbits excluded recurrence of OAL and serum Antineutrophil Cytoplasmic Autoantibody (ANCA) titres confirmed the diagnosis of GPA. Disease was poorly responsive to systemic steroids, azathioprine and rituximab. Ultimately, resolution was achieved with successive subconjunctival dexamethasone and subconjunctival triamcinolone injections. This case highlights the need to consider ocular inflammation in patients with a history of malignant hemopathies.

Biography

Ghazal graduated medicine at Bond University in Queensland, Australia, in 2020. She then completed her Master of Medicine (Ophthalmic Science) at the University of Sydney in 2024. Currently working as a junior doctor at the ophthalmology department in Sunshine Coast University Hospital, Ghazal is committed to a career in ophthalmology and medical research.

Lugean Khalid Alomari[1], Rahaf Khader Sharif[1], Basil Khalid Alomari[1], Hind Mohammed Aljabri[1*], Amal Abdullah Alomari[1], Faisal Fahad Aljahdali[1], Saeed Alghamdi[2]

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The efficacy of preoperative thermal pulsation treatment in reducing post cataract surgery dry eye disease: A systematic review and meta-analysis

Background: Thermal pulsation system is a new used therapy that uses heat and massage to treat dry eye disease; thus, some trials have been published to compare it with the conventional treatment. The aim of this study is to conduct a systematic review and meta-analysis comparing the efficacy of thermal pulsation system with the conventional treatment in patients undergoing cataract surgery.

Methods: Medline, Embase, and Cochrane Central Register of Controlled Trials (CENTRAL) databases were searched for eligible trials. We included three Randomized Controlled Trials (RCTs) that compared thermal pulsation system with the conventional treatment in patients undergoing cataract surgery. A table of characteristics was plotted and the Quality of the studies was assessed using Cochrane risk-of-bias tool for randomized trials (RoB 2). Forest plots were plotted using Random-effect Inverse Variance method. 2 test and the Higgins-I-squared (I2) model were used to assess heterogeneity. A total of 201 cataract surgery patients were included, with 105 undergoing preoperative pulsation therapy and 96 receiving conventional treatment. Demographic analysis revealed comparable distributions across groups.

Results: All the studies in our analysis are of good quality with low risk of bias. A total of 201 patients were included in the analysis, out of which 105 underwent pulsation therapy and 95 were in the control group. Tear Break-up Time (TBUT) analysis revealed no significant baseline differences, except pulsation therapy being better at 1 month. (SMD 0.42 [95%CI 0.14-0.70] p=0.004). This positive trend continued at three months (SMD 0.52 [95% CI (0.20–0.84)] p=0.002). Corneal fluorescein staining scores and Meibomian gland yielding secretion scores showed no significant differences at baseline. However, at one month, pulsation therapy significantly improved Meibomian gland function (SMD-0.86 [95% CI (-1.20--0.53)] p<0.00001) indicating reduced risk of dry eye syndrome.

Conclusion: Preoperative pulsation therapy appears to enhance post-cataract surgery outcomes, particularly in terms of tear film stability and Meibomian gland secretory function. The sustained positive effects observed at one and three months post-surgery suggest the potential for long-term benefits.

Biography

Dr. Hind completed her MBBS at King Saud bin Abdulaziz University for Health Sciences in June 2023, graduating with First Degree Honors and a Certificate of Outstanding Academic Performance. In addition to her academic achievements, Dr. Hind has been actively involved in medical research, contributing valuable insights to the field.

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Protein and mineral malnutrition in military personnel and its association with dry eye syndrome

Military personnel are frequently faced with environmental challenges and operational demands.These barriers increase vulnerability to nutrient deficiencies including minerals and proteins imbalance. Such nutrient deprivation can make a disadvantageous impact on ocular wellness,especially in the scope of dry eye syndrome which is a complex condition distinguished as tear film instability and damage of ocular surface. This disorder is usually exacerbated by common conditions in military settings as inflammatory and environmental factors including wind,dust exposure and extended screen time.

Fundamental minerals such as zinc,magnesium,selenium and essential proteins play an important role for maintaining the constitutional and functional integrity of the eye surface. The main function of the protein is to maintain cellular regeneration. On the other hand minerals are used as an antioxidant defense and regulators of the immune system. As an example,zinc serves as a cofactor for enzymes which are important in tear production and epithelial stability. Moreover,selenium plays a crucial role in minimizing oxidative damage. Nutrient insufficiency can interfere with tear film,impair healing of cornea and increase state of inflammation. These factors can worsen dry eye syndrome.

Nutritional deficiency is often induced by restricted dietary diversity,increased physical and mental stress and expanded mobilization among military personnel.Various research studies have shown that nutritional deficiencies within military communities are linked with reduced overall performance and overall health. Moreover, distinct significance of ocular disorders like dry eye syndrome has not been explored in detail yet. Progressive evidence proposes that related protein and mineral insufficiencies could alleviate the liability of dry eye syndrome and improve ocular health,which plays an important role in operational efficiency.

This study emphasises the shortage of focused nutritional interventions which include supported supplementation and proper dietary intake in order to sustain ocular health in military settings. Further research studies are necessary to initiate evidence-based guidelines and proper management and prevention plans for patients with dry eye syndrome in military settings. By dealing with these nutritional deficiencies, we can boost not only the visual health but also overall condition and performance of military personnel in high-risk conditions.

Biography

Dr. Jamshid Furkatovich Mamatov is the Head of the Ophthalmology Department and a practicing ophthalmologist with extensive experience in clinical care and ophthalmic surgery. He has pursued advanced training in small-incision cataract surgery and fundus interpretation in India, as well as participating in international conferences and workshops, including those in Turkey, Uzbekistan, and the United States. He is committed to advancing ophthalmic care through his clinical expertise and continuous learning.

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Safety and visual outcomes of scleral fixated physiol lens using gore-tex suture

Over the past two decades, surgical options for Intraocular Lens (IOL) implantation in the absence of capsular support have evolved. Surgical indications for secondary IOL implantation are mainly due to complicated cataract surgery, trauma, or inherited conditions such as Marfan syndrome. In the absence of capsular support, different techniques have evolved to implant intraocular lenses with variable outcomes.

This study aimed to report visual outcomes and the complications rate of scleral fixated intraocular lens using Gore-Tex suture.

Subject and methods: This retrospective case series study reviewed 29 patients who underwent secondary intraocular lens implantation using a Gore-tex suture 4-point scleral fixation technique with the physiol lens at Prince Sultan Military Medical City, Ophthalmology Department–Riyadh, Saudi Arabia. Data collected include demographic data (i.e., age, gender), the primary cause of Aphakia, pre-op and post-op BCVA, post-op complications, pre-op comorbidity, and duration of follow-up.

Results: 69% of the patients were more than 10 years old during surgery. Male patients (62.1%) were predominantly higher than female patients (37.9%). Primary cause of aphakia was secondary to complicated cataract surgery (48.3%). There was a significant improvement between pre-OP BCVA logMAR from 0.85±0.31 to postop BCVA logMAR 0.56±0.4 ($p<0.001$). Significant improvement in post-OP BCVA was seen in female gender ($p=0.047$). 58.6% of the patients suffered postoperative complications, prevalent in patients who had short follow-up duration (≤15 months) ($p=0.047$). the most common postop complication was corneal decompensation (20.7%), followed by transient hypertension (10.3%) and iris capture (6.9%).

Conclusion: There was a significant visual improvement after scleral fixated physiol lens using Gore-Tex sutures. Female patients demonstrated better postoperative visual outcomes compared to male patients. The outcome of this study concludes that Gore-Tex scleral-fixated secondary IOLs are generally effective and safe, with modest complications that are mostly manageable. More investigations are warranted to establish its effectiveness in our region.

Biography

Dr. Leema Alhussayen is a board-certified ophthalmologist who completed her residency at Prince Sultan Military Medical City, Riyadh, Saudi Arabia. She earned her Bachelor of Medicine and Surgery from Taibah University in 2018 and obtained her Saudi Board in Ophthalmology in 2024. Dr. Alhussayen has contributed to multiple research publications, with presentations at international conferences.

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Gonioscopy-assisted transluminal trabeculotomy: A viable minimally invasive approach for management of open-angle glaucoma

Introduction: In this review, an analysis of the outcomes of Gonioscopy-Assisted Transluminal Trabeculotomy (GATT) was done in patients with Primary Open-Angle Glaucoma (POAG), with outcomes in one study being compared to trabeculectomy. Trabeculectomy is already accepted as an effective procedure for advanced glaucoma, GATT offers a minimally invasive alternative that has shown promise in recent studies.

Methods: Relevant studies were identified and selected by a literature search using Medline and Embase. The review focused on data comparing post-operative IOP reduction, changes in medication burden, and reported complications following GATT and trabeculectomy.

Results: One study at 6 months reported a significant reduction in IOP from 26.94 mmHg preoperatively to 15.59mmHg in 69 patients. Medication use decreased from 2.59 to 0.76 per day. Adverse effects included hyphema, transient vision loss, iridodialysis, and corneal edema.

Another study observed a drop in IOP from 27.70±10.30mmHg to 14.04±3.75mmHg at 12 months in 56 eyes. Medication use fell from 3.73±0.98 to 1.82±1.47. Reported complications included hyphema, IOP spikes, and corneal edema.

In a four-year retrospective study, IOP decreased from 27.0±10.0mmHg to 14.8±6.5mmHg. Medication usage dropped from 3.2±1.0 to 2.3±1.0. Adverse events, including hyphema, were transient.

Another study evaluated 124 eyes and found that IOP in the GATT-only group reduced from 27.54±8.09mmHg to 15.57±3.34mmHg at 12 months and 15.50±3.40mmHg at 24 months. In the GATT combined with phacoemulsification group, IOP decreased from 26.40±6.37mmHg to 14.61±2.28mmHg at 12 months and 16.08±2.38mmHg at 24 months. Medication use was minimal in both groups.

The last study after 18 months, comparing GATT to trabeculectomy with mitomycin C, in 110 eyes showed that GATT reduced IOP from 27.59±4.70mmHg to 15.26±3.47mmHg. Trabeculectomy achieved a mean IOP reduction of 12.48±4.58mmHg. Hyphema was the most common complication in both groups.

Conclusion: GATT has shown to effectively lower IOP and reduce medication burden in patients with POAG. Although GATT is associated with transient hyphema in some cases, it remains a viable minimally invasive option. GATT can be considered as an option for mild to moderate

POAG cases, and allowing trabeculectomy to be the next stage treatment for more advanced cases. However, further long-term studies- by itself and in comparison- to fully highlight the safety and efficacy profile of this procedure.

Biography

Dr. Ayoub completed his MBBS from Dhaka Medical College, Bangladesh, in 2021. He subsequently pursued and completed an MSc in Ophthalmology at the UCL Institute of Ophthalmology in 2024. Currently, he serves as a Clinical Fellow at Croydon University Hospital. Dr. Ayoub is preparing to enter the UK Ophthalmology Training Program.

Nicole Ang Si-Xian[1*], William Rojas- Carabali[1,2], Ngo Wei Kiong2, Graham E Holder[2,3,4], Melissa Tien Chih Hui[2], Joyce Lim Ye Xin[2], Choo Sheriel Shannon[2], Joewee Boon[2], Rupesh Agrawal[1-5]

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Structure-function correlation in immune-mediated retinal diseases

Purpose: To investigate the relationship of retinal structure as measured on Optical Coherence Tomography (OCT), to retinal function as assessed by electrophysiology, consisting of pattern (pERG) and full-field Electroretinogram (ffERG), in patients with Immune-mediated Retinal Diseases (IRD).

Design: Cross-sectional study.

Methods: Thirty-one actively diseased eyes from 20 patients diagnosed with Autoimmune Retinopathy and Acute Zonal Occult Outer Retinopathy in a tertiary eye centre in Singapore were included in this study. Quantitative (i.e macular thickness and length of the Ellipsoid Zone (EZ) band) and qualitative (i.e EZ Status, presence of epiretinal membrane, cystic Spaces, and material) measurements on the OCT were correlated to quantitative measurements on pERG and ffERG.

Results: Our results demonstrated significant correlations between various electrophysiological functional measurements and OCT structural measurements. The strongest correlations were between pERG large field P50 amplitude, standard field N95 amplitude and standard field P50 amplitude measurements against total macular thickness at the nasal (rho=0.659, 0.599, 0.570, respectively), temporal (rho=0.659, 0.599, 0.477, respectively), superior (rho=0.640, 0.563, 0.532, respectively), and inferior (rho=0.636, 0.598, 0.530, respectively) perifovea. ffERG measurements showed strongest correlation between 30 Hz flicker peak time and macular thickness at the temporal (rho=0.526), and inferior (rho=0.436) parafovea. 30 Hz flicker amplitude also had significant correlations with macular thickness at the superior perifovea (rho=0.376), and superior parafovea (rho=0.482). The length of intact EZ band had significant correlations with all three pERG parameters but no with any of the ffERG parameters. Ellipsoid zone status, presence of epiretinal membrane, and material were correlated with all three pERG parameters but only presence of epiretinal membrane had significant correlations with ffERG parameters. Presence of cystic space did not show any significant correlations with electrophysiology.

Conclusion: pERG parameters correlated with total macular thickness across various perifoveal regions, while ffERG correlations were prominent with macular thickness in specific areas and ellipsoid zone characteristics affecting pERG more than ffERG outcomes.

Biography

Nicole is currently in her final year at Nanyang Technological University, Lee Kong Chian School of Medicine, Singapore, graduating in 2025. In 2021, she had her first experience doing research when she joined an internship at Skin Research Institute of Singapore Lab A* Star doing laboratory work researching cytotoxicity of various nano-particles in powders. In 2023, she did her scholarly project with Prof Rupesh Agrawal, senior consultant with National Healthcare Group Eye Institute in Singapore, where she presented her work at various conferences in Singapore. From 2023, she also joined a group of students to conduct a systematic review and meta-analysis in the field of Anaesthesiology, which is currently pending publication.

Ayman S. Al Sharei[1], Rua H. Alhamaideh[2], Raneem M. Alhunaiti[2], Jad Y. Ismail[2], Noor Y. Aldalahma[3*]

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Deep learning convolutional neural network diabetic retinopathy detection using gaussian filter preprocessing

Background: Diabetic Retinopathy (DR) is a severe complication of diabetes that affects retinal blood vessels and can lead to blindness. The Middle East faces a significant public health challenge due to the high prevalence of DR among diabetics, with rates reaching up to 64% in Jordan. Early detection via fundus imaging is essential, but the variability and fatigue in human interpretation can impact diagnostic accuracy.

Methodology: 4,162 retinal images selected from the APTOS 2019 Blindness Detection dataset were used. Two models were trained: one with Gaussian filter as the primary preprocessing method to enhance feature clarity, and one without it. The CNN architecture included multiple convolutional and pooling layers, optimized to minimize the loss function.

Results: The CNN model with Gaussian filter preprocessing achieved 99.5% accuracy on the training set, 92.3% on the validation set, and 94.9% on the test set. In contrast, the non-filtered model exhibited overfitting, with higher training accuracy but lower validation and test accuracies. The filtered model also excelled in precision, recall, and F1-score across DR categories.

Conclusion: Our comparison showed that the CNN model with Gaussian filter preprocessing significantly outperforms the non-filtered model, demonstrating higher accuracy and better generalization. This underscores the value of advanced preprocessing in improving DR detection and its potential for enhancing diagnostic accuracy in the Middle East and beyond.

Rabeeah Zafa

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Mastering lensectomy: Surgical nuances in pediatric ectopia lentis

Purpose: Aim is to give an overview of different lensectomy techniques which can be utilized in various scenarios of subluxated lenses in children.

Method: We present various lensectomy techniques with or without intraocular lens implantation in five pediatric cases of subluxated crystalline lenses utilising anterior approach and a close chamber in a descriptive case series manner at Al-Shifa Trust Eye Hospital Rawalpindi, Pakistan.

Results: Case 1: Anterior Approach; 02 Limbal Ports Uni-Manual Technique: A 02 year old marfan's syndrome child with unstable microspeherophakic lens in pupillary plane had undergone lensectomy via limbal approach. Two 20 guage limbal ports were fashioned at 3 and 9 o'clock using 20 guage MVR blade. A unimanual technique with 20G vitrectomy cutter was used for complete removal of subluxated lens keeping AC (anterior chamber) maintainer in the other port to ensure formed AC. Anterior vitrectomy was done to clear off any vitreous in AC and pupillary plane.

Case 2: 03 Limbal Ports Bimanual "Surgeon's 3rd Hand" Technique: In a microspeherophakic lens, subluxated in anterior chamber with <1 quadrant zonular support causing a pupillary block glaucoma, limbal approach 3 ports bimanual lensectomy using AC maintainer in 20G port at 3 o'clock and a 9 o'clock port was used for vitrectomy cutter. Another port at 70 degree to the 3 o'clock port was made to hold the subluxated lens from falling posteriorly using a sinskey hook.

Case 3: Pharmacologically Assisted-02 Ports Uni-Manual Limbal Approach: A microspherophakic lens subluxated in anterior chamber with <1 quadrant zonular support. Acetylcholine chloride in irrigating fluid assisted 02 port uni-manual lensectomy was performed similar to case No. 1.

Case 4: 03 Ports Bimanual Technique in a Subluxated Traumatic Cataract: 6 clock hours subluxation of traumatic cataract was dealt with anterior approach lensectomy using two 20G horizontal limbal ports and a superior 2.7mm partial thickness scleral port. Capsular tension ring was inserted to address the bag subluxation after anterior capsulorrhexis. Posterior capsulectomy and shallow anterior vitrectomy was performed after lens matter aspiration. A multipiece piece IOL was unloaded in the sulcus with optic capture behind the capsular bag.

Case 5: 03 Ports Bimanual Technique in a Traumatic Iridodialysis and Subluxation of Traumatic Cataract: Traumatic superior 3 clock hour subluxation of cataract was dealt with the 03 port bimanual technique as described in case No. 4 except for an anterior vitrectorrhexis using high

cutting rate with 20G vitrector and an endocapsular single piece foldable IOL. Iris root dialysis was repaired with double armed straight needle 9-0 polypropylene suture after fashioning partial thickness scleral flaps utilising cobbler's technique.

Conclusion: Various lensectomy techniques are tailored to address different scenarios of ectopia lentis depending upon the specific cause and nature of zonular weakness.

Keywords: Ectopia Lentis, Traumatic Subluxation, Lensectomy, Bimanual Technique, Anterior Vitrectomy.

Financial Disclosure: No financial conflict of interest to disclose.

Biography

Dr. Rabeeah Zafar graduated from University of Health Sciences in 2012. She was awarded a fellowship in General Ophthalmology by College of Physicians & Surgeons Pakistan in 2018. Later she joined Al-Shifa trust eye hospital in 2018 and completed her second fellowship training in Pediatric Ophthalmology and Strabismus in 2021. She is also Fellow of International Council of Ophthalmology (FICO-2022). Currently she is working as Assistant Professor in Children Eye Hospital, Al-Shifa trust Rawalpindi. She has participated and presented in various national and international conferences and published articles in local and international journals.

Sarah Naveed Malik

Pediatric Ophthalmology and Strabismus Department, Al-Shifa Trust Eye Hospital, Rawalpindi

Stickler syndrome. Clinical presentation and outlook

Stickler Syndrome is an uncommon frequently undiagnosed multisystem collagenopathy with significant genetic and phenotypic heterogeneity, a condition that carries a risk for significant ocular complications, ranging from severe myopia to retinal detachment and vision loss. Systemic findings, including micrognathia, cleft palate, hearing loss, or early onset osteoarthritis.

We report the case of a family of multiple affectees with Stickler Syndrome who presented with history of high myopia in father and three offsprings. Children were found to have flat mid facies, and membranous vitreous that is characteristically seen in STL1. Further systemic investigations and genetic testing /gene sequencing of the entire family was also carried out. Genetic testing results may be used to help guide management, assist in testing other at-risk individuals, and provide the parents with genetic counselling.

Biography

Dr. Sarah Naveed Malik completed her MBBS at Shifa College of Medicine and graduated in year 2013. She then completed house job in year 2015 and started fellowship in Ophthalmology in 2016. She passed her fellowship exam in 2021 along with FICO examination. She started her second fellowship in year 2022 in Pediatric Ophthalmology and Strabismus at Al-Shifa Trust Eye Hospital where She is currently working.

Savini Hewage[1*] MBBS, BSc; Sam Myers[2] MBBS, BSc, FRCOpth; Rishi Ramessur[3] MA, BMBCh, FRCOpth

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An overview of deep-learning enabled microbial keratitis classification

Infectious Keratitis (IK) is the fifth leading cause of blindness globally. Gold-standard diagnostic techniques of microscopy, cultures and sensitivity from corneal scrapes are limited by low sensitivity, invasiveness, and time lag for identifying causative organisms.

This review explores how AI can enhance IK diagnosis. An English Language literature search on Medline, ISI Web of Knowledge, Science Direct and Google Scholar generated 193 studies from 2004-2024.

32 studies on classification of bacterial, fungal, viral, parasitic, non-infectious keratitis and normal corneas from anterior segment photography were evaluated. Variation was noted in reporting of ground truth definition, sampling techniques, imaging acquisition protocols and outcomes. Only 3 studies reported externally validated outcomes. Deep learning and Convolutional Neural Networks (CNN) achieved or surpassed human experts in IK classification, with Area Under the Receiver Operator Curve (AUROC) ranging from 0.5 to 0.96 and accuracy from 71% to 98%. Performance drops in areas where human evaluation is poor (e.g., classifying atypical microorganisms).

This review demonstrates how CNNs can improve IK classification. It highlights the need for external validation and standardised reporting of ground truth definition, evaluation metrics and image acquisition techniques. Promising techniques identified include knowledge enhanced multimodal classifiers and incorporating facial recognition techniques into CNN architecture.

Biography

Dr. Savini Hewage is an academic foundation programme doctor based in North Central London. She has keen interest in ophthalmology and academic research having undertaken various research projects into ophthalmology and AI as well as diabetic retinopathy. She has been involved multiple published systematic reviews and wishes to pursue a career in ophthalmology.

Dr. Shima Bakhtiary*, Dr. Michael Barkley

Department of Paediatric Ophthalmology, Queensland Children's Hospital, Brisbane, Queensland, Australia

Primary conjunctival embryonal rhabdomyosarcoma in an 8-year-old girl

Introduction: Rhabdomyosarcoma is a rare paediatric cancer, with the head and neck region representing a major anatomical site for rhabdomyosarcoma. In particular, orbital rhabdomyosarcoma is the most common region among children. However, rhabdomyosarcoma originating from the conjunctiva in paediatric population is a rare disease, and this knowledge is essential in order to ensure prompt treatment and early intervention.

Case Presentation(s): We discuss a rare case of primary conjunctival rhabdomyosarcoma in an 8-year-old Caucasian girl. She presented to a paediatric ophthalmology clinic with a 5-day history of a rapidly growing conjunctival lesion in the superior fornix of the right eye. An urgent excisional biopsy was performed which yielded a large 30- mm multilobulated, vascular, and papillomatous specimen with histopathological features consistent with embryonal rhabdomyosarcoma. She was urgently referred to oncology and was treated with systemic chemotherapy.

Conclusion: Therapeutical options and prognosis of rhabdomyosarcomas are based on clinical findings, tumour staging, and grouping, combined with histopathological and molecular features. Although rare, it is important to note that in the paediatric population, rhabdomyosarcoma can originate from the conjunctiva. Knowledge of its clinical, histopathological, and imaging characteristics is essential in order to achieve early diagnosis and timely treatment.

Biography

Dr. Shima Bakhtiary completed Bachelor of Science in Health Sciences at Simon Fraser University in British Columbia, Canada, and a Master of Health Studies in Alberta, Canada. She then pursued a career in Medicine, completing her Doctor of Medicine (MD) degree at University of Queensland, Australia. Upon graduation as a medical doctor, she gained special interest in the field of Ophthalmology and currently working in large tertiary hospital in Queensland, Australia. Aside from her clinical work, she is committed to research, and ongoing contribution to the body of knowledge within field of Ophthalmology.

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Acute acquired comitant esotropia following long-term low dose atropine use

Purpose: Acute Acquired Comitant Esotropia (AACE) is a rare form of strabismus presenting as a sudden onset, large angle, esotropia in older children and young adults. Of the 3 subtypes, Type 3 is historically associated with myopia and a period of excessive convergence related to close working distances during near work activities. However, in recent years, there has been a spike in case reports linking AACE and excessive smartphone use. This case series details 2 presentations of AACE encountered in children who had been using long-term 0.01% atropine eye drops.

Case Report: A 10-year-old male presented with a sudden onset right esotropia, larger at near than distance, after 4 years of using nightly 0.01% atropine eye drops for progressive myopia. The patient's parents reported it worsened after intense near work. Similarly, a 14-year-old female presented with a sudden onset alternating esotropia after 3 years of nightly 0.01% atropine use, which was worse at near and in the morning. At the time of AACE onset, the 10 y.o. male had a Mean Spherical Equivalent (MSE) and Visual Acuity (VA) of R –4.75 D (20/20) L –5.25 D (20/20), and a right esotropia measuring 16 Δ at distance and 20Δ at near. Four years prior, before atropine treatment was commenced, this patient had an esophoria measuring 1Δ at distance and 3Δ at near, which had increased 1.5 years later to 3Δ at distance and 9Δ esophoria at near. At AACE onset, the 14 y.o. female had MSE and VA of R –7.25 D (20/25) L –7.50 D (20/25), and an alternating esotropia measuring 20Δ at distance and 35Δ at near. Three years prior, before atropine treatment was commenced, the patient had an esophoria of 3Δ at distance and near, which had increased 2.5 years later to 4Δ at distance and 6Δ at near. Both patients were immediately referred to the local hospital's paediatric ophthalmology department for neuroimaging to exclude intracranial pathology. Medial rectus recession was suggested for both patients after returning normal MRI results. The 10 y.o. male underwent successful surgical correction and binocularity was restored. The 14 y.o. female was lost to follow-up following referral.

Conclusion: Type 3 AACE is reported to be a rare cause of acquired strabismus in adolescents and young adults, and yet there were 2 presentations within a 10-month period in our university-based optometry clinic. Myopic children are known to have shorter working distances and perform near work activities for longer durations without a visual break than other refractive groups, therefore an increased incidence may be expected in a clinical population of young myopes. However, both patients had been long-term users of 0.01% atropine and had a

distance and near esophoria prior to treatment, hence we speculate that the additional strain on the binocular vision system due to chronic cycloplegia may have contributed to the decompensation of these esophorias.

Biography

Dr. Shima Bakhtiary completed Bachelor of Science in Health Sciences at Simon Fraser University in British Columbia, Canada, and a Master of Health Studies in Alberta, Canada. She then pursued a career in Medicine, completing her Doctor of Medicine (MD) degree at University of Queensland, Australia. Upon graduation as a medical doctor, she gained special interest in the field of Ophthalmology and currently working in large tertiary hospital in Queensland, Australia. Aside from her clinical work, she is committed to research, and ongoing contribution to the body of knowledge within field of Ophthalmology.

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Evaluation of artificial intelligence chatbots' reponses regarding questions on common ophthalmic conditions

Purpose: While AI chatbots are increasingly used for patient education, their effectiveness in providing accurate, comprehensive, and understandable information about ophthalmologic conditions remains understudied. We performed an observational, cross-sectional study to evaluate the ability of five AI chatbots (Chat GPT 3.5, Bing Chat, Google Gemini, Perplexity AI, and YouChat) to educate patients on common ophthalmologic conditions by assessing the accuracy, quality, and comprehensiveness of their responses as rated by participants with varying levels of ophthalmic knowledge.

Methods: There were fifteen participants stratified by ophthalmic knowledge, ranging from college- educated adults to practicing ophthalmologists. Ten questions were submitted to each AI chatbot, and de-identified chatbot responses were sent to the respondents. Using a weighted scale, respondents were asked to evaluate the overall quality and five metrics of each chatbot's response: scientific accuracy, comprehensiveness, balanced explanation, financial considerations, and understandability. Scores from 150 evaluations were averaged, and comparative statistics using mixed-effects models were performed to evaluate significant differences.

Results: Chat GPT 3.5 received the highest overall quality score, while Bing Chat received the lowest ($p<0.0001$). No significant difference was found in scientific accuracy. Chat GPT 3.5 received the highest comprehensiveness (4.2; $p=0.0002$) and understandability scores (4.3; $p=0.004$), while Bing Chat received the lowest scores of 3.4 and 2.7, respectively. Chat GPT 3.5, Perplexity AI, and YouChat had higher scores for balanced explanation than Bing Chat ($p <0.0001$). For financial considerations, Chat GPT 3.5, Perplexity AI, and YouChat had higher scores than Bing Chat and Google Gemini ($p<0.0001$). Only ophthalmology residents, optometrists, and ophthalmologists could distinguish scientific accuracy among the chatbots.

Conclusion: Participants graded particular chatbots (e.g., ChatGPT 3.5) with higher scores than others in several of the studied metrics regarding questions about common ophthalmologic diagnoses. However, as the quality of these responses varies across chatbots, eye care professionals remain an authoritative source for patient education.

Biography

Simren Shah is currently a third-year undergraduate studying Biomedical Engineering at Johns Hopkins University. She conducts research in computational biology under the guidance of Dr. Pablo Iglesias, head of the Electrical and Computer Engineering Department at Johns Hopkins. Additionally, for several projects (including this one), she collaborates with Dr. Kamran Riaz, Vice Chair for Clinical Research at the Dean McGee Eye Institute in Oklahoma, on projects that bridge biomedical engineering and clinical research.

BOOK OF ABSTRACTS

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