Early Surgical and Visual Outcomes of Patients who underwent Descemet Membrane Endothelial Keratoplasty (DMEK)

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Background

- Corneal diseases are a major cause of visual impairment and blindness worldwide.[1]
- Approximately 2500 corneal transplantations are undertaken each year in the UK[2]
- **Descemet membrane endothelial keratoplasty (DMEK) is a partial-thickness posterior endothelial corneal graft which involves transplantation of the Descemet membrane and endothelium without stromal tissue[3]**
- The procedure is surgically challenging and involves difficulties in donor preparation, although studies have found lower rejection rate, fewer complications, and better visual outcomes when compared to penetrating keratoplasty
- NICE interventional guidance set out a standard of improvement in mean visual acuity and total detachment rates in endothelial keratoplasty (EK)[4]
- **As techniques and experience for this procedure evolve, thorough data collection is required to allow ongoing review of outcomes**

Aims

- Assess the early surgical and visual outcomes of patients who underwent DMEK at the Royal Shrewsbury Hospital UK between 2020 and 2021 compared to a case series of DMEK-treated patients at the Moorfield's Eye Hospital UK between 2013 and 2014

Methods

Study type: Retrospective cohort
Study setting: Patients treated with DMEK at the Royal Shrewsbury Hospital by two experienced surgeons (TJ and EC) 2020/21
Data collected: gender, age, condition, partial Descemet membrane detachment requiring rebubbling, total detachment, primary graft failure, pre-operative best-corrected visual acuity (BCVA) and three months post-operative BCVA
Outcomes were extracted from the Moorfields' DMEK case series for comparison

Discussion

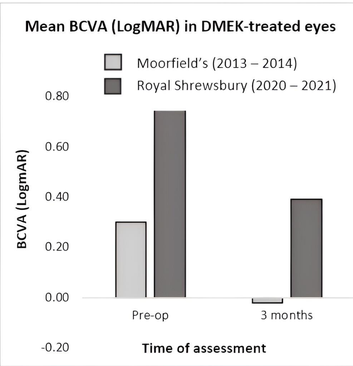
Summary
The results of this audit have **shown a reduced incidence of serious complications and a greater mean improvement in visual acuity when comparing the Royal Shrewsbury Hospital (2020/21) to Moorfield's Eye Hospital (2013/14)**

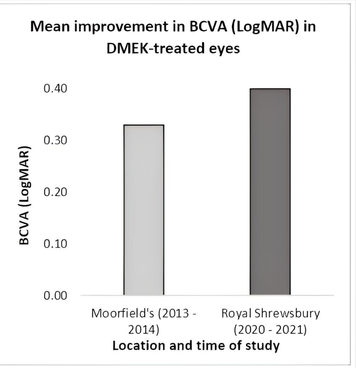
Surgical outcomes
Overall, there was a reduced incidence of serious complications including partial detachment (35.7% to 7.7%), total detachment (7.1% to 0.0%), and primary graft failure (7.1% to 0%)

Visual outcomes
The Moorfield's case series had a better pre-op (0.30, 0.79) and post-op (-0.03, 0.39) BCVA, although a greater mean improvement in visual acuity was seen in 2020/21, an improvement of 0.33 in 2013/14 and 0.40 in 2020/21

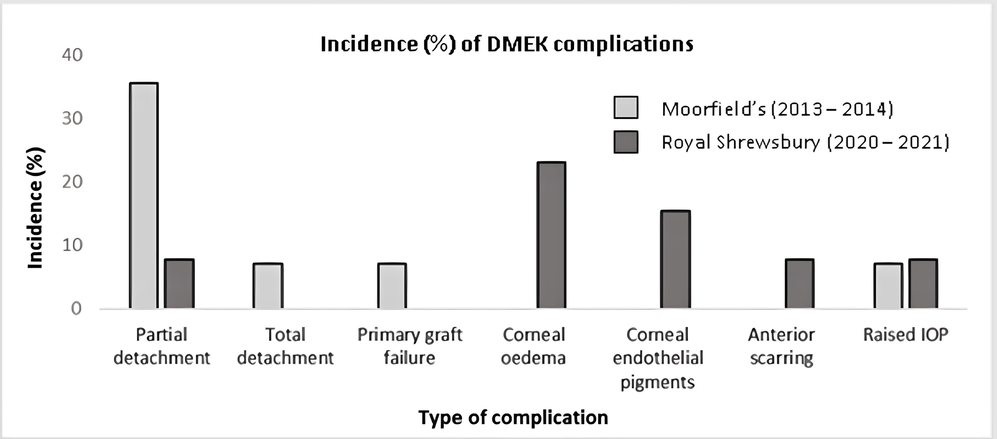
Comparison to NICE Interventional Guidance
The NICE guidance4 set out a standard of improvement in mean UCVA of 0.21 at 6-months follow-up, and a total detachment rate of 2.0% to 8.5%. Although not directly comparable due to differences in VA measurement and timescale, both the Moorfield's study and this Royal Shrewsbury study **exceeded this improvement in VA over a 3 months follow-up. Additionally, the 2020/21 review found a total detachment rate better than that set out by NICE (0.0% compared to 2.0% - 8.5%)**

Results





Total patients	13
Mean age ± SD (range)	70.2 ± 6.7 years (60 to 86)
Gender	9/13 (69.2%) F, 4/13 (30.8%) M
Fuchs' endothelial dystrophy (FED)	10/13 (76.9%)
Other	3/13 (23.1%)



References

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