

associated with keratoconus (n=28) did not significantly contribute to the model. The predicted time-to-event curves closely followed the observed curves during internal-external validation.

**Conclusions** A prognostic model to predict keratoconus progression could aid patient empowerment, triage and service provision. Age at presentation is the most significant predictor of progression risk. Candidate SNPs associated with keratoconus do not contribute to progression risk.

OP-4

#### DESCEMET MEMBRANE ENDOTHELIAL KERATOPLASTY PATCHING (DMEP) – SELECTIVE ENDOTHELIAL REPLACEMENT IN EYES WITH LOCALISED ENDOTHELIAL DYSFUNCTION

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**Objective** To report the clinical outcomes of a series of cases in which localised areas of endothelial dysfunction were selectively treated with shape and position matched endothelial transplants in a procedure we have termed Descemet's membrane endothelial patching (DMEP).

**Methods** Interventional case series. Five patients presented with localised endothelial dysfunction in eyes with high-risk graft failure due either to rejection, recurrence of the focal endothelial dysfunction or because extended treatment with steroid drops was contraindicated. Endothelial grafts matching the area of dysfunction were produced to preserve healthy host cells and limit the immunological burden of new grafts. Patient demographic details, indication for surgery, preoperative and postoperative visual acuity, intraoperative and postoperative complications, and graft rejections episodes were noted.

**Results** Five patients were included in this cases series. Indications for DMEP were Fuchs' heterochromic iridocyclitis (n=1), Fuchs' endothelial dystrophy (n=2), endotheliitis (n=2). In all cases, a customised DMEP graft was used, as opposed to our standard 8.25mm circular DMEK graft size. The DMEP grafts were centred over the area of focal endothelial dysfunction. In all cases, complete graft attachment was achieved, and the corneas were cleared. Steroid drops were reduced rapidly without any episodes of graft rejection/failure reported at 1 year.

**Conclusion** DMEP transplants are a viable option to treat localised endothelial dysfunction. Placing non-circular, no central transplants is surgically feasible and does not appear to affect graft adhesion. Limiting the size of the transplant may limit the immunological burden of new grafts and reduce the need for extended courses of steroids.

OP-5

#### FEMTOSECOND ENABLED KERATOPLASTY TECHNIQUES FOR KERATOPLASTY

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**Objective** To present a case series evaluating the role of the femtosecond laser in a range of keratoplasty techniques, and evaluation of the Victus femtosecond laser (Bauch & Lomb) software version 3.4 in a range of procedures.

- Femtosecond assisted descemetorhexis for DMEK.
- Use of modified hyaluronate augmentation to allow trephination in eccentric or thin corneas including desmetocele, for DALK.
- Use of femtosecond trephination to allow mushroom configuration with simplified Big bubble DALK tunnel creation.
- Post keratoplasty intrastromal astigmatic keratotomy.

**Methods** Surgical and clinical case review including video.

**Results and Conclusions** The femtosecond laser platform provided a configurable tool with wide ranging applications in corneal surgery. Modifications to manual techniques utilising femtosecond laser offers some surgical benefits.

OP-7

#### OUR EXPERIENCE OF DMEK WET LAB-TRAINING COURSE AS A PRECURSOR TO STARTING DMEK SERVICE AT NHS TRUSTS DURING COVID-19 PANDEMIC IN UK

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**Objective** The benefits of simulation model and wet lab training courses have been well publicised. We were keen to introduce DMEK service in our NHS trust and put simulation and wet-lab training courses to the test for corneal consultants.

**Methods** We designed and held DMEK wet lab courses using human donors and the simulation model and wet lab training for consultants. We collected surveys pre- and post- wet lab course attendance. We also recorded their performance times. We used human research grade corneas and Phillip DMEK, Kitaro model eye, artificial anterior chambers for consultants.

**Results** All participants had practiced all the steps of DMEK and improved performance times. All reported to have increased confidence level as a direct result of the wet lab courses. All steps of DMEK surgery except graft manipulation were closely simulated to real-life surgery on patients. Out of the six consultants participating, two started DMEK services in their respective NHS trusts in the following month, with others planning to start DMEK services in the coming months.

**Conclusions** The benefits of simulation and wet lab training is particularly valuable during the COVID-19 pandemic, which drastically reduced the availability of donor cornea, thus grinding to a halt corneal graft surgery nationally for many months. Surgeons, regardless of grade (beginner to advanced) can keep their skills up using wet lab and simulation. This setting also improves safety for patients.

OP-8

ABSTRACT WITHDRAWN