

supporting evidence for outcomes are widely used but seldom audited for adherence and results. The current situation is exemplified by the widely disseminated American Academy of Ophthalmology Bacterial Keratitis Preferred Practice Pattern which reviews a swathe of publications but provides few details for the key decision making points in the treatment of bacterial keratitis other than choice of initial treatment.

Key decisions are causative organism dependent and are required for the following: initial treatment; the application frequency for the intensive treatment phase and its length; how to reduce the intensive frequency to one specified for maintenance therapy until defined cure criteria are reached; the time point at which treatment failure should be considered requiring re-evaluation of both diagnosis and treatment; second line adjunctive or alternative topical/systemic antimicrobial therapy; use of adjunctive steroids both when being applied at baseline (point of diagnosis and start of antimicrobial therapy) or later; how to withdraw steroid; management of recurrences of infection or inflammation; when to use cross linking, photodynamic therapy or therapeutic keratoplasty.

Evidence will be given to show how the use of such a detailed protocol has provided high cure rates in both fungal and protozoal keratitis and how such protocols can be expected to be of benefit to all colleagues managing both common and rare causes of keratitis.

OP-10 RECURRENT MICROBIAL KERATITIS DUE TO STAPHYLOCOCCUS AUREUS

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Purpose To investigate microbiological and clinical characteristics of recurrent *S. aureus* keratitis.

Methods Patients with *S. aureus* keratitis were included. For a subgroup, samples were collected from affected and unaffected corneas and contiguous sites (conjunctiva, lids, nose) at presentation and on days 3, 7 and 28. Samples were cultured, amplified and analysed using metagenomics (Illumina and Nanopore sequencing followed by hybrid assembly and annotation). Comparisons were undertaken of clonal type and presence of virulence genes in *S. aureus* between patients with and without recurrent disease. Patients were grouped according to presence of risk factors: group 1 (contact lens), group 2 (corneal disease), group 3 (systemic disease), group 4 (ocular surface disease) and group 5 (previous keratitis).

Results Twenty-five patients with recurrent disease and 60 without were included (age 69.20 SD 14.50). Mean healing time was 25.55 days (SD 14.74) and ulcer size 1.99 x 1.31 mm. There was no difference in clonal type, but 3 virulence genes ($p=0.03$, $p=0.01$ and $p=0.009$) were significantly more likely to be present in *S. aureus* from patients with recurrent disease. Bar one patient with recurrent disease, the same strain of *S. aureus* isolated from cornea at initial and recurrent episodes. *S. aureus* persisted at contiguous sites in both recurrent and non-recurrent disease and was isolated more frequently from conjunctiva and nose compared to controls ($p=0.03$).

Conclusions Treatment of *S. aureus* keratitis only with topical antimicrobials is insufficient to remove *S. aureus* from contiguous sites and patients remain at risk of further keratitis.

Poster Abstract Presentation

P-11 OUTCOMES OF LARGE DIAMETER PENETRATING KERATOPLASTY: THE SOUTHAMPTON EXPERIENCE

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Introduction In severe corneal infections or keratolysis, large-diameter penetrating keratoplasty (LDPK) is often the last resort before eye evisceration or enucleation to restore tectonic integrity. The literature shows a greater risk of complications postoperatively, second surgeries, and poor visual acuity following a large-diameter keratoplasty. Studies overlook LDPK benefits, such as maintaining eye integrity and limited vision.

Methods We performed a retrospective observational study of all full-thickness corneal grafts at Southampton General Hospital from 2017 to 2022 with graft diameters larger than 8.5 mm. Data from these patients were analysed for tectonic success, visual outcomes, and graft rejection/failure rate.

Results 18 patients underwent large-diameter penetrating keratoplasties from 2017 to 2022. Of these, 12 cases (66.7%) were performed for severe infectious keratolysis and 4 (22.2%) for perforation from pellucid marginal degeneration and trauma. Tectonic stability was achieved in 15 cases (83.3%) at a mean follow-up of 26.05 months. Optical outcomes showed improvement in visual acuity in 10 patients (55.6%). Graft remained clear in 9 out of 15 cases (60%) where a tectonic outcome was achieved.

Conclusion/Discussion LDPK should be considered as an option in corneal infection and keratolysis cases to avoid enucleation or evisceration. Our study found that 83.3% of cases achieved this goal. However, the prognosis for vision and graft viability remains guarded, and patients should be counselled accordingly.

P-12 PREVALENCE AND EVIDENCE OF TOMOGRAPHIC BIOMARKERS OF DECOMPENSATION IN FUCHS' ENDOTHELIAL CORNEAL DYSTROPHY

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Purpose To compare the performance of three commercially available tomographers (the Pentacam Scheimpflug camera, the SS-OCT Casia, and the blue light slit-scanning tomographer Preciso) in the identification of patterns associated with Fuchs' Endothelial Corneal Dystrophy (FECD) decompensation.

Methods Clinic-based, cross-sectional imaging study. Pachymetry maps and posterior surface elevation maps were acquired with the three devices from 45 eyes affected by FECD. The

maps were graded according to the evidence of tomographic patterns predictive of FECD decompensation (loss of parallel isopachs, displacement of the thinnest point, and focal posterior depression) by two blind cornea specialists.

Results The loss of parallel isopachs was significantly less frequently evident in Pentacam pachymetry maps (4%, 95% CI [1%,15%]) compared with both the Casia (31%, 95% CI [19%, 45%], $p=0.01$) and Precisio (24%, 95% CI [14%, 39%], $p=0.04$). The displacement of the thinnest point was graded as most evident in a significantly higher proportion of Precisio pachymetry maps (42%, 95% CI [28%, 57%]) compared to the Pentacam (11%, 95% CI [5%, 24%], $p=0.005$). There were no significant differences in the identification of focal posterior depression on posterior elevation maps across the three devices.

Conclusions The identification of patterns predictive of FECD prognosis on pachymetry and posterior elevation maps are possible with different devices. Significant differences exist among devices in their ability to identify specific patterns.

P-13

STERIOD RESPONSE IN DESCEMET'S MEMBRANE ENDOTHELIAL KERATOPLASTY (DMEK): A 7-YEAR LONGITUDINAL STUDY OF 993 NON-GLAUCOMATOUS EYES

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Objective To identify the incidence and risk factors for steroid response (SR) in low-risk patients who underwent routine DMEK or phaco-DMEK surgery.

Methods Retrospective review of 1,032 eyes which underwent DMEK surgery or combined phacoemulsification/DMEK surgery (phaco-DMEK) between 01/2014 and 12/2020 was performed and 993 eyes were included. Eyes with pre-existing ocular hypertension, glaucoma or post-operative pupillary block were excluded. Incidence and time to SR onset were determined. Association between onset of SR and agents for graft tamponade (air vs SF6), topical steroids agents and need for re-bubbling were analysed. Treatment outcomes of SR were reported.

Results Overall incidence of SR was 10.8% (107/993) across 7-years, of which 6.8% (67/993) for DMEK alone and 4.0% (40/993) for phaco-DMEK but the difference was not significant ($p>0.05$). Majority developed within 4–6 months (30.8%), and median time to onset was 4.5 months post-operatively. 95% were still on topical dexamethasone at onset. Re-bubbling increased the risk (OR 1.85, 95% CI 0.07–1.65). There was no statistical difference between air vs SF6 tamponade and risk of SR ($p>0.05$). Majority (85.0%) responded well to topical intraocular pressure treatment and change of topical steroid formulation without developing glaucoma.

Conclusion Incidence of SR is higher than expected even for low-risk DMEK patients with no pre-existing history of ocular hypertension but majority of these cases responded well to topical treatment. Lower potency steroid formulation should be considered at around 6-months post-operatively in low-risk DMEK grafts. Patients who require DMEK re-bubbling should be monitored more closely for SR.

P-14

APPARENT ABSENCE OF A SURGICAL PLANE DURING ATTEMPTED STROMAL PEELING FOR DALK IN A POST-ROTATIONAL AUTOKERATOPLASTY EYE SUGGESTS ROLE OF MIGRATION OF HOST KERATOCYTES IN THE DEVELOPMENT OF THE NATURAL PRE-DESCEMETIC PLANE OF SEPARATION

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Case A 58-year-old female was referred to our clinic for corneal scarring in the left eye. She previously underwent ipsilateral rotational autokeratoplasty (IRA) for herpetic keratitis in 2001. Day to day visual acuity was 0.74 logMAR and best corrected visual acuity was 0.40 logMAR. Slit lamp exam showed significant stromal scarring in the visual axis. The peripheral cornea was otherwise clear. Deep anterior lamellar keratoplasty (DALK) using the stromal peeling technique described by Bovone et al was attempted. The donor was prepared with a microkeratome (Moria SA, Antony, France) with a 400 µm head. A 9.0 mm adjustable depth vacuum trephine (Moria SA, Antony, France) was applied to the cornea to a depth of 450 microns. After repeated attempts to open a pre-descemet plane with no success, the surgery was electively converted to a 2-piece microkeratome-assisted mushroom keratoplasty with 9 mm anterior lamella secured with 16 interrupted 10–0 nylon sutures and a 6 mm posterior lamella. At 6 months postoperatively, the graft was clear. Unaided visual acuity was 0.50logMAR improving to 0.10logMAR with correction. Topographic astigmatism with sutures in situ was 5.4D. The postoperative course was otherwise uneventful. The apparent absence of a pre-descemet plane in an old IRA adds evidence that formation of this plane is dependent on the allogeneic stimulation of host keratocytes. Our working theory is that host keratocytes migrate to the pre-descemet layer of an allogeneic PK graft, thereby allowing stromal peeling in post-PK eyes along a natural pre-descemet plane of separation.

P-14

SURGICAL MANAGEMENT OF TRAUMATIC ANIRIDIA USING SCLERAL FIXATION OF ARTIFICIAL IRIS IMPLANT WITH PRE-EXISTING SCLERAL FIXATED IOL

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Introduction A 78-year-old male patient with a background of angle-closure glaucoma underwent left cataract surgery in May 2021, during which zonular dehiscence and vitreous prolapse were noted. This required an anterior vitrectomy and insertion of a GORE-TEX[®]-sutured IOL (Akreas Adapt AO, Bausch & Lomb). In August 2021 trauma to the same eye resulted in complete aniridia and a vitreous haemorrhage which resolved with conservative management. Complete aniridia reduced the patient's vision to 6/30, and caused constant glare symptoms.