UK Paediatric Glaucoma Society

UKPGS

24 January 2025

Cavendish Conference Centre
London, UK

ukpgs.org.uk

Welcome to
UK Paediatric Glaucoma Society
2025

UKPGS

Registration Desk: Open 08:00 - 20:00

Louise Richards will be available if you have any questions about proceedings.

WIFI access

Network: Cavendish WIFI **Password:** 12345cav

CPD

The Royal College of Ophthalmologists approves UKPGS to award **8** self-accredited points. An e-copy of your CPD Certificate will be emailed to you shortly after the meeting.

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Scan to view the day's programme online via the UKPGS website:

UKPGS EXHIBITORS

UKPGS thanks all its exhibitors for their support at the 2025 meeting.

Representatives will be available in the Whittington Suite throughout the day.

PLATINUM SUPPORTER

Théa

GOLD SUPPORTER

SCOPE

SILVER SUPPORTER

HAAG-STREIT SURGICAL

UKPGS POSTERS

Please take the opportunity to visit the posters located in the Whittington Suite during the meeting breaks.

Posters are also available on the website.

Posters in the Whittington Suite and online @ www.ukpgs.org.uk/programme

P1	A systematic review and meta-analysis of the Paul tube implant outcomes	Diya Baker	Birmingham, UK.
P2	*WITHDRAWN*		
P3	Understanding *CYP1B1* cytopathy: A case study of congenital glaucoma and corneal opacification	David Alves	Porto, Portugal.
P4	Congenital anterior staphyloma	David Alves	Porto, Portugal.
P5	Hidden clues: Navigating the ocular and genetic	Gowri Pratinya Kolipaka	Hyderabad, India.
P6	GAPO syndrome	Manju Anilkumar	Madurai, India.
P7	An unusual case of ocular hypertension following steroid treatment in Kikuchi-Fujimoto disease	Manju Anilkumar	Madurai, India.
P8	*WITHDRAWN*		
P9	A rare association of Peters sd and Axenfeld-Rieger sd with neonatal glaucoma in the same patient	Alicia Serra	Barcelona, Spain.
P10	The syndrome of the syndrome - complicated consequences	Rony Rachmiel	Tel Aviv, Israel.
P11	Management of a child with iris bombe in uveitic glaucoma secondary to juvenile idiopathic arthritis	Alejandro Marin	Miami, USA.
P12	Case report of the medical approach to a traumatic hyphaema in a nine-year-old male	Josephine Bates	Sheffield, UK.
P13	Outcomes of Paul glaucoma implant in paediatric traumatic glaucoma	Alev Ozcelık Kose	Istanbul, Turkey.
P14	Fundus reflex assessment for healthcare providers not in ophthalmology: A simulation-based training	Harita Abraham	Miami, USA.
P15	Glaucoma incidence in paediatric patients undergoing cataract surgery; a single centre retrospective case notes review	Timothy Lloyd	Leeds, UK.
P16	Prevalence and management of glaucoma in paediatric patients with Rubinstein-Taybi syndrome in a tertiary eye care centre	Adam Davis	Miami, USA.

UKPGS 2025 Meeting Programme

09:00 - 09:10	Housekeeping announcements & President's welcome	**Peng Tee Khaw**, London, UK.

09:10 - 10:03 **SESSION 1: RESEARCH**

Co-Chairs: Joe Abbott, Birmingham, UK & **Ta Chen Peter Chang**, Miami, USA

1	Assessment of a novel ultrasound biomicroscopy-based classification of corneal changes in paediatric glaucoma as a prognostic tool	**Shrushti Hunashyal**	Chandigarh, India.
2	Phacomatosis pigmentovascularis versus Sturge-Weber syndrome: Comparative outcomes of primary combined trabeculotomy with trabeculectomy in early onset glaucoma	**Gowri Pratinya Kolipaka**	Hyderabad, India.
3	Visual and surgical outcomes of childhood glaucoma following cataract surgery	**Brenda Bohnsack**	Chicago, USA.
4	Evaluation of swept-source anterior segment OCT as an in-office non-contact procedure for diagnosing early-onset childhood glaucoma	**Sushmita Kaushik**	Chandigarh, India.
5	Visual field abnormalities in Sturge-Weber syndrome and phacomatosis pigmentovascularis: Clinical implications	**Sirisha Senthil**	Hyderabad, India.
6	Integrating clinical and UBM perspectives for the classification of Peters anomaly with glaucoma	**Manik Sardana**	Chandigarh, India.

09:47 - 10:03 Session Discussion Panel

10:03 - 10:55 **SESSION 2: CLINICAL**

Co-Chairs: Sushmita Kaushik, Chandigarh, India & **Velota Sung**, Birmingham, UK

7	Efficacy and safety of the PRESERFLO™ MicroShunt in paediatric glaucoma	**Susana Duarte**	Lisbon, Portugal.
8	Influence of *CYP1B1* variants on phenotypic characteristics and therapeutic outcomes in primary congenital glaucoma patients from Northern Portugal	**David Alves**	Porto, Portugal.
9	Children with primary congenital glaucoma and failure to thrive	**Rizwan Malik**	Riyadh, Saudi Arabia.
10	Outcomes of gonioscopy-assisted transluminal trabeculotomy in juvenile glaucoma	**Serhat Imamoglu**	Istanbul, Turkey.
11	Long-term paediatric glaucoma outcomes in a different world	**Deep Sarode**	Glasgow, UK.
12	Exudative retinal detachment without choroidal effusion following glaucoma surgery in a child with Sturge-Weber syndrome	**Alejandro M. Perez**	Miami, USA.

10:40 - 10:55 Session Discussion Panel

10:55 - 11:20	Refreshments, Posters, Exhibition

11:20 - 12:15 **SESSION 3: ANGLE SURGERY SYMPOSIUM**

Co-Chairs: Elena Bitrian, Miami, USA & **Patrick Watts**, Cardiff, UK

13	Intermediate outcomes of GATT in paediatric glaucoma: A promising surgical approach?	**Hussain Aluzri**	Birmingham, UK.
14	Gonioscopy-assisted transluminal trabeculotomy in specific severe paediatric glaucoma cases	**Murat Gunay**	Trabzon, Turkey.
15	Efficacy of gonioscopy-assisted transluminal trabeculotomy (GATT) in paediatric glaucoma	**Anchal Gera**	Chandigarh, India.
16	Trabeculotomy outcomes in paediatric patients with steroid-induced ocular hypertension and glaucoma - a case series	**Mathilde von Arenstorff**	Copenhagen, Denmark.
17	Bimanual circumferential canaloplasty and goniotomy (BCCG) technique with illuminated microcatheter: Reporting clinical outcomes in a paediatric population	**Alejandro Marin**	Miami, USA.
18	Intraoperative real-time OCT-guided Ab externo trabeculotomy	**Daniel M. Vu**	Boston, USA.
19	WITHDRAWN		
20	A simple step made the journey great	**Shahinur Tayab**	Assam, India.

12:01 - 12:15 Session Discussion Panel

12:15 - 12:35 **GUEST LECTURE:**
Glaucoma-surgical retina case studies
Chetan K. Patel, Oxford, UK.

12:35 - 13:25 Lunch, Posters, Exhibition **AGM 12:40 - 13:10**

13:25 - 14:06 **SESSION 4: TUBE SYMPOSIUM**

Co-Chairs: Beth Edmunds, Portland, USA & **Kenneth Yau**, Manchester, UK

21	Initial results of the Paul Ahmed Comparison (PAC) study in refractory childhood glaucoma	**Mohamed Sayed**	Abu Dhabi, United Arab Emirates.
22	The Paul glaucoma implant in a paediatric cohort	**Nyaish Mansoor** *on behalf of Clarissa Fang*	Manchester, UK.
23	Long-term outcomes of glaucoma drainage devices following failed initial combined trabeculotomy and trabeculectomy in refractory primary congenital glaucoma	**Sirisha Senthil**	Hyderabad, India.
24	Long-term outcomes of tube shunt surgery in aniridia-related glaucoma	**Jeremy Tan**	London, UK.
25	Factors associated with early tube revision surgery in paediatric glaucoma patients	**Alejandro M. Perez**	Miami, USA.

13:51 - 14:06 Session Discussion Panel

14:06 - 14:45 **SESSION 5: GENETICS SYMPOSIUM**

Co-Chairs: Jocelyn Chua, Singapore, ROS & **Sam Gurney**, Birmingham, UK

26	*CYP1B1* variants in Indian primary congenital glaucoma: Genetic profiling and clinical outcomes	**Gowri Pratinya Kolipaka**	Hyderabad, India.
27	Genetic screening and counselling for families with primary congenital glaucoma (PCG): Three years of experience at King Khaled Eye Specialist Hospital (KKESH) in Saudi Arabia	**Areej Alizary**	Riyadh, Saudi Arabia.
28	Unravelling genotype-phenotype correlations in primary congenital glaucoma: Whole exome sequencing insights from North India	**Vyshak A S**	Chandigarh, India.
29	Decoding the genotype-phenotype relationship in aniridia-associated glaucoma	**Manik Sardana**	Chandigarh, India.
30	*CYP1B1* keratopathy in neonatal congenital glaucoma: Genetic insights and clinical implication	**Sirisha Senthil**	Hyderabad, India.

14:32 - 14:45 Session Discussion Panel

14:45 - 15:26 **SESSION 6: RAPID FIRE**

Co-Chairs: Brenda Bohnsack, Chicago, USA & **John Brookes**, London, UK

31	Turning the tide: Vitreous management can prevent vision loss in young with angle closure glaucoma and inherited retinal dystrophies	**Sirisha Senthil**	Hyderabad, India.
32	Exuberant steroid response after angle surgery in juvenile open angle glaucoma patients	**Alejandro Perez** *on behalf of Sebastian Lacau*	Miami, USA.
33	Phenotypic variability in monozygotic twins with familial Axenfeld-Rieger syndrome and *FOXC1* mutation	**Adam Davis** on *behalf of Kasem Seresirikachorn*	Miami, USA.
34	Sirolimus and Sturge-Weber syndrome: Early glaucoma outcomes in two patients	**Ray Areaux**	Minneapolis, USA.
35	From oversights to insights: Neonatal-onset glaucoma in neurofibromatosis	**Sushmita Kaushik**	Chandigarh, India.
36	Glaucoma tube shunt removal as primary surgical intervention for improved cosmesis of tube-related strabismus	**Teresa Chen** *on behalf of Tolgahan Uyar*	Boston, USA.
37	From eyes to kidneys: Exploring the *PAX2* connection in congenital primary aphakia and papillorenal syndrome	**Gowri Pratinya Kolipaka**	Hyderabad, India.

15:14 - 15:26 Session Discussion Panel

15:26 - 15:36 **Childhood Glaucoma Research Network (CGRN) update** — **Alana Grajewski**, Miami, USA.

15:36 - 15:55 Refreshments, Posters, Exhibition

15:55 - 16:37 **SESSION 7: RAPID FIRE**

Co-Chairs: Ray Areaux, Minneapolis, USA & **Jay Richardson**, Crewe, UK

38	Screening childhood glaucoma with an automated, offline, artificial intelligence algorithm deployed on a smartphone-based fundus camera – pilot study	**Sirisha Senthil**	Hyderabad, India.
39	Exam under anaesthesia for paediatric glaucoma: A simulation-based training	**Harita Abraham**	Miami, USA.
40	Comparison of visual acuity and strabismus pre- and post-Baerveldt 350 glaucoma drainage device placement in refractory childhood glaucomas	**Brenda Bohnsack**	Chicago, USA.
41	Effect of trabeculodescemetic window perforation in deep sclerectomy on intraocular pressure in primary congenital glaucoma	**Nouf Alzendi**	Riyadh, Saudi Arabia.
42	Differences in intraocular pressure measurements by tonometer type in children with glaucoma and suspected glaucoma	**Yeabsira Mesfin**	San Francisco, USA.
43	A unique intersection: Congenital onset glaucoma in neurofibromatosis type-1	**Gowri Pratinya Kolipaka**	Hyderabad, India.
44	Prognostic significance of early postoperative choroidal detachment in patients with congenital glaucoma operated on with non-penetrating deep sclerectomy	**Nouf Alzendi**	Riyadh, Saudi Arabia.

16:24 - 16:37 **Session Discussion Panel**

16:37 - 17:18 **SESSION 8: VIDEO SYMPOSIUM**

Co-Chairs: Alessandra Martins, London, UK & **Sirisha Senthil**, Hyderabad, India

45	Ultrasound B-scan in paediatric glaucoma: A non-invasive solution to complex diagnoses	**Gowri Pratinya Kolipaka**	Hyderabad, India.
46	Surgical resection for capsular ingrowth of valved drainage devices in paediatric uveitic glaucoma patients	**Matthew Javitt**	Boston, USA.
47	A novel surgical technique: Management of chronic Baerveldt glaucoma implant hypotony using a thermal cauterised ball-tip prolene suture to occlude aqueous flow	**Jay Richardson**	Crewe, UK.
48	Gonioscopy assisted transluminal trabeculotomy as a surgical option for acute hydrops secondary to primary congenital glaucoma	**Vyshak A S**	Chandigarh, India.
49	Paul glaucoma implant operation in a familial aniridia case with severe limbal stem cell deficiency	**Alev Ozcelık Kose**	Istanbul, Turkey.

17:03 - 17:18 **Session Discussion Panel**

17:18 - 17:25 Prizes and acknowledgements — **Peng Tee Khaw**, London, UK.

17:25 - 18:10 **NOEL RICE LECTURE 2025**

Can we "cure" paediatric glaucoma – lessons from half a century of clinical treatments and research

Peng Tee Khaw, London, UK.

18:10 - 18:15 President's closing comments — **Peng Tee Khaw**, London, UK.

18:15 - 20:00 Buffet Dinner (ticket-entry only)

GUEST LECTURE

Glaucoma-surgical retina case studies

Mr Chetan K. Patel

Consultant Surgeon, Oxford Eye Hospital & Honorary Senior Lecturer in Ophthalmology, University of Oxford, Oxford, UK.

C.K. Patel has over 20 years of experience as a consultant in adult and paediatric retinal surgery at a large University teaching hospital in Oxford UK. His contributions have had a significant impact on paediatric retinal imaging.
He initiated a national service for management of "retinal detachment that complicates retinopathy of prematurity" in the UK and worked with colleagues at Great Ormond Street to develop endoscopic vitrectomy for ROP that impacts on the incidence of glaucoma.

Can we "cure" paediatric glaucoma – lessons from half a century of clinical treatments and research

Professor Sir Peng Tee Khaw

PhD FRCS FRCP FRCOphth FRSB FCOptom Hon DSc FARVO FMedSci

Professor and Consultant Eye Surgeon

UK National Institute for Health and Care Research in Ophthalmology at Moorfields Eye Hospital and UCL Institute of Ophthalmology, London UK.

Professor Sir Peng Tee Khaw has a special interest in the surgical treatment of glaucoma, including adults and children. He succeeded Noel Rice and Arthur Lister (who founded the paediatric glaucoma service at Moorfields) then expanded the current paediatric glaucoma service. Group meetings of previous paediatric glaucoma fellows led to the formation of the UKPGS organised by Velota Sung. Through research Sir Peng's group have developed and refined surgical techniques (Moorfields Safer Surgery System) and treatments to prevent scarring and increase the efficacy and safety of surgery worldwide, including the developing world. They have proposed the 10-10-10 goal for surgery (a pressure of 10mmHg that lasts 10 years and takes 10 minutes) and are helping to develop microdevices, anti-scarring systems, and proposed the "energy theory of glaucoma" and have co-discovered a novel stem cell (Moorfields-IO Müller stem cell), which is being developed for optic nerve regeneration.

Sir Peng has published over 600 papers, chapters and books has delivered over 36 national and international named lectures, has won over 12 international prizes and awards. He was the first UK President of the Association for Research in Vision and Ophthalmology 9ARVO). He has raised grants of over US$150 million, including being the main fundraiser for the building of the world's largest eye clinical research centre and the Richard Desmond Children's Eye hospital, and was founder Director of the UK National Institute for Health Research Biomedical Research Centre at Moorfields and UCL of Ophthalmology (the only single speciality UK national centre) with four five-year renewals. The joint site is currently one of the highest ranked sites for Ophthalmology research in the world. He sat on the scientific board of the Queen Elizabeth Diamond Jubilee Trust, which helped eliminate Trachoma in several Commonwealth countries. He was elected to the UK Academy of Medical Sciences in 2002, NIHR Senior Investigator in 2009 and was knighted in the Queen's Birthday Honours in 2013 for services to ophthalmology, the second in the past hundred years. He passionately believes that scientific research enables us to achieve new and better treatments to change lives for the better around the world.
https://powerlist.theophthalmologist.com/pengteekhaw

SESSION 1

1 Assessment of a novel ultrasound biomicroscopy-based classification of corneal changes in paediatric glaucoma as a prognostic tool

Research

Shrushti Hunashyal
Manik Sardana, Ashok Kumar Singh, Faisal Thattaruthody, Surinder S. Pandav, Sushmita Kaushik.
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Aim: To categorise corneal changes in paediatric glaucoma using ultrasound biomicroscopy (UBM), and assess their prognostic value.
Methods: This retrospective study included 202 eyes from 110 children <6 years of age with congenital glaucoma, who had undergone UBM at baseline and had completed one year of postoperative follow-up. The corneal changes on UBM were classified into seven types: Type A (diffuse thickening), Type B (intracorneal hyper-reflectivity), Type C1/C2 (Descemet membrane abnormalities), Type D (intracorneal clefts), Type E (miscellaneous), and Type N (a clear cornea with glaucoma). Data collected included demographic information, detailed ocular history, and anterior/posterior segment examination. Cooperative children were assessed using a slit lamp, while uncooperative/younger patients were examined under anaesthesia. Glaucoma severity was classified based on intraocular pressure (IOP), horizontal corneal diameter (HCD), and corneal clarity, and categorised into mild, moderate, or severe. Post-surgery outcomes for IOP control and corneal clarity were graded as good, fair, or poor.
Results: Patients with the Type A UBM type (43%) showed the best surgical outcomes with significant improvements in IOP and corneal clarity. Type B (22%) had stable IOP, but required more antiglaucoma medications. Types C1 (6%) and C2 (9%) correlated with Peters anomaly, with C1 showing better outcomes. Type D (3%) had the poorest prognosis. Type N (12%) showed good outcomes in 66% of cases.
Conclusion: UBM-based classification of corneal changes in early childhood glaucoma has emerged as a valuable tool in predicting post-surgical corneal clarity and glaucoma severity, aiding in long-term management.

2 Phacomatosis pigmentovascularis versus Sturge-Weber syndrome: Comparative outcomes of primary combined trabeculotomy with trabeculectomy in early onset glaucoma

Research

Gowri Pratinya Kolipaka
Sirisha Senthil.
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Purpose: This retrospective study compares outcomes of primary combined trabeculotomy with trabeculectomy (CTT) in children with early onset glaucoma associated with phacomatosis pigmentovascularis (PPV) and Sturge-Weber syndrome (SWS) at a tertiary eye-care centre.
Methods: The SWS cohort included 49 eyes of 49 children and the PPV cohort included 48 eyes of 32 children with PPV that underwent primary CTT with at least 1-year postoperative follow-up (from 1996–2020). Diagnostic criteria for SWS included facial haemangioma with leptomeningeal disease, and PPV based on concurrent presence of pigmentary nevi and capillary malformation.
Results: Preoperative ocular parameters were similar in both cohorts. However, the age at presentation and surgery of PPV cohort was significantly younger (0.2 vs. 0.57-years, p=0.01) and had higher prevalence of systemic comorbidities (p=0.02). With a median follow-up of 5-years, the intraocular pressure (IOP) was comparable between the cohorts, however, complete success probability was higher in SWS (p=0.03). PPV eyes required higher number of glaucoma medications (p=0.01) and repeat glaucoma surgery (p=0.01). Postoperative complications were slightly higher in PPV group but was not statistically significant (p=0.31).
Conclusion: Primary CTT yielded better outcomes in SWS compared to PPV. The study also highlights higher prevalence of systemic comorbidities in PPV, providing valuable insights into managing early onset glaucoma associated with these conditions.

3 Visual and surgical outcomes of childhood glaucoma following cataract surgery

Research

Brenda Bohnsack[1]
Adam Jacobson[2].
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2] University of Michigan, Michigan, USA.
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Purpose: Glaucoma following cataract surgery (GFCS) is a common complication after congenital cataract surgery. However, the percentage of patients with GFCS that require IOP-lowering surgery as well as outcomes are underreported.

Methods: Retrospective review of patients with GFCS. Lensectomy and glaucoma surgery details and final examination findings were collected. Inclusion criteria included history of lensectomy at <1 year of age, diagnosis of glaucoma, and >1 year follow-up.

Results: Of 169 eyes of 127 GFCS patients (66 male, 58 bilateral), 88 eyes (52%) of 73 (57%) patients underwent glaucoma surgery (median 3.5 years of age at first glaucoma surgery, median 2 glaucoma surgeries). At final follow-up (13.6±7.0 years), eyes requiring glaucoma surgery had worse visual acuity (VA, p=0.01) and greater cup-to-disc ratio (p<0.01). GFCS patients with history of bilateral congenital cataracts had better VA than those with history of unilateral congenital cataracts (p<0.01). Angle surgery (n=56), Baerveldt devices (n=38), Ahmed valves (n=19), and cycloablation (n=21) showed 1-year survival rates between 64 and 75%. Baerveldt implants showed the highest 5- and 10-year survival rates at 65% and 43%, respectively.

Conclusions: More than 50% of eyes with GFCS required at least 1 if not multiple glaucoma surgeries. Glaucoma surgery and history of unilateral cataract were associated with worse VA outcomes.

4 Evaluation of swept-source anterior segment OCT as an in-office non-contact procedure for diagnosing early-onset childhood glaucoma

Research

Sushmita Kaushik
Shivangi Yadav, Ashok Kumar Singh, Manik Sardana, Surinder S. Pandav.
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Introduction: Diagnosing early-onset childhood glaucoma is usually based on signs like cloudy cornea, buphthalmos, and excessive lacrimation. However, these symptoms can overlap with other congenital conditions, making differentiation crucial. Traditionally, examination under anaesthesia (EUA) has been used for precise diagnosis. Swept-source anterior-segment OCT (ASOCT) offers a rapid, non-invasive alternative to assess anterior chamber angles, potentially eliminating the need for EUA. This study evaluates ASOCT's ability to distinguish glaucomatous from non-glaucomatous angles in infants.

Methods: Infants under two years were categorised into three age-matched groups: normal infants, primary congenital glaucoma (PCG), and infants with hazy corneas without glaucoma, based on corneal clarity, IOP, buphthalmos, and optic disc evaluation. Anterior segment imaging was performed using the Cassia™ ASOCT with the "flying baby" technique, analysing the presence of the trabecular meshwork (TM), AOD 500, AOD 250, and ARA 500. Comparisons were made using ANOVA, and ROC curves determined the best discriminators for glaucomatous angles.

Results: The study included 23 normal, 35 PCG, and 12 infants with hazy corneas without glaucoma. The TM shadow was visible in all non-glaucomatous eyes but only 22.8% of glaucomatous eyes (sensitivity 77.14%, specificity 100%). AROC for TM visibility was 0.87. PCG infants had significantly larger AOD 250 values compared to non-glaucomatous infants (0.42±0.27 µm vs. 0.32±0.09 µm; p=0.09).

Conclusions: ASOCT is a valuable, non-invasive tool for imaging the anterior chamber angles in infants, offering insights for distinguishing PCG from other conditions of congenital cloudy corneas. TM visibility is the most specific sign for non-glaucomatous eyes.

5 Visual field abnormalities in Sturge-Weber syndrome and phacomatosis pigmentovascularis: Clinical implications

Research

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Objective: To assess visual field abnormalities in patients with Sturge-Weber syndrome (SWS) and phacomatosis pigmentovascularis (PPV).
Methods: A total of 172 eyes from 86 patients with SWS and PPV over 25 years underwent Humphrey visual field (HVF) testing. The medical records of these patients were retrospectively reviewed. Clinical, demographic parameters, systemic factors, and visual field (VF) outcomes were analysed. Logistic regression was used to evaluate factors affecting reliability, systemic associations, and VF defect patterns. The outcome measures were best corrected visual acuity (BCVA), type, and pattern of VF defects.
Results: Of the 86 patients, 62 (72%) had SWS and 24 (28%) had PPV. PPV eyes with glaucoma had significantly worse BCVA (p=0.02). SWS patients performed more reliable VF tests (p=0.02). Low reliability of VF was associated with younger age, poorer BCVA, and PPV glaucoma (p<0.001). Among 155 analysed VF reports, 60 (34.9%) were normal, 61 (35.5%) had glaucomatous defects, 12 (7.8%) showed homonymous hemianopia, 7 (4.1%) had combined glaucomatous and neurological defects, and 16 (9.3%) were unclassifiable. Neurological defects were associated with epilepsy (p=0.02) and leptomeningeal angiomas (p=0.005). External beam radiotherapy-treated eyes showed central scotomas, unlike eyes treated with photodynamic therapy.
Conclusions: SWS patients predominantly exhibited unilateral glaucoma, had better visual acuity, and performed more reliable VFs. Glaucomatous, neurological, combined pathology and DCH-related or treatment-related VF defects can be present in both SWS and PPV. These factors should be considered while interpreting the VF defects in these eyes.

6 Integrating clinical and UBM perspectives for the classification of Peters anomaly with glaucoma

Research

Manik Sardana
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Aim: Peters anomaly (PA) is characterised by a defect in Descemet's membrane (DM), traditionally divided into Type 1 and Type 2, based on the presence or absence of iris or lens attachment in the corneal defect. This study aims to classify PA using ultrasound biomicroscopy (UBM) to assess the correlation between UBM characteristics and disease severity and clinical outcomes.
Materials and methods: We examined children with glaucoma associated with PA who presented between January 2019 and June 2023 and completed a one-year follow-up. All children underwent UBM under anaesthesia, diagnosing PA by discontinuities in DM with or without stromal excavation. UBM findings were categorised into four types: Type A (DM defects), Type B (DM and stromal defects), Type C (DM defects with iridocorneal adhesions), and Type D (DM defects with keratolenticular adhesions).
Results: A total of 32 eyes from 21 patients were studied (31 Type 1, 1 Type 2 PA). The distribution of UBM types was: 15 Type A, 11 Type B, 5 Type C, and 1 Type D. Eyes with Type C and D UBM had more severe glaucoma at presentation. All patients underwent combined trabeculotomy-trabeculectomy. Eyes with Type A UBM showed the best surgical and visual outcomes, while Types C and D had the worst. Genetic testing in 16 children revealed mutations in 56%, predominantly in the *CYP1B1* gene.
Conclusion: This study provides novel insights into the UBM characteristics of PA and helps in better prognostication for affected patients through UBM classification.

7 Efficacy and safety of the PRESERFLO™ MicroShunt in paediatric glaucoma

Clinical

Susana Duarte[1]

Afonso Lima-Cabrita[2, 3], Rafael Correia Barão[2, 3], André Barata[2], Cristina Brito[2, 3], Ingeborg Stalmans[2, 3], Sophie Lemmens[2], João Barbosa Breda[4, 5], Luís Abegão Pinto[1], Filipa Jorge Teixeira[1].

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Introduction: To assess the efficacy and safety of the PRESERFLO™ device in selected cases of paediatric glaucoma.

Methods: Retrospective multi-centre observational study. Patients ≤18 years of age who underwent PRESERFLO™ implantation with at least 6 months of follow-up were included. Primary outcome was surgical success, defined as an intraocular pressure (IOP) between 6–21 mmHg with an IOP reduction of ≥20% (criteria A) or ≥30% (criteria B), no need for further surgery and no severe surgery-related complications. Secondary outcomes included postoperative IOP, number of hypotensive drops and adverse effects.

Results: Twenty eyes from 20 patients (mean age 11.7±1.1 years) were included, most with uveitic glaucoma (n=8 eyes; 40%). Average follow-up was 18.3±7.7 months, with 60% (n=12) completing 24 months. Mean IOP was significantly reduced from 27.8±1.3 mmHg at baseline to 14.2±8.5 mmHg and 14.6±13.9 mmHg at 12 and 24 months, respectively (p<0.001 for both). Average medication reduced from 2.9±1.1 to 0.9±1.3 (p=0.006) at 24 months. Qualified surgical success (regardless of medication) was 60% and 50% after 12 months, for criteria A and criteria B, and 45% at 24 months (criteria A and B). In both time-points and for both criteria, 35% of cases were complete successes (drop-free). No sight-threatening complications were registered.

Conclusion: Real-world data from PRESERFLO™ use suggests this to be a safe and effective surgical option for the treatment of selected cases of paediatric glaucoma.

8 Influence of *CYP1B1* variants on phenotypic characteristics and therapeutic outcomes in primary congenital glaucoma patients from Northern Portugal

Clinical

David Alves[1]

Rita Rodrigues[1], João Esteves-Leandro[1], Marta Silva[1], João Barbosa-Breda[1,3], João Tavares-Ferreira[1], Joana Araújo[1], Susana Fernandes[4], Renata Oliveira[5], António Melo[1], Flávio Alves[1], Augusto Magalhães[1], José Cotta[1], Sérgio Estrela-Silva[1,6].

1] Department of Ophthalmology, Centro Hospitalar Universitário de São João, Porto, Portugal. 2] Cardiovascular R&D Centre – UnIC@RISE, Department of Surgery and Physiology, Faculty of Medicine of the University of Porto, Porto, Portugal. 3] KU Leuven, Research Group Ophthalmology, Department of Neurosciences, Leuven, Belgium. 4] Genetics Department, Faculty of Medicine of Porto, Porto, Portugal. 5] Medical Genetics Department, Unidade de Saúde Local de São João, Porto, Portugal. 6] Department of Surgery and Physiology, Faculty of Medicine, University of Porto, Porto, Portugal.

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Purpose: To identify *CYP1B1* gene variants in primary congenital glaucoma (PCG) patients from Northern Portugal and examine genotype-phenotype correlations.

Methods: A cross-sectional observation study from 71 patients diagnosed and treated for PGC at ULS São João, Porto, Portugal was conducted. Demographic and clinical data were collected. *CYP1B1* were screened using DNA sequencing. A next-generation sequencing (NGS) glaucoma panel was performed in patients with heterozygous or absent *CYP1B1* variants in the screening. Genotype-phenotype correlations were assessed by comparing clinical characteristics between patients with identified *CYP1B1* variants and those with negative genetic testing results. Main outcome measures included gender, laterality, age at diagnosis, age at first surgery, number of surgical procedures, number of intraocular pressure (IOP) – lowering medications, postoperative IOP and final best-corrected visual acuity (BCVA).

Results: Data from 66 unrelated PCG probands and 5 affected relatives (total of 133 eyes) were analysed. Nineteen distinct *CYP1B1* variants were identified in 46 patients (65%), including four novel variants. The most frequent variants were c.535del (45.3%) and c.1200_1209dup (28.2%). Patients with *CYP1B1* variant showed significantly higher rates of bilateral disease (p0.030), earlier disease onset (p=0.001), poorer final BCVA (p=0.033), higher postoperative IOP (p<0.001), greater need for surgical interventions (p=0.017) and IOP-lowering medications (p=0.006).

Conclusions: PCG patients from Northern Portugal with *CYP1B1* variants are more likely to present with bilateral disease, earlier onset, and a more severe clinical phenotype, suggesting a strong genotype-phenotype correlation.

9 Children with primary congenital glaucoma and failure to thrive

Clinical

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Introduction: Saudi Arabia has a relatively high incidence of children with primary congenital glaucoma (PCG). The aim of the current study was to test the observation that children with PCG have a failure to thrive.
Method: A retrospective chart review for 120 PCG children (aged 0-5 years) diagnosed with PCG at King Khaled Eye Specialist Hospital (KKESH) in Saudi Arabia was conducted for the period Jan 2014 to Dec 2020. Any child with a medical illness, prematurity, secondary and developmental glaucoma was excluded. The birth weight was recorded. The present weight and height of each child was plotted in a growth chart as per patient age. For patients younger than 2 years, WHO growth charts were used; while for children 2 to 5 years old, CDC growth charts were used. Z-scores from weight and height charts were utilised to classify children as moderate or severely stunted and moderately or severely underweight.
Results: The study included approximately equal numbers of boys (n=57, 47.1%) and girls (57, 47.1%) with PCG. The mean ±SD birth weight was 2.65±0.72 kg. Small birth weight for gestational age (with weight less than 2.5 kg) was present in in 26 (21.5%) children. The mean ±SD height of children was 79.25 ± 21.14 cm. Sixty-four children (62.7%) had moderate to severe growth stunting whilst 55 (53.9%) had severe growth stunting. Seven children (6.9%) were severely underweight.
Conclusions: Children with PCG may have failure to thrive. Early co-management with paediatricians may help limit growth failure and associated developmental delay. The current findings warrant further exploration in a prospective study.

10 Outcomes of gonioscopy-assisted transluminal trabeculotomy in juvenile glaucoma

Clinical

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Purpose: To evaluate the effectiveness of gonioscopy-assisted transluminal trabeculotomy (GATT) in reducing intraocular pressure (IOP) and medication dependence in juvenile glaucoma patients.
Methods: This retrospective study included a single group of juvenile glaucoma patients who underwent GATT surgery. The primary outcome was IOP control, defined as achieving an IOP of 5–21 mmHg. Qualified success was defined as reaching this IOP range with medication, while total success was defined as reaching the target IOP without medication. Preoperative and postoperative medication use was also analysed.
Results: The mean follow-up period was 17.07±7.46 months. The mean preoperative IOP was significantly higher at 27.1±7.8 mmHg, decreasing to 13.8±2.8 mmHg postoperatively ($p<0.0001$). The median number of medications reduced from 3 preoperatively to 0 postoperatively ($p<0.0001$). Out of the total cases, 19 eyes achieved total success, and 6 eyes achieved qualified success. Three eyes did not meet the success criteria and were classified as failures. IOP spikes were observed in 6 eyes (21.4%). The procedure was completed for 360 degrees in 22 eyes, while it was limited to 180 degrees in 2 eyes and 270 degrees in 4 eyes. Postoperative complications included hyphaema in 7 eyes (25.0%), which resolved with postoperative intervention. No significant difference was observed in the occurrence of hyphaema between those who achieved qualified or total success and those who did not ($p=0.058$). No additional surgical procedures were required in the majority of cases (89.3%).
Conclusions: GATT effectively reduces IOP and medication dependence in juvenile glaucoma patients, with most achieving the target IOP range. The surgery demonstrates a high success rate with minimal postoperative complications, supporting its use as a surgical option for managing juvenile glaucoma.

11 Long-term paediatric glaucoma outcomes in a different world

Clinical

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Purpose: To summarise long-term real-world outcomes of patients managed in the West of Scotland.

Methods: Retrospective case series review of paediatric patients who had undergone surgical procedures for glaucoma between 2011–2022. Complete success at most recent follow-up was defined as IOP≤21 mmHg with no medications and qualified success was defined as IOP≤21 mmHg on IOP-lowering medication.

Results: There were 91 eyes of 60 patients included. Mean follow-up postoperatively was 6.4±4.3 years. Primary diagnoses included primary congenital glaucoma (PCG) (38%), aphakic/pseudophakic glaucoma (29%), juvenile open angle glaucoma (JOAG) (10%), uveitic glaucoma (7%), and other secondary glaucomas (16%). Mean number of procedures was 2.3 (range = 1–10). The primary procedure was goniotomy in 42% of eyes and trabeculectomy in 26% of eyes. During their surgical course, 46% of eyes underwent angle surgery, 36% underwent trabeculectomy, 51% underwent tube surgery, and 20% underwent cyclodiode laser ablation.

Surgical success rates were highest for uveitic glaucoma at 100% (67% complete, 33% qualified; mean follow-up =8.0 years), followed by JOAG at 89% (22% complete, 67% qualified; mean follow-up = 8.3 years), aphakic/pseudophakic glaucoma at 74% (35% complete, 39% qualified; mean follow-up = 5.7 years), PCG at 69% (49% complete, 26% qualified; mean follow-up = 7.0 years), and other secondary glaucomas at 54% (27% complete, 27% qualified; mean follow-up = 4.4 years).

Conclusion: Eyes in our cohort required multiple procedures to manage their glaucoma. Although most eyes achieved an IOP≤21 at most recent follow-up, the overall rates of complete success are low. These results provide further evidence of a need for a dedicated paediatric glaucoma service in Scotland.

12 Exudative retinal detachment without choroidal effusion following glaucoma surgery in a child with Sturge-Weber syndrome

Clinical

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Purpose: To describe a case of exudative retinal detachment in a child with Sturge-Weber syndrome (SWS)-related glaucoma following glaucoma surgery managed with systemic and intravitreal beta blockers.

Method: Single case report.

Case: An 8-day-old full-term infant with early-onset glaucoma associated with SWS underwent a staged surgical approach, beginning with trabeculotomy. After five years of stability, the patient developed increased intraocular pressure and increased axial length in the affected eye, requiring a staged Baerveldt glaucoma implant with concurrent scleral windows. Postoperatively, the patient developed an inferior exudative retinal detachment, which was initially monitored, followed by the administration of intravitreal metoprolol. This resulted in the complete resolution of the retinal detachment by six months.

Conclusion: We report the first case of postoperative exudative retinal detachment in the absence of choroidal effusion in a child with SWS-related glaucoma. This case highlights the utility of integrating beta-blockers in managing complex glaucoma and retinal detachment in SWS. The findings underscore the importance of a personalised, multifaceted treatment strategy to optimise outcomes in such challenging cases.

13 Intermediate outcomes of GATT in paediatric glaucoma: A promising surgical approach?

Clinical

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Introduction: This study aimed to assess the safety and efficacy of gonioscopy-assisted transluminal trabeculotomy (GATT) in paediatric glaucoma.

Methods: This retrospective consecutive case series included all GATT procedures using Ellex iTrack on patients (≤18 years) with over 6 months of follow-up at a single tertiary glaucoma centre by a single surgeon. Primary outcome was surgical success, while secondary outcomes included intraocular pressure (IOP), best-corrected visual acuity (BCVA), number of medications (NOM), and complications.

Fifteen eyes from 11 patients (36.36% female) were included, with 66.7% of Asian and 20% Caucasian ethnicity. The median age at surgery was 9.85 years (range: 1.55–17.95 years). Primary paediatric glaucoma was present in 53.33% of eyes, while 46.67% had secondary glaucoma, predominantly uveitic (29.4%).

Results: Preoperatively, the mean IOP was 28.20 mmHg (±7.88), BCVA was 0.15 (±0.27), and cup-to-disc ratio (CDR) was 0.69 (±0.20). Patients were on an average of 3.05 (±1.43) glaucoma medications, with 26.67% on oral acetazolamide. Postoperatively, IOP significantly improved to 21.02 mmHg (±12.75); (p=0.0381), BCVA was 0.26 (±0.34); (p=0.93), NOM decreased to 2.0 (±1.69); (p=0.0165), and CDR remained stable at 0.70 (±0.20); (p=0.9288). Oral acetazolamide usage decreased to 20% (p=0.58). Mean follow-up was 3.01 years (±1.63); (range of 0.73–6.44 years). Six eyes (40%) were surgical failures, with one due to inadequate IOP reduction and five requiring further glaucoma surgery (with all but one undergoing trabeculectomy).

Conclusion: On final follow-up, 60% of eyes achieved qualified success, with 20% achieving complete success. GATT is a safe, conjunctival-sparing option for paediatric glaucoma.

14 Gonioscopy-assisted transluminal trabeculotomy in specific severe paediatric glaucoma cases

Clinical

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Purpose: To report clinical characteristics and surgical outcomes of the gonioscopy-assisted transluminal trabeculotomy (GATT) procedure in certain types of severe paediatric glaucoma patients.

Case series: Case 1 (9-year-old male) and case 2 (14-year-old female) had primary congenital glaucoma who had previously received multiple surgical procedures, case 3 (15 -year-old female) had isolated microcornea and case 4 (12-year-old male) had a history of previous vitreoretinal surgery. All cases were on maximally tolerated topical and systemic antiglaucoma medication. Preoperative intraocular pressure (IOP) levels were, 35 mmHg, 38 mmHg, 36 mmHg and 45 mmHg, in cases 1, 2, 3 and 4, respectively. Cases 1 and 2 had severe buphthalmos with several degrees of corneal opacity and peripheral anterior synechia. Case 3 was myopic and had a modest axial length increase. Case 4 had undergone vitrectomy for retinal detachment with silicone oil tamponade and had intumescent cataract. 5-0 prolene was used during GATT procedure. Circumferential cannulation could not be achieved in all patients. Case 1 required anterior chamber wash-out. Case 4 developed neurotrophic ulcer and amniotic membrane transplantation was needed. Overall, IOP could not reasonably be controlled in all cases during postoperative follow-up and further interventions were required.

Conclusion: GATT has been used as a promising method in paediatric glaucoma surgical armamentarium. It has an increased surgical efficacy especially in primary congenital glaucoma. Partial cannulation and severe buphthalmos can be associated with poor IOP control. One should be vigilant to use GATT as a primary procedure in several secondary subtypes of paediatric glaucoma.

15 Efficacy of gonioscopy-assisted transluminal trabeculotomy (GATT) in paediatric glaucoma

Research

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Purpose: To evaluate the efficacy and safety of gonioscopy-assisted transluminal trabeculotomy (GATT) across childhood glaucoma, aiming to identify which specific entities respond best to this surgical technique.
Materials and methods: Children with glaucoma presenting between January and December 2023, with corneal clarity sufficient for angle visualisation and a minimum six-month postoperative follow-up were included. GATT was performed using a 5-0 polypropylene suture. The primary outcome was the reduction in intraocular pressure (IOP) relative to the extent of the angle treated. Secondary outcomes included factors affecting failure and surgical complications. Success was defined as IOP≤18 mmHg post-surgery without or with up to three topical medications.
Results: 48 eyes were studied, comprising 68% primary congenital glaucoma (PCG), 16% non-acquired ocular anomalies, and 14.6% acquired conditions. Mean IOP decreased from 25.69±10.5 mmHg to 15.40±5.4 mmHg ($p<0.001$) at six months, and to 14.56±4.5 mmHg ($p<0.001$) at one year for those who completed follow-up. The IOP reduction correlated with the extent of the angle treated ($p<0.05$). The cumulative success rates were 81% and 90% at six months and one year, respectively. Successful outcome correlated with early age of presentation ($p=0.01$), degrees of angle treated ($p<0.001$), and diagnosis of PCG and acquired glaucoma ($p=0.01$). Hyphaema was the most common complication (56%) but usually resolved spontaneously.
Conclusion: GATT is a safe and effective first-line surgical option for childhood glaucoma, with the best results in PCG and acquired glaucoma.

16 Trabeculotomy outcomes in paediatric patients with steroid-induced ocular hypertension and glaucoma - a case series

Research

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Purpose: This study aims to assess the 24-month outcomes of trabeculotomy in paediatric patients with steroid-induced ocular hypertension or glaucoma.
Methods: A retrospective review was conducted of medical records from eight paediatric patients (13 eyes) who underwent trabeculotomy for steroid-induced ocular hypertension or glaucoma at Copenhagen University Hospital, Rigshospitalet between February 2018 and January 2022. The mean age of the patients was 9.9 years (range: 7-17 years). All patients required surgery due to inadequate intraocular pressure (IOP) control despite maximal medical therapy. Surgical outcomes were evaluated over a 24-month follow-up period, with complete success defined as an IOP of ≤21 mmHg, without medication.
Results: The mean preoperative IOP was 29.7 mmHg, which significantly decreased to under 16 mmHg at all postoperative follow-ups with a mean IOP of 15.1 mmHg at the last follow-up. All patients were entirely off pressure-lowering medications postoperatively, and complete success was achieved in all eyes through 24 months without complications. Visual acuity showed slight improvement, though this was not statistically significant. Despite continued corticosteroid use for underlying conditions, no recurrence of IOP elevation was observed.
Conclusion: Trabeculotomy is a safe and effective procedure for managing steroid-induced ocular hypertension and glaucoma in paediatric patients. The procedure achieved high success rates in long-term IOP control, reduced the need for pharmacological therapy, and was free of complications. Trabeculotomy should be considered as a surgical option when medical management fails, particularly in paediatric steroid responders.

17 Bimanual circumferential canaloplasty and goniotomy (BCCG) technique with illuminated microcatheter: Reporting clinical outcomes in a paediatric population

Research

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Purpose/Relevance: To evaluate whether the BCCG technique using an illuminated microcatheter effectively reduces intraocular pressure (IOP) and decreases the need for anti-glaucomatous medications in paediatric patients with glaucoma.

Methods: We present a single-centre, retrospective chart review. A total of 12 eyes from 8 paediatric patients operated on with the bimanual circumferential canaloplasty and goniotomy (BCCG) technique using an illuminated microcatheter were included to collect data on intraocular pressure (IOP), the number of glaucoma medications used preoperatively and after surgery, interventions following the surgery, and any complications that occurred during the procedure. Surgical success was defined as a reduction in intraocular pressure (IOP) of at least 20% from baseline at three-months (or, if unavailable, at the last visit one month after surgery) without requiring any additional glaucoma interventions.

Results: Out of the 12 eyes operated on, 10 demonstrated surgical success (83.33%). No major complications were reported.

Discussion: The bimanual circumferential canaloplasty and goniotomy technique is a relatively straightforward surgery to perform. This technique combines bimanual circumferential canaloplasty and goniotomy, which may lead to improved intraocular pressure reduction compared to either procedure performed alone. Overall, the results indicate that this technique is both effective and safe for significantly lowering intraocular pressure.

Conclusion: The BCCG technique using an illuminated microcatheter shows significant effectiveness in reducing intraocular pressure, all while demonstrating a strong safety profile.

18 Intraoperative real-time OCT-guided Ab externo trabeculotomy

Video

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Introduction: Ab externo trabeculotomy (AET) may be the most unfamiliar procedure for new paediatric glaucoma surgeons. Visual cues such as the grey-white junction help to identify Schlemm's canal (SC). However, proper instruction can still lead to inadequate cannulation. Intraoperative real-time optical coherence tomography (iOCT) has the potential to drop the learning curve for this key surgery.

Methods: iOCT was performed routinely on paediatric glaucoma patients undergoing AET. A Zeiss OPMI Lumera 700 with integrated iOCT recorded real-time imaging using a scan depth of 2.9 mm within a 6 mm^2 box area at the centre of the surgical field during incision over SC roof, catheterisation of SC with an iTrack 250a, and completion of the trabeculotomy. Two cases from patients with congenital glaucoma were selected to highlight the strengths and limitations of iOCT usage.

Results: Two patients with cloudy corneas and uncontrolled glaucoma underwent successful AET. The Zeiss Lumera iOCT has an acquisition speed of 27kHz, axial resolution of 5.5 µm, and 840 nm wavelength, which limits image quality through opaque sclera. This was overcome by dissecting a very deep scleral flap. iOCT was able to identify SC during cannulation and confirmed trabecular cleft presence, but was unable to identify SC prior to cannulation.

Discussion: iOCT could become a complementary tool for AET, but does not have the resolution or wavelength of current anterior segment OCTs. Other imaging challenges include scleral flap depth or absence of SC. Future iOCT improvements may increase surgeon uptake and AET proficiency.

19 WITHDRAWN.

20 A simple step made the journey great

Video

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Introduction: The challenge of performing external trabeculotomy in an eye with congenital glaucoma lies in correct identification of the Schlemm's canal. There are a number of tips for identifying the Schlemm's canal such as knowledge about the surgical limbus, entry of perforator vessels at the limbal area and the dip seen between the blue and white zones marking the scleral sulcus. However, in the case of stretched limbus there is anatomical distortion which can make identification of the surgical limbus difficult. A simple and effective technique which helps to localise the Schlemm's canal is injection of an air bubble into the anterior chamber. The extent of anterior chamber angle is correctly outlined with the presence of air bubble seen. This video demonstrates the same in an eye with a stretched and thinned limbus in which the identification of the Schlemm's canal using the usual tips proved to be difficult.

21 Initial results of the Paul Ahmed Comparison (PAC) study in refractory childhood glaucoma

Clinical

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Purpose: To compare the effectiveness and safety of the PAUL glaucoma implant (PGI) to the Ahmed glaucoma valve (AGV) in managing refractory childhood glaucoma.
Methods: An ongoing randomised controlled trial including patients <18 years with refractory childhood glaucoma in whom glaucoma drainage implant surgery was planned. Patients were randomised to receive either PGI or AGV. The primary outcome was success rate, defined as IOP <21 mmHg without the need for additional glaucoma procedures or development of vision-threatening complications. Secondary outcomes were the reduction in IOP, glaucoma medications, and complication rate.
Results: The current report included 44 patients (44 eyes) who completed the one-year postoperative follow-up (25 in the PGI group versus 19 in the AGV group). The mean age at the time of surgery was eight years. At one year, the success rate of PGI was 80% vs. 73.6% in the AGV (p=0.2). There were no statistically significant differences in the mean IOP and number of glaucoma medications at 3, 6, and 12 months postoperatively.
Conclusion/Relevance: At one year postoperatively, the success rates, IOP reduction, reduction of glaucoma medication, and rate of complications were comparable between both groups.

22 The Paul glaucoma implant in a paediatric cohort

Research

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Purpose: To report the medium-term outcome (up to 5 years) of the Paul glaucoma implant in a paediatric cohort.
Methods: A retrospective evaluation of 93 eyes of 70 children (age 5 months to 18 years) performed at Manchester Royal Eye Hospital.
Results: 23% of eyes had primary congenital glaucoma, 26% had uveitis, 20% were aphakic. The average follow-up was 33 months with a range of 12-58 months. Preoperative intraocular pressure (IOP) was 26.8 (range 17-42) mmHg on 3.8 medications. Postoperative IOP was 13.6 (range 5-22) mmHg on 1.0 medication. 91.4% of eyes achieved at least 20% reduction in IOP. 55% of eyes were medication free at last follow-up 5 eyes had further IOP lowering procedures (2 second glaucoma drainage tubes and 3 cyclodiode). 2 eyes had restenting of the tube following removal of intraluminal prolene for hypotony and 2 eyes suffered a retinal detachment during the follow-up period.
Conclusions: Our case series demonstrates the Paul glaucoma implant effectively reduces IOP and the need for glaucoma medical therapy in the medium term.

23 Long-term outcomes of glaucoma drainage devices following failed initial combined trabeculotomy and trabeculectomy in refractory primary congenital glaucoma

Research

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Purpose: To report long-term outcomes of glaucoma drainage device (GDD) following initial failed combined trabeculotomy and trabeculectomy (CTT) in refractory primary congenital glaucoma (PCG).

Methods: We retrospectively studied 60 eyes of 41 PCG children who underwent GDD after failed CTT with follow-up of >5 years (2009-2019). 38 eyes of 28 children underwent Ahmed glaucoma valve (AGV) and 22 eyes of 17 children underwent Aurolab aqueous drainage device (AADI). Success was defined as IOP>5 and ≤21 mmHg with (Qualified) or without AGMs (Complete). Failure when IOP was >21 mmHg, need for repeat surgery or loss of vision. The primary outcome measure was the success of GDD and the secondary outcome was a comparison of AGV and AADI.

Results: The median age at GDD was 1.96 years with a median follow-up of 7.74 years. At 5 years, the qualified success was similar in AADI and AGV (p=0.5) and the complete success was significantly better in AADI (60% vs. 26%, p<0.001). Among the risk factors studied, age at CTT (p=0.03), higher IOP at presentation (p=0.02), and duration between CTT and GDD (p<0.001) were significantly associated with failure. Complications were similar with one AGV needing explantation and 1 AADI having tube erosion and endophthalmitis.

Conclusion: GDD had moderate long-term success and similar complications in refractory PCG eyes and was similar to AGV and AADI. However, AADI had better complete success. Delay in primary surgery, higher IOP before GDD, and delay in GDD were associated with higher risk for failure.

24 Long-term outcomes of tube shunt surgery in aniridia-related glaucoma

Research

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Purpose: To evaluate the long-term safety and efficacy outcomes of tube shunt surgery with/without intraoperative mitomycin-C (MMC) in aniridia-related secondary glaucoma and risk factors associated with success.

Design: Retrospective study.

Subjects: Patients with congenital aniridia who underwent a tube shunt surgery with/without intraoperative MMC for glaucoma at Moorfields Eye Hospital, London between 2012 and 2021 with at least 3 years follow-up.

Methods: The primary outcome was success at 3 years defined by intraocular pressure (IOP) reduction ≥20% from baseline and final IOP between 6 to 21 mmHg with (qualified) or without (complete) medications, without secondary glaucoma surgery and loss of light perception vision. Secondary outcomes were change in IOP, medications and visual acuity (VA) from baseline.

Results: 28 eyes of 23 patients were included, with baseline IOP, medications and visual acuity of 23.4 (SD 8.3), 3.0 (SD 0.9) and 1.6 (0.7) logMAR respectively. At 3 years the proportion of complete and qualified success was 39.2% and 85.7% respectively, with a significant reduction in IOP (-9.7, CI -12.7 to -6.6 mmHg, p<0.001) and medication use (-1.5, CI -2.1 to -1.1, p < 0.001), and no significant change in VA. There was no incidence of numerical or clinical hypotony or endophthalmitis. There was no significant association between baseline IOP, number of medications and VA, lens status, MMC use, ROS and surgical success.

Conclusions: Tube shunt surgery is effective at reducing IOP and medication use at years, with no significant association between intraoperative MMC use, baseline IOP/ medications and lens status and surgical success.

25 Factors associated with early tube revision surgery in paediatric glaucoma patients

Research

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Purpose: This study aims to identify factors associated with the need for tube revision surgery within 6 months of glaucoma drainage device (GDD) placement in paediatric patients.

Methods: A retrospective review of medical records was conducted for 58 paediatric patients under 18 years of age who underwent GDD revision at the University of Miami's Bascom Palmer Eye Institute from 2010 to 2023. Collected data included demographic information (age at initial surgery and sex), preoperative variables (diagnosis, axial length, visual acuity, intraocular pressure [IOP], and number of glaucoma medications), and clinical factors (GDD location, reason for revision, and additional glaucoma procedures). The time from GDD placement to revision was recorded. Patients were followed from initial GDD placement to their last follow-up visit. Univariable analyses were performed to compare those who required tube revision within 6 months versus after 6 months. Statistical significance was set at p-value <0.05.

Results: A total of 58 eyes were included in the analysis, with an average follow-up of 70.3±47.4 months. The mean age at initial GDD placement was 6.2±5.9 years. On average, patients required tube revision 28±36 months after GDD placement, with 40% (n=23) needing revision within 6 months. A significant association was found between sex and early revision, with 57% of females requiring revision within 6 months compared to 44% of males (p=0.03).

Conclusion: Female paediatric patients were significantly more likely to require early tube revision surgery. Early intervention may reduce future revision surgeries and improve long-term outcomes.

26 *CYP1B1* variants in Indian primary congenital glaucoma: Genetic profiling and clinical outcomes

Research

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Purpose: To profile and analyse *CYP1B1* variants in an Indian cohort of primary congenital glaucoma (PCG) and to evaluate clinical outcomes.

Methods: Twenty-eight clinically diagnosed PCG cases from a tertiary eye care centre were subjected to whole exome sequencing. Identified *CYP1B1* variants were categorised into A2 (exon 2) and A3 (exon 3) clusters and analysed using in silico tools. Clinical outcomes were classified as complete success, qualified success, and failure and they were evaluated in relation to genetic and clinical parameters using Cox proportional hazards model.

Results: Seventeen distinct *CYP1B1* variants were identified across 28 cases, including 12 missense, 1 nonsense, 2 stop-gain, and 2 frameshift variants. Five were novel. The recurrent variants were p.Arg368His, p.Cys280Ter, and p.Arg390His. A2 cluster variants were observed in 12 cases, and A3 in 16. Protein structural analysis showed hydrophobicity changes, altered hydrogen bonding, and ligand binding variations. Multivariate analysis revealed that genetic clusters, variant conservation, and clinical factors such as gender, age, medication use, and corneal clarity were significantly associated with outcomes. A2 variants were associated with better outcomes, while severe phenotypes were linked to variants like p.Arg390His. Male gender, older age at presentation, and preoperative medications were linked to poor outcomes.

Conclusion: *CYP1B1* variants significantly contribute to PCG pathogenesis in Indian patients. A2 variants were protective, while more conserved variants like p.Arg390His were linked to severe outcomes. Tailoring treatment strategies based on genetic and clinical risk factors can improve PCG management.

27 Genetic screening and counselling for families with primary congenital glaucoma (PCG): Three years of experience at King Khaled Eye Specialist Hospital (KKESH) in Saudi Arabia

Research

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Purpose: The incidence of PCG in Saudi Arabia is among the highest globally.

This study describes our initial experience with a pilot genetic screening and counselling for primary congenital glaucoma (PCG) as a public health intervention initiative in Saudi Arabia, targeting index patients and relatives. Notably, 75% of patients with PCG in Saudi Arabia were previously found to have mutations in the *CYP1B1* gene.

Design: In this pilot cross-sectional study conducted at King Khalid Eye Specialist Hospital (KKESH), index patients and their families were screened for the common pathogenic variants in *CYP1B1* using Sanger sequencing. The patients and carriers were then offered counselling for PCG. During counselling sessions, we evaluated the first 100 patients' comprehension of genetic concepts, attitudes to counselling and prenatal genetic screening.

Results: A total of 388 index cases with PCG were tested for the *CYP1B1* variants. Out of the total, 306 (78.9%) patients had *CYP1B1* variants, including 284 who were homozygous and 22 who were compound heterozygous. Additionally, 13 cases were heterozygous and 82 (21.1%) had no *CYP1B1* variants. Among the 288 relatives tested, 190 (66%) were identified as carriers. While most participants understood the implications of autosomal recessive diseases such as PCG, one-third 33 (33%) struggled with the concept of the recurrent risk, which triggered the creation of an informative and educational brochure. The majority (98%) were in favour of the premarital genetic testing, and all participants endorsed genetic counselling for families with a history of affected family member(s). However, only 61% of the parents agreed to prenatal genetic screening, while the remainder were hesitant citing concerns of potential grief and religious consideration, if they had to terminate a pregnancy. Patients who were negative for the common *CYP1B1* gene variants will be tested for other variants in known or candidate PCG-associated genes.

Conclusion: This pilot study confirms the high prevalence of *CYP1B1* variants in PCG patients in the Kingdom, describes the high carrier rate in relatives and the high rate of acceptance of genetic counselling. These findings suggests that the "genetic testing and counselling approach" for prevention of PCG is feasible, acceptable, and clinically useful for patients and their families, and may lead to preventive measures to reduce disease burden in future generations.

28 Unravelling genotype-phenotype correlations in primary congenital glaucoma: Whole exome sequencing insights from North India

Research

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Objective: To investigate the underlying genetic variants in primary congenital glaucoma (PCG) in a North Indian cohort, focusing on the relationship between specific genetic variants and the disease onset and severity.

Methods: We studied infants with PCG presenting between January 2021 and June 2024, who underwent whole exome sequencing (WES) and had a six-month follow-up. PCG was diagnosed after examination under anaesthesia. Pathogenic variants (PVs) were classified using ACMG guidelines, validated by Sanger sequencing, and analysed for genotype -phenotype correlations.

Results: A total of 44 children were included: 72.2% had neonate-onset PCG (NO-PCG), 18.2% had infantile-onset PCG (IO-PCG), and 9.1% had late-onset PCG (LO-PCG). Among the NO-PCG group, 37.5% had PVs, and 37% had variants of uncertain significance (VUS). The most common PV was *CYP1B1* (41.66%). Notably, one infant had a novel combination of *CYP1B1-LTBP2* mutations. VUS in *LTBP2* (25%) and *TEK* (16.6%) were other variants. Neonates with biallelic p.Arg390. His *CYP1B1* mutations exhibited the most severe disease and poorest outcomes, while those with *LTBP2* and *TEK* mutations had milder phenotypes and better prognoses. In the IO-PCG group, 37.5% carried *CYP1B1* mutations, while 12.5% had other variants, and 50% had no identifiable variants. In the LO-PCG group, 75% had no variants, while 25% harboured *ABCC6-TIMM8A* mutations.

Conclusion: Understanding genotype-phenotype correlations may help in optimising genetic testing strategies. NO-PCG, with high genotype-phenotype concordance, may benefit from targeted gene panels, while late-onset PCG, with lower variant concordance, may require whole genome sequencing to identify novel genetic causes.

29 Decoding the genotype-phenotype relationship in aniridia-associated glaucoma

Research

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Introduction: Aniridia is a pan-ocular condition that often presents with associated features such as glaucoma, nystagmus, cataracts and keratopathy. The severity and clinical outcomes of aniridia-associated glaucoma (AAG) exhibit considerable variability. This study aimed to explore the relationship between genetic variants and disease severity in a cohort of children with AAG from North India.

Methodology: This prospective cohort study included children diagnosed with aniridia between January 2020 and June 2024. The diagnosis was confirmed by the absence of the iris following examination under anaesthesia. Clinical exome sequencing (CES) was performed, and pathogenic variants (PVs) were identified according to ACMG guidelines and validated through Sanger sequencing. Patients were followed for six months, and genotype-phenotype concordance was assessed.

Results: Among the 23 children studied, 14 exhibited nystagmus (Group 1), while nine did not (Group 2). Overall, the majority of PVs (61%) were in *PAX6*, followed by *FOXC1* (13%). In Group 1, 86% of mutations were in *PAX6*, compared to 22% in Group 2. Lenticular abnormalities were present in 64% of Group 1 and 45% of Group 2. Group 2 had three pathogenic variants in *CYP1B1*, *FOXC1*, and *PITX2*. Notably, *PAX6* deletions were associated with more severe phenotypes compared to substitutions. No systemic abnormalities were observed in any patient.

Conclusion: Aniridia is a complex ocular phenotype rather than a single disease entity, with varying ocular and systemic manifestations depending on the underlying genetic variant. Detailed phenotyping and accurate genotyping can enhance our understanding of the condition and pave the way for potential gene-targeted therapies.

30 *CYP1B1* keratopathy in neonatal congenital glaucoma: Genetic insights and clinical implication

Research

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Aim: To investigate the genetic causes in children with neonatal-onset congenital glaucoma and central corneal opacity.

Methods and materials: Sixteen children (32 eyes) with neonatal-onset congenital glaucoma and severe corneal haze underwent surgical treatment and genetic evaluation through whole exome sequencing. Primary surgeries included trabeculotomy, trabeculectomy, and cyclophotocoagulation.

Results: The median age at surgery was 0.28 months. Preoperative intraocular pressure (IOP) was 26.6±8.9 mmHg, with a mean horizontal corneal diameter of 12.1±1.57 mm. Subsequently, glaucoma drainage devices were required in 56% eyes, and five eyes each underwent optical iridectomy and penetrating keratoplasty (PK), though three PK cases resulted in graft infection. At the last follow-up, the mean IOP was 17.0±11.1 mmHg, with four eyes experiencing low IOP due to surgical complications. Central corneal scars were seen in 27 eyes, and ectropion uveae in 30 eyes.

Genetic Analysis: Variants in the *CYP1B1* gene were identified in 12 cases (75%), including 11 missense and one nonsense variant. Variants in *PITX2* were found in two children, and one case each of *FOXC1* and *TEK*. Five novel variants were discovered, including a TEK variant reported for the first time in an Indian patient.

Conclusion: *CYP1B1* is the predominant genetic cause of neonatal-onset congenital glaucoma with central corneal opacity. Variants in *TEK, PITX2*, and *FOXC1* were also identified, though less frequently associated with this phenotype.

31 Turning the tide: Vitreous management can prevent vision loss in young with angle closure glaucoma and inherited retinal dystrophies

Clinical

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Purpose: Angle-closure glaucoma (ACG) occurs in very young patients and is refractory when associated with inherited retinal dystrophies (IRDs). They need glaucoma surgery for IOP control and almost always develop malignant glaucoma (MG) post-surgery.

Case description: Two patients, both under 18 years old, were diagnosed with IRDs and advanced ACG that was unresponsive to laser iridotomy and medical treatment. One of them underwent trabeculectomy in both eyes 1-month apart. He developed malignant glaucoma bilaterally that responded only to pars plana vitrectomy (PPV) and irido-zonulo-hyaloido-vitrectomy (IZHV). In the second case, a primary vitrectomy with IZHV was performed instead of traditional glaucoma surgery for intraocular pressure (IOP) control. There was a deepening of the anterior chamber, the crystalline lens was preserved, IOP was controlled, the vision was stable, and no malignant glaucoma. Multimodal imaging and genetic profiling using a next-generation gene panel were performed.

Results: Genetic testing revealed *BEST 1* gene-associated bestrophinopathy in one patient and CRB-associated retinitis pigmentosa in another patient. The clinical phenotype was confirmed by retinal imaging and electrophysiological tests. ACG was likely secondary to vitreous-related mechanisms that cause progressive angle closure, do not respond to laser PI, and develop MG after glaucoma surgery.

Conclusion: IRDs associated with refractory ACG pose significant management challenges, as conventional glaucoma surgeries can lead to malignant glaucoma, requiring additional interventions like vitrectomy. We propose vitrectomy with IZHV as a primary procedure or adjunctive to lens aspiration in managing ACG in these eyes and avoiding glaucoma surgery.

32 Exuberant steroid response after angle surgery in juvenile open angle glaucoma patients

Clinical

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Introduction: Steroid-induced hypertensive response is a common, yet underdiagnosed complication of steroid therapy. Certain patients, known as high-responders, experience a rapid and aggressive rise in IOP potentially reaching sight-threatening levels. This report presents two high-responder patients with multiple risk factors.

Methods: Medical records of two patients who underwent 360° angle surgery and had IOP spikes postoperatively were reviewed and clinical data was extracted.

Results: Two male patients (8 and 22 years old) with juvenile open angle glaucoma presented to the emergency department with elevated IOP. Despite receiving maximum doses of three antiglaucoma medications, stable IOP levels were not achieved. Both patients subsequently underwent successful gonioscopy-assisted transluminal trabeculotomy in both eyes and started on prednisolone. Patient 1 had an IOP of 61 on postoperative day (POD) 6/4, prednisolone was stopped and he was started on ketorolac, anti-glaucoma drops and oral agents. Patient 2 had an IOP of 48 on POD 9 and IOP was controlled upon discontinuing prednisolone and glaucoma drops. His second eye was treated with fluorometholone after surgery but presented with an IOP of 39 on POD 8, and also switched to ketorolac. All patients had controlled IOPs after steroid cessation.

Conclusion: Steroid response can occur even in procedures that target trabecular meshwork. Identifying risk factors for high steroid response, such as glaucoma diagnosis, glaucoma family history, use of potent steroids, and young age, allows for closer monitoring. Early detection and cessation of steroid therapy prevented sustained IOP elevation, highlighting the importance of vigilance in high-risk patients.

33 Phenotypic variability in monozygotic twins with familial Axenfeld-Rieger syndrome and *FOXC1* mutation

Clinical

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Purpose: To report a case series of familial Axenfeld-Rieger syndrome (ARS) in monozygotic twins with a confirmed *FOXC1* mutation.
Methods: Case series involving a family with ARS.
Results: Monozygotic twin sisters were diagnosed with ARS at birth, requiring multiple glaucoma surgeries. One twin also underwent a corneal transplant, while both had aortic valve disorders necessitating cardiac surgeries. Their older brother, also diagnosed with ARS, required multiple glaucoma surgeries and a corneal transplant but did not exhibit cardiac anomalies. Genetic testing confirmed a heterozygous *FOXC1* mutation. Their father and paternal grandmother also had ARS but with less severe systemic involvement.
The eldest brother presented with congenital glaucoma, managed through surgeries including trabeculectomy, Ahmed shunt placement, and corneal transplantation. The twin sisters required similar interventions, with both also facing cardiovascular complications. Despite sharing the same genetic mutation, the siblings displayed significant phenotypic variability, particularly in systemic involvement and disease severity.
Conclusion: This case series underscores the phenotypic variability of ARS, even in monozygotic twins, highlighting the importance of a multidisciplinary approach in managing this complex disorder. Genetic testing is essential for early diagnosis and tailored treatment in families with a history of ARS. The variability in systemic manifestations emphasises the unpredictable nature of the condition, making individualised management crucial for optimising patient outcomes.

34 Sirolimus and Sturge-Weber syndrome: Early glaucoma outcomes in two patients

Clinical

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Introduction: Port-wine mark (PWM) biopsies from patients with Sturge-Weber syndrome (SWS) over-express phosphorylated S6, a downstream target of AKT signalling GNAQ somatic mutations in SWS may hyperactivate the phosphoinositide 3-kinase/AKT/mammalian target of rapamycin (mTOR) pathways making them ripe targets for an mTOR inhibitor like sirolimus. Clinically, sirolimus has shown early promise in controlling seizures while improving processing speed and cognitive function in patients with SWS. Literature has not reported the effect of sirolimus on glaucoma in SWS.
Methods: Retrospective consecutive case series describing the clinical course and early glaucoma outcomes in 4 eyes of 2 patients with glaucoma in SWS who were treated with sirolimus.
Results: 2 newborns presented for glaucoma evaluation with clinical diagnoses of SWS including leptomeningeal angiomatosis and bilateral, extensive, lid-involving V1 and V2 PWM. Both were diagnosed with bilateral glaucoma. Patient A was started on sirolimus at 2 months-old and underwent bilateral 360-degree trabeculotomy ab interno at 3 months old. Initially, glaucoma appeared controlled, but then required additional medication. Stage 1 Baerveldt shunts were placed but have not required conversion to stage 2. Patient B was started on sirolimus at 7 months old. Despite early signs of glaucoma, patient B showed no signs of glaucomatous progression at 18 months old without any glaucoma treatment.
Conclusions: Sirolimus is an emerging treatment for CNS sequelae of SWS. It may also impact glaucoma in SWS. The members of the UKPGS are invited to share their experiences and collaborate on future research to pool data for publication.

35 From oversights to insights: Neonatal-onset glaucoma in neurofibromatosis

Clinical

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Purpose: Newborn glaucoma is a rare presentation of neurofibromatosis (NF) that can be easily overlooked in infants due to the late onset of NF features.
Methods: We describe five infants with intractable unilateral newborn glaucoma. Genetic testing confirmed NF in two cases, prompting a thorough evaluation that led to NF diagnoses in three additional children.
Results:

1. A one-month-old boy with unilateral glaucoma underwent multiple surgeries for intraocular pressure (IOP) control. Whole exome sequencing (WES) at age five years identified a pathogenic NF1 variant (c.1393-1G>A). Systemic evaluation revealed previously missed café-au-lait spots and MRI indicated non-progressive cranial neurofibromas.
2. A six-month-old girl presented with unilateral buphthalmos since birth and had café-au-lait spots and sphenoidal dysplasia on MRI. WES identified a pathogenic NF1 variant (c.4600C>T).
3. A three-week-old girl with unilateral buphthalmos underwent several surgeries for IOP control. At seven years, café-au-lait spots and axillary freckling were noted, raising the suspicion for NF.
4. A two-month-old girl with unilateral buphthalmos had a trabeculotomy-trabeculectomy but was lost to follow-up. Three years later, she presented with an S-shaped upper lid and a large plexiform neurofibromas; MRI was recommended, but she was lost to follow-up again.
5. A six-week-old boy with unilateral glaucoma underwent multiple procedures for IOP control over two years and displayed an S-shaped upper lid suggestive of NF. He was lost to follow-up before genetic testing could be organised.

Conclusions: NF should be considered in neonates with intractable unilateral glaucoma, as NF features may develop later and can be easily missed without careful evaluation.

36 From oversights to insights: Neonatal-onset glaucoma in neurofibromatosis

Clinical

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Purpose: This case series evaluates the outcomes of tube removal, without concomitant or subsequent muscle surgery, for tube-related strabismus patients, who are primarily seeking surgery for improved cosmesis but who secondarily wish to maintain intraocular pressure (IOP) control.
Methods: Prior to tube removal, all patients were initially evaluated for muscle surgery alone by their paediatric ophthalmologist. After discussion with the paediatric ophthalmologist, glaucoma specialist, and patient, the surgical plan was changed to a two-staged approach: 1) removal of the tube(s), with or without cyclophotocoagulation, followed by 2) strabismus surgery for any residual strabismus.
Results: Three female patients with unilateral aphakic glaucoma presented at 15 to 21 years of age with complaints of cosmetically unacceptable strabismus after having had 1 to 3 tubes in the affected eye. All patients had congenital cataract surgery at 3 to 4 weeks of age, with subsequent aphakic glaucoma. Associated diagnoses included persistent foetal vasculature and ocular coloboma. Preoperatively, strabismus ranged from 20 to 45 degrees, vision from light perception to 20/70, IOPs from 6 to 21 mmHg, and cup-to-disc ratios from 0.5 to 0.9. Postoperatively, tube removal achieved acceptable cosmetic alignment ranging from 5 to 15 degrees, with all patients retaining their preoperative vision, IOP control (i.e. 11 to 15 mmHg), and cup-to-disc ratios.
Conclusions: Removal of poorly functioning tubes should be considered prior to and possibly in lieu of strabismus surgery for tube-related strabismus, as it can achieve good cosmetic results in select patients, while maintaining IOP control and avoiding muscle surgery.

37 From eyes to kidneys: Exploring the *PAX2* connection in congenital primary aphakia and papillorenal syndrome

Clinical

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Purpose: To report a rare case of congenital primary aphakia (CPA) with *PAX2* mutation in a child with papillorenal syndrome (PRS), highlighting unique ocular and renal manifestations in this atypical presentation.

Case description: A 6-year-old girl presented with congenital ocular anomalies, including CPA, secondary corneal opacification, and microphthalmos, diagnosed at birth. CPA is commonly associated with *FOXE3* mutations; however, genetic testing was negative for this mutation. She developed secondary glaucoma and was managed with anti -glaucoma medications. The patient later exhibited systemic problems, including pedal oedema and facial puffiness, leading to further evaluation. Laboratory tests revealed nephrotic syndrome, prompting renal imaging and a kidney biopsy.

Results: Renal ultrasound showed no morphological abnormalities, but the biopsy revealed focal segmental glomerulosclerosis (FSGS). Genetic testing confirmed a heterozygous *PAX2* mutation, a finding typically associated with PRS and not with CPA. The nephrotic syndrome responded to corticosteroids but relapsed twice, requiring ongoing management. Her ocular condition is closely monitored and glaucoma is treated medically. Association of CPA with *PAX2* is very rare and combination of CPA and FSGS without renal dysplasia is not described earlier. This case expands the phenotypic variability associated with *PAX2* mutations.

Conclusion: This case highlights the rare presentation of CPA in association with PRS due to a *PAX2* mutation. Comprehensive genetic testing and systemic evaluation are crucial in managing patients with complex ocular and renal anomalies, that may impact diagnosis and treatment.

38 Screening childhood glaucoma with an automated, offline, artificial intelligence algorithm deployed on a smartphone-based fundus camera – pilot study

Research

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Purpose: To assess the effectiveness of an AI-driven glaucoma screening tool in detecting childhood glaucoma, particularly in cases with visible optic disc changes, using a smartphone-based fundus camera.

Methods: In this pilot study, disc-centred fundus images were captured using a portable, non-mydriatic camera among children aged 5 to 18 years attending the glaucoma clinic at a tertiary eye hospital. The AI tool's diagnostic accuracy in identifying referable glaucoma (including glaucoma and disc suspects) and normals was evaluated and compared against a specialist's diagnosis based on the comprehensive examination.

Results: We included 33 eyes from 17 children (mean age 12±3.4 years). 12 eyes of 6 children were normal and 21 eyes of 11 children had glaucoma. The AI system accurately identified all 12 eyes without glaucoma. Among the 21 eyes with glaucoma, it detected 8 eyes as referable glaucoma (5 primary congenital glaucoma, 3 secondary) and identified 2 eyes as suspects. However, the AI missed 11 of the eyes among the glaucomas. Note that all these 11 eyes had optic discs that were normal but had other features of congenital glaucoma like habbs striae and megalocornea.

Conclusion: In this pilot study, the AI-integrated portable fundus camera seems promising in screening children with glaucomatous optic disc changes. Integrating the fundus photo-based AI with anterior segment corneal findings in primary childhood glaucoma can provide better diagnostic yield. This would help early diagnosis and appropriate referral of secondary childhood glaucoma as well.

39 Exam under anaesthesia for paediatric glaucoma: A simulation-based training

Research

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Purpose: Paediatric patients may require exam under anaesthesia (EUA) to evaluate for glaucoma. EUA must be done efficiently in the operating room to minimise potential complications from anaesthesia. Currently, there is an under-exposure of EUA in ophthalmic training.
The purpose of this study is to determine if a simulation-based training for EUA is feasible and beneficial to trainees to increase exposure and knowledge of EUA.
Methods: Specialised mannequins with 3-D printed eyes were used to simulate infants and the environment of an EUA in the operating room. Participants filled out a pre-course survey and a post-course survey. Participants also recorded their findings of the mannequins as they completed the simulation.
Results: Out of the 18 participants, 100% agreed that the session was a beneficial training tool for paediatric EUA. In addition, 89% agreed that the training session increased their basic knowledge and skills. Lastly, 83% of participants agreed that the session increased their efficiency, expertise and exposure.
Discussion: Across the cohort, which consisted of ophthalmology residents, there was no identifiable trend in baseline exposure and knowledge of EUA, thus highlighting the need for a standardised model to teach this technique at a broader scale. Despite the varied knowledge and exposure, participants self-reported that this model was beneficial and increased their basic knowledge and paediatric EUA skills. This suggests a great benefit to adapting this teaching model.

40 Comparison of visual acuity and strabismus pre- and post-Baerveldt 350 glaucoma drainage device placement in refractory childhood glaucomas

Research

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Purpose: Assess strabismus and visual acuity (VA) changes in children after Baerveldt 350 (BV350) device placement.
Methods: Retrospective review of children (<21 years of age) who had superotemporal BV350 placement (2012-2023) with pre- and post-operative strabismus measurements and >6 months follow-up. Ocular and systemic diagnoses, surgical details, and preoperative and final follow-up exam findings were collected. In bilateral cases, first eye implanted was included in analysis.
Results: One-hundred thirty-three eyes of 97 patients (57 female) underwent BV350 surgery at 7.7±5.6 years old with 4.5±3.0 years of follow-up. Most common glaucomas were secondary to non-acquired ocular anomaly (n=31) and primary congenital glaucoma (n=21). There was no difference in pre-operative and final VA in the operative eye (1.50±1.10 vs. 1.33±1.14, p=0.6583). Twenty-seven (28%) and 25 (26%) patients were orthophoric pre-operatively and at final follow-up, respectively. Orthophoria was associated with better preoperative (OR2.2[1.3, 3.6], OR1.8[1.2, 2.9]) and final VA (OR3.1[1.8, 6.2], OR1.5[1.1, 2.3]). The amount of pre-operative and final horizontal prism diopter (PD) deviation was linearly associated with VA of the operative eye (r2=0.2098, r2=0.1558). Improvement (n=19) or worsening (n=13) of horizontal deviation (>10PD) was not associated with VA. There was also no association between number of glaucoma surgeries with type of strabismus or final VA.
Conclusions: A high percentage of children had strabismus prior to (72%) and following (74%) BV350 placement. Orthophoria was associated with better VA. The majority of patients did not show worsening of strabismus post-operatively.

41 Effect of trabeculodescemetic window perforation in deep sclerectomy on intraocular pressure in primary congenital glaucoma

Research

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Introduction: Primary congenital glaucoma causes vision loss if intraocular pressure is uncontrolled. Nonpenetrating deep sclerectomy is effective in treating primary congenital glaucoma. However, the effects of inadvertent trabeculodescemetic window perforation remain unclear.
Methods: This retrospective cohort study included patients with primary congenital glaucoma who underwent nonpenetrating deep sclerectomy between 2014 and 2021. The perforation group had intraoperative trabeculodescemetic window perforations; the non-perforation group did not. The primary outcome was intraocular pressure between the groups over 15 months. The secondary outcomes included surgical success and complications.
Results: The study included 74 eyes of 44 patients. The cohort comprised 31 perforated and 43 non-perforated eyes. Both groups showed significant intraocular pressure reduction without significant between-group differences in complete (68 vs. 77%), qualified (19 vs. 9%), or failed (13 vs. 14%) treatments. The median intraocular pressure decreased from 39 to 14 mmHg in the perforation group and 35 to 12 mmHg in the non-perforation group. Of the 74 treated eyes, 68 (92%) showed no complications.
Conclusions: An inadvertent trabeculodescemetic window perforation during nonpenetrating deep sclerectomy for primary congenital glaucoma did not significantly affect intraocular pressure outcomes compared to non-perforated cases over 15 months. Nonpenetrating deep sclerectomy reduced intraocular pressure regardless of intraoperative perforation in patients with primary congenital glaucoma. Perforation of the trabeculodescemetic window was associated with a low incidence of postoperative complications.

42 Differences in intraocular pressure measurements by tonometer type in children with glaucoma and suspected glaucoma

Research

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Purpose: Various tonometers are used to measure intraocular pressure (IOP) in children with glaucoma, and discrepancies between tonometers can impact clinical decision-making. This study compared IOP measurements using three different tonometers and evaluated factors affecting these differences.
Methods: Retrospective chart review of children ≤18 years with glaucoma or suspected glaucoma and IOP measured by Goldmann applanation and least one other tonometer during the same clinic visit (pneumotonometer or rebound tonometer) between May 2019 and August 2024. Bland-Altman analysis assessed mean difference and limits of agreement (LOA) between tonometers. A linear mixed-effects model evaluated the effect of patient characteristics on differences in IOP measurements.
Results: 126 eyes from 71 patients were included. The mean difference for IOP measured by pneumotonometer (n=63 eyes) was 1.58 mmHg higher (LOA: 7.68, -4.52) than applanation. The mean difference for IOP measured by rebound tonometry (n=63 eyes) was 2.26 mmHg higher (LOA: 9.39, -4.87) than applanation. For rebound tonometry, the difference in IOP was affected by the time between measurements ($p<0.01$), central corneal thickness ($p<0.005$), suspected glaucoma ($p<0.001$), patients not on glaucoma medication ($p<0.05$), and patients with no history of glaucoma surgery ($p<0.05$). For pneumotonometer, a significant effect was noted only for patients not on glaucoma medications ($p<0.05$).
Conclusions: In our cohort, both pneumotonometry and rebound tonometry measured higher than Goldmann applanation. Clinic and patient factors, such as time between measurements, CCT, medications, and surgical history, may influence this variability. Clinical interpretation of IOP measurements in children with glaucoma should consider IOP measurement modality.

43 A unique intersection: Congenital onset glaucoma in neurofibromatosis type-1

Research

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Purpose: To report the ocular and systemic features of patients with Neurofibromatosis type 1 (NF-1) and congenital glaucoma.
Methods: A retrospective review was conducted of 21 patients (22 eyes) diagnosed with NF-1 and congenital glaucoma between January 1995 and September 2024. Patient demographics, ocular and systemic features, and surgical outcomes were analysed. Statistical comparisons were performed on intraocular pressure (IOP) and the number of anti-glaucoma medications (AGM) pre- and post-operatively.
Results: The median age at presentation was 0.1 years (IQR 0.08–0.25) with a median follow-up of 1.05 (0.17, 9.5) years. Glaucoma was predominantly unilateral in 20 eyes (95%), with patients presenting as buphthalmos in 20 eyes (91%). The median horizontal corneal diameter was 13 (12.75, 14.25) mm. Plexiform neurofibromas of the eyelid was observed in 18 patients (82%). Café-au-lait spots were present in all (100%) and cranial bony abnormalities in 11 patients (50%). Glaucoma surgery was required in 20 eyes, commonest being combined trabeculotomy with trabeculectomy (CTT) in 19 eyes (95%), with significant reduction in IOP from a median of 28 (22–30.5) to 14 (12–18.75) mmHg at the last follow-up (p=0.0003). The median number of AGM decreased from 2 (0.5–2) to 0.5 (0–2) (p=0.17).
Conclusion: NF-1 can be associated with congenital onset glaucoma, often unilateral with buphthalmos. CTT is effective in reducing IOP, however visual prognosis needs to be evaluated in view of multiple coexisting ocular and neurological pathologies in these children.

44 Prognostic significance of early postoperative choroidal detachment in patients with congenital glaucoma operated on with non-penetrating deep sclerectomy

Research

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Objective: To assess the association between early postoperative choroidal detachment and intraocular pressure (IOP) following nonpenetrating deep sclerectomy in paediatric primary congenital glaucoma.
Design: Retrospective double-arm cohort study.
Setting: Single centre in Saudi Arabia.
Patients: Seventy-two eyes of 45 patients were evaluated. Primary congenital glaucoma patients aged 0–3 years undergoing nonpenetrating deep sclerectomy as the first procedure from 2014 to 2021 were divided into groups with (n=20) and without (n=52) postoperative choroidal detachment.
Main Outcome Measures: The primary outcome was complete surgical success, defined as an intraocular pressure below 21 mmHg without medication or additional surgery at 24 months. The intraocular pressure was evaluated in the first 72 hours after surgery and at 1, 3, 6, 12, 18, and 24 months. Kaplan–Meier survival analysis over 24 months was used to evaluate this outcome in both cohorts. Te secondary outcome was the time to choroidal detachment resolution.
Results: There was no significant difference in surgical success between choroidal detachment and nonchoroidal detachment groups (p=0.12). Preoperative and 2-year postoperative intraocular pressure was similar between groups, with a significant decrease in intraocular pressure from baseline (p<0.001) in both the groups. The median time to choroidal detachment resolution was 27 days, and 90% of choroidal detachment cases were resolved with medical therapy.
Conclusions: Postoperative choroidal detachment does not appear to significantly impact intraocular pressure or surgical success at 24 months following nonpenetrating deep sclerectomy for primary congenital glaucoma. Choroidal detachment typically resolves within one month of treatment. These findings suggest that transient choroidal detachment has a benign course in patients with primary congenital glaucoma undergoing deep sclerectomies.

45 Ultrasound B-scan in paediatric glaucoma: A non-invasive solution to complex diagnoses

Video

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Purpose: To highlight the role of ultrasound B-scan as an essential diagnostic tool in the management of paediatric glaucoma. Additionally, to discuss specific clinical situations where B-scan has proven invaluable in reducing the need for examinations under anaesthesia.

Methods: The presentation discusses five major clinical scenarios in paediatric glaucoma where B-scan ultrasonography was utilised for diagnosis and follow-up. These cases demonstrate the effectiveness of B-scan in providing crucial information that influenced management decisions. A review of literature has also been conducted to assess how B-scan has aided in the management of paediatric glaucoma cases in prior studies.

Results: Ultrasound B-scan played a pivotal role in paediatric glaucoma management by providing essential diagnostic insights, particularly when other imaging techniques were not feasible due to poor patient cooperation. It significantly reduced the need for repeated examinations under anaesthesia. The five clinical cases presented illustrate the versatility of B-scan in diagnosing conditions such as anterior segment anomalies, posterior segment pathologies, and in assessing the angle structures in paediatric patients with glaucoma. Literature review also underscores the underutilised potential of B-scan in diagnosing various ocular conditions in paediatric glaucoma.

Conclusion: Ultrasound B-scan, though often underestimated, is a valuable, non-invasive, and cost-effective tool with significant potential in diagnosing and managing paediatric glaucoma. Its ability to provide crucial diagnostic information without requiring sedation or anaesthesia makes it indispensable in the routine follow-up of children with glaucoma, ensuring better management outcomes.

46 Surgical resection for capsular ingrowth of valved drainage devices in paediatric uveitic glaucoma patients

Video

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Introduction: The Ahmed glaucoma implant (AGI) is often used for surgical management of refractory paediatric uveitic glaucoma due to its valved mechanism. AGI provides a reduced risk of serious early postoperative adverse events compared with other filtering surgeries though it comes with a 50% likelihood of failure within 5 years. A flat bleb on exam or ultrasound may indicate endplate occlusion from capsular ingrowth. Capsule revision of the fibrovascular plug is a targeted treatment that can spare subconjunctival space and the need for additional hardware.

Methods: Two patients, ages 7 and 12 years, with juvenile idiopathic arthritis underwent capsule revision for late bleb failure after previous AGI surgery (34 and 26 months prior). Intraocular pressures (IOP) were 30 and 28 mmHg in the two eyes, respectively. A fornix-based peritomy was created and careful dissection was performed with Westcott scissors to access the superotemporal AGI capsule. Both flow resistors had been completely occluded by fibrovascular ingrowth in the ostium. The plug was excised and the capsule and conjunctiva were reapproximated.

Results: Both patients had an IOP of 4 and 2 mmHg postoperatively at 1-day, respectively. One patient had choroidal effusions and a shallow anterior chamber and was started on atropine. By POW4, IOP was 8 mmHg and the effusions had resolved. The other patient maintained an IOP of 3 mmHg without complications at POW6.

Discussion: Capsule revision is a targeted treatment for fibrovascular ingrowth of the AGI ostium. Paediatric uveitic patients may be at higher risk due to younger age and higher likelihood of receiving AGIs. Low early post-operative IOP is one concern after glaucoma surgery in paediatric uveitic patients.

47 A novel surgical technique: Management of chronic Baerveldt glaucoma implant hypotony using a thermal cauterised ball-tip prolene suture to occlude aqueous flow

Video

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Purpose: Hypotony is a complication in a minority of glaucoma tube shunt surgeries. Chronic hypotony can lead to visual loss. Management strategies typically include surgically occluding the tube either partially or completely. Ab-interno, intra-luminal suture re-stenting achieves partial occlusion and reduces outflow; conversely, ab-intero or ab-externo. suture ligation can be undertaken when complete occlusion is required.

Methods: We present a video presentation of a patient with trichothiodystrophy who presented with delayed hypotony and secondary retinal detachment in 2023 following prior Baerveldt glaucoma implant (BGI) in 2019. Hypotony was resistant to conventional measures. The case was managed ab-internally by introducing a 3-0 polypropylene suture with a cauterised "ball-tip" into the tube lumen to achieve total occlusion of aqueous flow.

Results: Following tube occlusion by the above method intraocular pressure (IOP) rose from 3-6 mmHg preoperatively, to 30 mmHg one month after. Despite this intervention, the patient had an inoperable retinal detachment given its chronicity and systemic risk factors for general anaesthetic.

Conclusion: Ab-interno BGI occlusion using a cauterised "ball-tip" 3-0 polypropylene suture was an effective way of occluding flow and increasing IOP despite the poor postoperative visual outcome.

48 Gonioscopy assisted transluminal trabeculotomy as a surgical option for acute hydrops secondary to primary congenital glaucoma

Video

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Aim: To present an infant with acute hydrops secondary to primary congenital glaucoma (PCG) that was successfully managed through gonioscopy-assisted transluminal trabeculotomy (GATT).

Case report: A 5-month-old girl was brought in by her parents with complaints of a sudden white discoloration in her left eye for one day. Clinical examination revealed photophobia, a densely cloudy left cornea, buphthalmos, and limbal stretching in the left eye, while the right eye appeared normal. Intraocular pressure (IOP) measured with an I-care tonometer was 10.7 mmHg in the right eye and 24.5 mmHg in the left. The axial lengths were 18.40 mm in the right eye and 20.8 mm in the left. We diagnosed left eye PCG with acute hydrops and planned a combined trabeculotomy-trabeculectomy (CTT). Meanwhile, treatment with brinzolamide 1% eye drops was initiated in the left eye. Within two days, the corneal haze was significantly reduced, allowing for the visualisation of the angle structures via manipulative gonioscopy. We successfully performed a 360-degree GATT using a 5-0 polypropylene suture without any complications. At the two-week follow-up, the patient exhibited reduced photophobia, improved corneal clarity, and a decrease in IOP to 14.0 mmHg. The axial length also decreased to 19.4 mm.

Conclusion: GATT can be considered as a valuable surgical option for managing acute hydrops in children with PCG, obviating the need for a more invasive procedure such as a CTT. This case illustrates the benefits of accurate diagnosis, prompt initiation of medical management, and early surgical intervention in these children.

49 Paul glaucoma implant operation in a familial aniridia case with severe limbal stem cell deficiency

Video

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Overview: Aniridia is associated with keratopathy due to limbal stem cell deficiency. Nearly 50% of patients with aniridia also present with glaucoma, usually developing before age 20; this glaucoma can often be relieved with a drainage device. Drs. Alev Ozcelik Kose, Serhat Imamoglu and Ali Olgun present the case of a 13-year-old patient with both familial bilateral congenital aniridia and glaucoma who received a Paul glaucoma implant.

P1 A systematic review and meta-analysis of the Paul tube implant outcomes

Research

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Objective: A systematic review and meta-analysis evaluating the peer-reviewed literature describing the outcomes and efficacy of the Paul glaucoma implant (PGI) in managing intraocular pressure (IOP).
Methods: Comprehensive searches were conducted across major databases to identify relevant studies. The analysis focused on glaucoma patients who underwent PGI. The primary outcomes included reduction in IOP, success rates (complete and qualified), failure rate, and postoperative complications. Reduction in medication use was assessed as a secondary outcome. A random-effects model was applied for the meta-analysis, and pooled estimates were calculated using Comprehensive Meta-Analysis software.
Results: Out of the 255 articles screened, six studies met the eligibility criteria with a total sample of 312 eyes. The reduction in IOP vs baseline was significant at 13.62 mmHg ($p<0.001$). The selected articles described rates of complete success (56.4%) and qualified success of (80.3%). The mean rate of hypotony across eligible studies was 5.12%. There was a reduction in medications compared to baseline of no intervention by 2.80 ($p<0.001$).
Conclusion: This meta-analysis provides evidence supporting the efficacy of PGI in controlling intraocular pressure and achieving good outcomes for glaucoma patients.

P2 Withdrawn

P3 Understanding *CYP1B1* cytopathy: A case study of congenital glaucoma and corneal opacification

Clinical

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Purpose: *CYP1B1* variants are a primary cause of primary congenital glaucoma (PCG) and can also result in congenital corneal opacities, presenting as Peters anomaly or *CYP1B1* cytopathy. This case report presents a patient with biallelic *CYP1B1* variants exhibiting both PCG and a phenotype consistent with *CYP1B1* cytopathy.
Methods: This interventional case report follows a PCG patient with bilateral corneal opacification and biallelic *CYP1B1* variants over 11 months.
Results: A 3-day-old male, the first child of healthy, non-consanguineous parents with no glaucoma history, was referred for suspected PCG. Examination revealed bilateral elevated intraocular pressure (IOP) of 24 mmHg, diffuse corneal stromal opacification, and increased corneal diameters (13 mm OD, 12.5 mm OS). Axial lengths were 23.2 mm (OD) and 21.7 mm (OS). Due to difficult IOP control, the patient underwent three surgeries in the OD and two in the OS. Postoperative IOP stabilised at 16-18 mmHg (OD) and 14-16 mmHg (OS) with two hypotensive drugs. Persistent corneal opacities necessitated bilateral penetrating keratoplasty at 8 months (OS) and 9 months (OD). Three months post-PKP, both grafts remained clear. Histopathology showed central loss of Bowman's layer, stromal fibrosis, Descemet's membrane detachment, and endothelial loss. Genetic testing identified two *CYP1B1* variants: c.1133T>A (probably pathogenic) and c.171G>A (pathogenic).
Conclusion: This case underscores the complex phenotype of PCG with *CYP1B1* variants and highlights the role of PKP in managing corneal opacity to improve visual outcomes and prevent amblyopia.

P4 Congenital anterior staphyloma

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Introduction: Congenital anterior staphyloma (CAS) is a very rare condition characterised by corneal enlargement, opacity and bulging through the eyelids. It is associated with anterior segment dysgenesis, often presenting iridocorneal and keratolenticular adhesions.
Methods: This interventional case report details a patient with bilateral CAS, followed for six months.
Results: A 1-day-old male newborn was referred to our department with bilateral diffuse corneal opacification and protrusion through the eyelids. He was the firstborn of healthy, young, non-consanguineous parents, with irrelevant family history. Ophthalmological examination revealed severe bilateral corneal opacification and ectasia, with multiple iridocorneal adhesions. There were clearer areas with more pronounced ectasia, likely due to keratolenticular adhesions. Corneal diameters measured 11 mm OD and 11.5 mm OS. Intraocular pressure (IOP) ranged from 26 to 32 mmHg bilaterally. Ultrasound biomicroscopy showed an irregular posterior corneal surface with focal thinning in areas of keratolenticular and iridocorneal adhesions. B-scan ultrasound revealed a normal fundus and an axial length of 17 mm (OU). Immediate management aimed to lower IOP to address severe secondary glaucoma and globe enlargement, reducing the risk of spontaneous perforation. The patient underwent bilateral penetrating keratoplasty, iridectomy, lensectomy, and anterior vitrectomy. Six months postoperatively, he is unable to fixate and follow. A systemic evaluation revealed a thyroglossal duct cyst, developmental and growth delays, dysmorphic facial features, and a patent foramen ovale. Genetic counselling was initiated.
Conclusion: This case of CAS highlights the challenges of this condition and emphasises the need for early recognition, prompt intervention, and a multidisciplinary approach, including thorough ophthalmic and systemic evaluations and genetic counselling.

P5 Hidden clues: Navigating the ocular and genetic complexities of Traboulsi syndrome

Clinical
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Purpose: To describe the clinical features of Traboulsi syndrome in a 16-year-old girl. Further, to discuss the management of subluxated lens and intraocular pressure elevation, potential complications of intraocular surgeries due to abnormal sclera, in this rare genetic condition.
Case: A 16-year-old girl presented with subluxated lenses in both eyes, a superior staphyloma in the right eye (RE), normal intraocular pressure (IOP), and facial abnormalities. Initially diagnosed with Marfan syndrome, she underwent pars plana lensectomy (PPL), pars plana vitrectomy (PPV), and silicone oil injection in the RE. Postoperatively, IOP elevation occurred, necessitating early silicone oil removal. Despite this, the staphyloma worsened, and the patient was referred to glaucoma services.
Results: Further evaluation revealed systemic features, including mid-facial flattening, a large nose, cardiac issues, and ocular findings of scleral thinning with staphylomas in both eyes. Genetic testing confirmed Traboulsi syndrome with an ASPH gene mutation. Given the scleral abnormalities and risk of spontaneous blebs, left eye (LE) lens extraction was planned via the corneal route to minimize complications.
Conclusion: This case emphasises the importance of accurate diagnosis in patients with ectopia lentis and systemic abnormalities. Proper identification of conditions like Traboulsi syndrome are vital for planning appropriate interventions and preventing sight-threatening complications. Genetic testing plays a key role in confirming the diagnosis, guiding personalised management strategies, and addressing the unique surgical challenges posed by abnormal scleral tissue.

P6 GAPO syndrome

Clinical

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Overview: GAPO syndrome is a rare autosomal recessive genetic disorder with only 65 reported cases worldwide which is characterised by growth retardation, alopecia, pseudo-anodontia, optic atrophy/ocular manifestations.
Case: We report a case of a 7-year-old Indian female child of second-degree consanguineous parents who presented to us for ophthalmic evaluation. She exhibited clinical features indicative of GAPO syndrome, including a wide anterior fontanelle, frontal bossing, a prematurely aged face, hypertelorism, absence of eyebrows, eyelashes, and hair, protruding eyes due to shallow orbits, depressed nasal bridge, micrognathia, midface hypoplasia, anteverted nostrils, protruding lips, failure of tooth eruption, and marked growth retardation. Additionally, she presented with glaucoma, brachycephaly, and craniofacial vascular malformation without any intracranial abnormalities.
Results: Her ophthalmological examination revealed BCVA 6/12 and 2/60, BE showed uncontrolled intraocular pressure with clear megalocornea. Her fundus revealed BE optic atrophy with cup:disc ratio of 0.8:1 without papilloedema. She was diagnosed with BE secondary childhood glaucoma elsewhere and was on 2 topical AGMs. She was advised for BE trabeculotomy in view of uncontrolled intraocular pressure to preserve vision, but the parents refused the surgery.
Conclusions: This case is presented to enlighten ophthalmologists about this rare case scenario, the need for multidisciplinary approach and early ophthalmologic intervention to prevent irreversible vision loss in individuals with GAPO syndrome, particularly those with glaucoma. Challenges in treatment compliance and parental decision-making underscore the need for supportive care strategies tailored to the complex medical and developmental needs of patients with rare genetic disorders.

P7 An unusual case of ocular hypertension following steroid treatment in Kikuchi-Fujimoto disease

Clinical

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Background: Kikuchi-Fujimoto disease (KFD) is an extremely rare necrotising lymphadenitis that presents with fever of unknown origin and cervical lymphadenopathy. Ocular complications are unusual in KFD. Here we report a case of ocular hypertension in KFD patient following steroid treatment.
Case presentation: A 14-year-old boy presented with high intraocular pressure following corticosteroid treatment for KFD .He had a history of high-grade intermittent fever and right cervical lymphadenopathy. Histopathological examination of lymph node showed necrotising lymphadenitis suggestive of KFD. Since high grade fever persisted, he was treated with intravenous methyl prednisolone for 3 days. Ophthalmology consultation was done to rule out uveitis revealed ocular hypertension and he started three anti-glaucoma medications in both eyes. Parenteral steroid changed to oral steroids in tapering doses for 3 weeks, anti-glaucoma medications step down to two anti-glaucoma medications. Patient came to us for a second opinion. On examination his best corrected visual acuity in both eyes were 6/6, N6, IOP in right eye was 27 mmHg ,left eye was 32 mmHg with open angles without any evidence of glaucomatous disc damage.
Conclusion: Ocular manifestations in Kikuchi-Fujimoto disease are rare. This is the first case of ocular hypertension as a sequela of steroid treatment in KFD. Ophthalmic evaluation is needed in such patients to look for asymptomatic glaucoma.

P8 Withdrawn

P9 A rare association of Peters sd and Axenfeld-Rieger sd with neonatal glaucoma in the same patient

Clinical
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Background: Anterior segment dysgenesis is a term that includes a wide spectrum of ocular malformations described as neuro-cristopathies, inherited and frequently associated to glaucoma. An effort has been made to correlate phenotype-genotype, but this correlation sometimes is difficult to stablish.
Case report:: We present a 3-day old girl, referred for bilateral corneal opacity. She presented in the right eye a dense, thick, vascularised central corneal opacity with normal corneal diameter and normal IOP. In the left eye she had megalocornea, diffuse corneal opacity and IOP of 34 mmHg. An examination under general anaesthesia was performed after some days of medical treatment, and the OCT found in the RE iris adhesions to the border of the leucoma, and in the LE iris adhesions to the peripheral cornea, with a patent endothelium in all the extension of the cornea. Thus, the clinical diagnosis was Peters syndrome in the right eye and Axenfeld-Rieger syndrome in the left eye. Genetical exam showed a point mutation (Ser131Phefs*51) in the *FOXC1* gene.
We will show the systemic findings and the result of surgery for the glaucoma in the left eye (1 trabeculotomy + 2 goniotomies).
Discussion: There are few cases described in the literature of coexisting Peters and Axenfeld-Rieger in the same patient, related to mutations in either *FOXC1* or *PITX2* genes. These cases, as well as the case we present suggest that these diseases are not totally different entities, but different forms of expression of the same disease. There is a clinical overlap, as well as genetical heterogeneity with variable expressivity.

P10 The syndrome of the syndrome - complicated consequences

Clinical
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Case: A 7-year-old boy was admitted in September 2021 due to high intraocular pressure (IOP) in both eyes with deterioration of vision. His medical and ocular history revealed congenital aniridia with WAGR syndrome that was treated with bilateral lensectomy, right eye (RE) trabeculectomy, Right eye (RE) vitrectomy, and left eye (LE) cyclophotocoagulation. On presentation, visual acuity was 20/400 (RE) and 20/200 (LE). The IOP was 40 mmHg in both eyes with topical anti-glaucoma medications. Ahmed glaucoma valve implantation was performed immediately in the LE in September 2021 and in the RE in April 2023 with the improvement of IOP to 13 mmHg and 12 mmHg, respectively. Two months later, in June 2023, the RE developed aniridia associated keratopathy with hyphaema and vitreous haemorrhage, probably from pathological vessels at the angle, which required vitrectomy and endolaser in addition to peeling of corneal opacification. The result was disappointing and the eye went into phthisis.
The patient was lost to follow-up until May 2024 when he showed up with hypotony (IOP 3mmHg) in his LE. The tube was tied off with a ripcord and 9-0 nylon suture. A suspected fibrous membrane extending from the angle to the ciliary body and lens capsule noted. The pressure increased to 8-10 mmHg, and the vision stabilised at 6/90. On follow up, new vitreous membranes appeared on the ultrasound. Considering the result of the last operation in the right eye was not favourable, we were reluctant to proceed to another intraocular operation such as membranectomy in the fellow eye and preferred close monitoring.

P11 Management of a child with iris bombe in uveitic glaucoma secondary to juvenile idiopathic arthritis

Clinical

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Introduction: Uveitis is a prevalent extra-articular manifestation of juvenile idiopathic arthritis (JIA), often leading to raised intraocular pressure (IOP) through different mechanisms. This case report details a rare instance of inflammatory pupillary block in a child with poorly controlled uveitis due to JIA, along with the management strategies employed to address this condition.

Case Report: An 11-year-old female with a history of JIA underwent evaluation for uncontrolled IOP in the right eye. Symptoms included intermittent haziness and mild eye pain. Examination revealed significant IOP elevation, a pupillary membrane, and iris bombe. Despite ongoing treatment, the patient experienced persistent elevated IOP attributed to a fibrin pupillary block. Management included surgical interventions (goniosynechialysis, iridectomy, iris membrane excision), and increasing corticosteroid dosage for treating uveitis, leading to improved visual acuity and IOP normalisation.

Discussion: Uveitis-associated glaucoma is a serious risk, especially in paediatric populations. Effective management requires a multifaceted approach, including anti-inflammatory medications and potential surgical interventions. Monitoring for complications or treatment failure is crucial, as they can severely impact long-term visual outcomes.

Conclusion: It is important to perform a thorough clinical and ophthalmologic exam when we evaluate elevated IOP. The key aspects of treating uveitis involve controlling inflammation and keeping intraocular pressure within safe levels. If pupillary block develops, prompt iridectomy, along with other surgical and medical interventions, becomes necessary to prevent irreversible optic nerve damage.

P12 Case report of the medical approach to a traumatic hyphaema in a nine-year-old male

Clinical

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Introduction: Traumatic hyphaema in children is an acute ophthalmic emergency, with potential complications arising from uncontrolled intraocular pressure and, later, from corneal blood staining.

Case: This case reports the conservative management of traumatic hyphaema in the left eye of a nine-year-old male. Initially, the patient presented with a 2.8 mm hyphaema and traumatic mydriasis. Initial treatment consisted of dexamethasone 0.1% and cycloplegia (cyclopentolate 1% BD). After two days, intraocular pressure remained elevated at 45 mmHg. This was thought to be a steroid response. Anti-hypertensive therapy was added, including dorzolamide/timolol and iopidine drops. As the elevated pressure persisted, the iopidine dosage was increased, and acetazolamide introduced. The treatment regimen was further adjusted by switching the dexamethasone and cyclopentolate to betamethasone 0.1% and atropine 1% eye drops, and mandating bed rest. This approach successfully resolved the intraocular hypertension.

Discussion: During the ocular hypertension, consideration was also given to cyclodiode laser therapy. Anterior chamber washout was discussed to prevent corneal endothelial staining. These two aggressive treatments were not performed, as the patient's condition improved with conservative medical management. This case contributes to the growing body of literature supporting a conservative, medical approach to managing traumatic hyphaema in children.

P13 Outcomes of Paul glaucoma implant in paediatric traumatic glaucoma

Research

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Purpose: To evaluate the effectiveness of the Paul glaucoma implant (PGI) in reducing intraocular pressure (IOP) and medication dependence in paediatric traumatic glaucoma.
Methods: This retrospective study included a single group of paediatric patients with a history of ocular trauma who underwent PGI surgery. The primary outcomes measured were IOP control, defined as achieving IOP between 5–21 mmHg, and reduction in the number of medications required to manage IOP. Qualified success was defined as achieving target IOP with medication, while total success was achieving target IOP without medication. Secondary outcomes included complication rates and visual acuity changes.
Results: The mean follow-up duration was 14.48±2.15 months. Lens status was distributed as follows: 7 eyes were phakic, 7 had posterior chamber intraocular lenses (IOLs), 5 were aphakic, and 4 had anterior chamber IOLs. Preoperative IOP averaged 36.7±10.4 mmHg, which significantly decreased to 14.7±2.3 mmHg at 12 months postoperatively ($p<0.0001$). The number of medications required also significantly reduced from a median of 3 preoperatively to 2 at 12 months ($p=0.0001$). Total success was achieved in 8 eyes (34.8%), while 9 eyes (39.1%) attained qualified success. Six eyes (26.1%) were classified as failures. Mitomycin C (MMC) was used in 10 eyes (43.5%) during surgery. The most common postoperative complication was IOP spike, observed in 6 eyes (21.4%) within the first week. Additional glaucoma surgery was required in 6 cases (26.1%), predominantly diode laser cyclophotocoagulation.
Conclusions: The PGI effectively reduces IOP and medication dependence in paediatric patients with traumatic glaucoma, showing a high rate of IOP control. Although complications like IOP spikes were observed, the implant remains a viable option for managing difficult cases with a favourable safety profile over the follow-up period.

P14 Fundus reflex assessment for healthcare providers not in ophthalmology: A simulation-based training

Research

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Purpose: Fundus reflex assessment is a sensitive and non-invasive way to detect for detrimental and time-sensitive ocular pathologies in paediatric patients, such as glaucoma. This study is investigating if a mannequin-based simulation training is an effective way to teach fundus reflex assessment in healthcare providers with no ophthalmology background.
Methods: Specialised mannequins with 3-D printed eyes were used to simulate infants and varied manifestations of the fundus reflex. Paediatric residents filled out a pre- and post-simulation survey and also recorded their findings of the mannequins as they examined them with a direct ophthalmoscope. They saw a brief video of education and recorded their findings a second time. Accuracy and potential improvement were assessed.
Results: Nine out of the thirteen participants correctly assessed abnormalities on both attempts of the simulation.
Discussion: Most of the paediatric residents correctly assessed fundus reflex abnormalities on both passes of the simulation. This is possibly due to the obvious presentations of the mannequins. The presentations were intentionally made obvious to serve as a baseline. In addition, participant feedback did suggest more difficult presentations in the mannequins. Considering this would allow for the development of a more refined module for future testing and application as the goal is to build a standardised model of teaching to distribute across a wide variety of healthcare providers outside of ophthalmology who treat paediatric patients.
Conclusion: Simulation-based training is a potentially effective teaching model to train on the assessment of the fundus reflex for healthcare providers not trained in ophthalmology.

P15 Glaucoma incidence in paediatric patients undergoing cataract surgery; a single centre retrospective case notes review

Research

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Introduction: Glaucoma is a known complication of paediatric cataract surgery with significant visual implications. Early cataract surgery is associated with an increased incidence of glaucoma. Previous research suggests that those who do develop aphakic glaucoma frequently require surgical intervention in order to achieve successful intra-ocular pressure (IOP) control. We aimed to investigate the incidence of glaucoma after cataract surgery performed in children under two years old at Leeds Teaching Hospitals. We also examined the further management that was required for those children who did develop glaucoma.
Methods: A retrospective case notes review was undertaken of all patients who underwent cataract surgery under the age of two years old between January 2012 and December 2021. Fifty-four patients and seventy-eight eyes met these criteria however two patients and three eyes were removed from analysis due to pre-existing glaucoma or a diagnosis of Lowe syndrome.
Results: Ten eyes (13.3%) developed glaucoma by year one after surgery and this increased to a prevalence of eleven eyes (14.6%) at year two. All patients who developed glaucoma had cataract surgery performed before 3 months of age. Lensectomy without primary IOL implantation was performed in fifty-three eyes (70.7%). Six eyes (8%) required glaucoma drainage device surgery.
Discussion: The incidence of glaucoma in our cohort is similar to previously published results. Surgery at a younger age in our patient cohort appeared to be associated with a greater chance of developing glaucoma. Most eyes that developed glaucoma required glaucoma drainage device surgery to achieve successful IOP control.

P16 Prevalence and management of glaucoma in paediatric patients with Rubinstein-Taybi syndrome in a tertiary eye care centre

Research

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Purpose: To investigate the prevalence and management of glaucoma in paediatric Rubinstein-Taybi syndrome (RTS) patients, providing insights into clinical challenges and outcomes in this vulnerable population.
Methods: A retrospective chart review was conducted at Bascom Palmer Eye Institute involving paediatric RTS patients (2010–2023). Data was collected on demographics, glaucoma diagnoses, ocular conditions, treatments/interventions, and follow-up outcomes.
Results: Eleven RTS patients (mean age at first visit: 4.82±4.09 years, follow-up duration: 6.27±5.95 years) were identified. These patients presented with various ocular conditions, including strabismus (82%), refractive errors (64%), and nasolacrimal duct obstruction (18%). Glaucoma was diagnosed in 3 patients (27%), and 2 (40%) underwent surgical intervention for intraocular pressure (IOP) control: bilateral goniotomies as well as repeat bilateral trabeculotomies and Baerveldt glaucoma implants. No significant correlation was found between glaucoma and other ocular anomalies.
Discussion: The potentially high prevalence of glaucoma (27%) in RTS patients underscores the need for evidence-based glaucoma screening guidelines in this population, which currently do not exist despite prior reports also finding an increased risk of developing glaucoma. The surgical intervention rate (40%) in our cohort also reflects the need for aggressive treatment in certain cases. The additional ocular anomalies present further emphasise the need for a multidisciplinary approach in managing the complex ocular issues associated with RTS.
Conclusion: RTS patients are at increased risk of glaucoma, which should prompt timely referrals to paediatric glaucoma specialists when associated findings occur and regular monitoring to reduce visual impairment while guidelines are developed.

NOTES:

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