

We opted for conservative management, after which the DM detachment spontaneously resolved and corneal thickness improved.

DM detachment is an uncommon late complication of PK and pathophysiology is thought to be mechanical due to a retrocorneal membrane, or due to recurrence of corneal ectasia. The majority of published cases underwent surgery with air, SF6, or C3F8 with postoperative supine positioning, or progression to repeat PK or DSAEK if this initial treatment fails. Topical steroids can be given for conservative management.

Conclusion Conservative management of DM detachment can be an option for patients with guarded prognosis, or in small detachments with no tears. Our case provides another data point on the presentation and progression of this complication to the small number of case reports in the literature.

P-13 **TRANS-EPITHELIAL PHOTOTHERAPEUTIC KERATECTOMY (PTK) FOR RECURRENT CORNEAL EROSION SYNDROME (RCES)**

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Objective To evaluate the efficacy and safety of trans-epithelial phototherapeutic keratectomy (PTK) as a treatment for recurrent cornea erosion syndrome (RCES) in patients with symptoms refractory to conventional treatments.

Methods and Analysis All patients who received PTK treatment for RCES had failed more than one conventional treatment, and were first vetted and approved by the British Columbia public health authority. A retrospective chart review and telephone survey were conducted at the Pacific Laser Eye Centre. Exclusion criteria were ocular co-morbidities potentially affecting treatment efficacy.

Results This study included 593 eyes of 555 patients (46.2% male; 50.9±14.2 years old) who underwent PTK. The leading identified causes of RCES were trauma (45.7%) and anterior basement membrane dystrophy (44.2%). The most common pre-PTK interventions were ocular lubricants (90.9%), hypertonic solutions (77.9%), and bandage contact lenses (50.9%). 36 eyes had undergone surgical interventions such as stromal puncture, epithelial debridement, or diamond burr polishing. Post-PTK, 78% of patients did not require any subsequent therapies, 20% required ongoing drops and 6 patients (1.1%) reported no symptom improvement. All 6 eyes were successfully retreated with PTK between 11.3 ±14.9 months from initial PTK. All study patients showed no significant differences in best corrected visual acuity pre vs. postoperatively.

Conclusion When compared to other surgical options, PTK is potentially more costly but frequently more effective and has a high safety profile. The third-party public health vetted nature of this study, the high patient satisfaction, and the low recurrence rate of RCES suggest that PTK should be considered at an earlier stage in the management of RCES.

P-14 **DESCEMET STRIPPING ENDOTHELIAL KERATOPLASTY VERSUS DESCEMET MEMBRANE ENDOTHELIAL KERATOPLASTY: 5-YEAR GRAFT SURVIVAL AND ENDOTHELIAL CELL LOSS IN PATIENTS WITH FUCHS' ENDOTHELIAL DYSTROPHY**

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Objective To compare endothelial cell loss, graft survival, and clinical outcomes in patients with Fuchs' endothelial dystrophy (FED) up to 5 years after Descemet stripping endothelial keratoplasty (DSEK) and Descemet membrane endothelial keratoplasty (DMEK).

Methods 318 consecutive DSEK (n=189) and DMEK (n=129) grafts of 223 patients performed by 8 surgeons with standardised protocols between January 2006 and October 2021 were analysed. Group differences were compared with parametric and non-parametric tests. Kaplan-Meier analysis and Cox regression were conducted for graft survival and identify graft failure and rejection risk factors.

Results At 5 years, graft survival was 97% and 98% (p=0.370) in DSEK and DMEK eyes. Mean percentage endothelial cell loss was 56.6±17.6 in DSEK and 55.6±15.2 in DMEK eyes (p=0.865). Mean BSCVA was 0.12±0.13 LogMAR in DSEK and 0.00±0.17 in DMEK grafts (p<0.00001) at 5 years postop. Within 5 years, 12% of DSEK and 9% of DMEK eyes developed allograft rejection (p=0.412). Rebubbling was performed in 9.0% of DSEK and 2.3% of DMEK grafts (p=0.211). Cox regression identified rejection episode (HR 1.36; 95% CI: 2.31–80.22 (p=0.004)) as a significant contributing factor for graft failure.

Conclusions At 5 years there was no significant difference in graft survival or endothelial cell loss between DMEK and DSEK eyes with FED. We propose that our standardised technique reduces the need for rebubbling. DMEK had superior visual acuity outcomes compared with DSEK in these patients up to 5 years after surgery.

P-15 **UTILISING ENDOTHELIAL MIGRATION TO PERFORM DEEP ANTERIOR LAMELLAR KERATOPLASTY IN EYES WITH DEEP POSTERIOR CORNEAL SCARRING TYPICALLY TREATED WITH PENETRATING KERATOPLASTY**

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Purpose To describe a novel technique for deep anterior lamellar keratoplasty (DALK) in patients central corneal perforation and deep scarring making conventional DALK (Melles or Big Bubble) unviable. A posterior Descemet's membrane (DM) skirt has provided an adequate scaffold for the migration of the host endothelial cells.

Methods and Analysis A case report. A 32-year-old male with previous hydrops developed severe corneal scarring with a break in DM visible on OCT scanning. A modified DALK procedure was performed consisting of a 400µm, 8.5mm Anterior lamellar cap with a 4.5mm posterior lamellar disc, denuded of endothelial cells and containing a DM skirt.

Initially, manual dissection of the and anterior 400µm of corneal stroma was performed using a modified Melles technique. The residual posterior lamellar was assessed and found to have significant residual scarring. A central 4mm optical window was performed through the posterior lamellar over the visual axis.

The donor tissue was cut using a 350µm microkeratome head. The anterior cap was trephined to 8.5mm and set aside. The posterior lamellar was placed in a punch block, and the endothelial was removed using a silicone tipped cannula. The removal of endothelial cells was confirmed using trypan blue dye. A posterior lamellar graft with a 4.0mm stromal bed and a 4.5mm DM skirt was fashioned using a peeling and double punch technique. The posterior lamellar graft was inserted into the optical window such that the DM skirt provided a bridge to the donor corneal endothelium. The anterior cap was sutured with a double continuous suture of 10-0 monofilament nylon. An inferior peripheral iridotomy was created, and an air bubble filling the anterior chamber was left at the end of the case.

Results The preoperative visual acuity (VA) was hand movements. Full attachment of the posterior lamellar was seen at all time-points from week one onwards. Central corneal pachymetry continued to reduce for 12 weeks. One year after the operation, with sutures in, the best spectacle-corrected VA was 6/12. The corneal graft was clear, and no rejection episodes occurred. Endothelial cell repopulation of the donor DM could be observed with specular microscopy.

Conclusion The presence of DM promotes endothelial migration and healing. Modifications to traditional DALK surgery, in which DM is used to promote endothelial healing, are a viable alternative to penetrating keratoplasty. This method eliminates the risk of allograft endothelial rejection and allows a 'regenerative' for DALK to be used, offering a new modality of treatment in patients with healthy reserves of endothelial cells and deep posterior lamellar scarring.

P-16 PREDICTING ABLATION SPHERICAL EQUIVALENT OF PRIOR LASIK TREATMENT FROM CORNEAL PACHYMETRY MAP

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Purpose To provide a metric to differentiate between hyperopic and myopic ablation of a prior LASIK treatment based on the corneal pachymetry profile after laser vision correction.
Methods Pachymetry data were recovered retrospectively from patients who had previous LASIK for refractive purposes between 2019 and 2020. Patients with any corneal disorder were excluded. Ablation spherical equivalent was predicted from central to semi-peripheral corneal thickness (CPT) ratio,

both for values provided by Pentacam, and values computed from extracted raw pachymetry data.

Results Data were analysed for 140 eyes of 73 patients (42% female, mean age 40.9, SD 12.8). CPT-ratio cut-off for distinction between myopic and hyperopic LASIK was 0.86 for pentacam-provided values. Sensitivity and specificity were 0.7 and 0.95, respectively. Accuracy increased with computation of CPT ratio based on extracted raw data. Sensitivity and specificity were 0.87 and 0.99, respectively. There was a marked linear correlation between CPT-ratio and ablation spherical equivalent ($R^2=0.93$).

Conclusions CPT ratio cut-offs can correctly classify hyperopic versus myopic spherical equivalent of previous LASIK ablation. This could prove useful for increased accuracy of intraocular lens (IOL) calculations for patients with no historical data of their prior LASIK surgery at the time of cataract surgery planning.

P-17 CORNEA GUTTATA IN TRANSPLANTED DONOR TISSUE, IS THERE A NEED OF IMPROVEMENT IN THE EYE BANK SCREENING?

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Purpose We describe 2 cases who underwent uneventful DMEK surgery but presented delayed recovery and had confirmed cornea guttata in the donor tissues. Both patients received a cornea from the same donor.

Cases A 78-year-old man with Fuchs' dystrophy underwent triple procedure (phaco + IOL + DMEK) in his right eye and presented persistent central corneal oedema despite fully attached graft. Early rejection was suspected, and the oedema took 6 weeks to resolve completely at which point we confirmed central guttata in the donor tissue. His contralateral eye underwent DMEK surgery six months before and had clear cornea with no guttata. A 74-year-old man with corneal scarring and aphakic bullous keratopathy underwent DMEK surgery and had a persistent corneal oedema postoperatively even after initial rebubbling for a partially peripherally detached graft. Corneal oedema persisted for two months postoperatively despite full attachment and guttata identified. Both donor corneas were reported to have endothelial cell counts of 2600 cells/mm² preoperatively. In both cases confocal microscopy confirmed the presence of guttata in the donor graft. An imaging assessment from the donor tissues was performed with the eye bank and review from the literature is discussed.

Conclusion Fuchs' dystrophy appears relatively common in the general population (4% in the USA); thus, a proportion of this condition might be expected in donor corneas. Identification of guttae in donor corneas with early stages of Fuchs' dystrophy appears challenging. Current modalities of graft material screening (which appears to be standardised across Europe) are more orientated toward measuring the endothelial cell density and morphology and less toward detection of guttae. However, we believe this challenging case may not be isolated and thus improvement of eye bank screening would be of critical value to detect early Fuchs' dystrophy in donor tissues and therefore improve graft survival.