Intraoperative Descemet Membrane Endothelial Keratoplasty graft loss into the vitreous cavity

Chung Shen Chean[1], Fadil Khoyratty [1], Marta Fernandez-Gurria [1], Somnath Banerjee [1], Navpreet Dhillon [1]
[1] Department of Ophthalmology, Leicester Royal Infirmary, Infirmary Square, LE1 5WW Leicester

University Hospitals of Leicester NHS Trust

Background & Aim

- Descemet membrane endothelial keratoplasty (DMEK) is a type of endothelial keratoplasty introduced in 2006 which involves transplantation of Descemet membrane and the endothelial cell layer only
- DMEK has lower rejection rate and quicker recovery rate than full-thickness penetrating keratoplasty and other endothelial keratoplasty.
- However, it can pose unique surgical challenges, especially in eyes with previous vitreoretinal surgery.
- To illustrate a rare case of intraoperative posterior dislocation of DMEK graft of a pseudophakic patient (intraocular lens (IOL) in the posterior capsular bag), which was then successfully retrieved via pars plana approach.

Case Report

- 65-year-old gentleman
- Past ocular history: Multiple retinal detachment surgeries right eye (pars plana vitrectomy and endolaser repair, inferior scleral buckle and silicone oil for macula-off retinal detachment), uncomplicated cataract surgery and removal of silicone oil, Nd-YAG posterior capsulotomy right eye
- Presented and assessed in Corneal clinic for pseudophakic bullous keratopathy.
- Presenting logMAR visual acuity (VA): Counting Finger (CF) in the RE with glasses and 0.12 in the left eye (LE).
- Patient was listed for DMEK for visual rehabilitation.

Intraoperative complication

- Due to suboptimal intraoperative view despite staining the graft with VisionBlue 0.06%®, unfolding manoeuvres were challenging.
- During intracameral air insufflation to help with unfolding of the graft, the graft was dislodged into the vitreous and could not be retrieved intraoperatively.
- Procedure was abandoned.

Investigation

- B-scan ultrasound with A-scan overlay confirmed posterior localisation of the graft in the vitreous (**Figure 1**).
- Retina was flat with no signs of vitritis

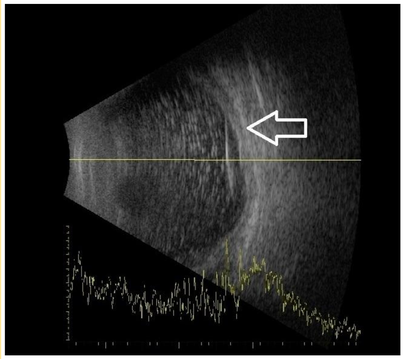


Figure 1

Intraoperative dislocation of DMEK graft into the posterior segment most likely occurred as it went through the pupil, behind the lens and through the posterior capsulotomy defect.

Management

- A week after the failed DMEK procedure, he had full thickness corneal trephine followed by temporary keratoprosthesis to retrieve the dislocated DMEK graft via a standard 23-gauge pars plana approach (**Figure 2a**)
- A penetrating keratoplasty was performed with interrupted 10-0 Nylon sutures after the DMEK graft was successfully retrieved (**Figure 2b**).

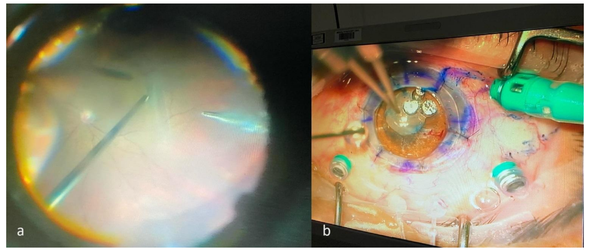


Figure 2a Figure 2b

Outcomes:

- Patient recovered well with viable corneal graft and flat retina, with no macular oedema and proliferative vitreoretinopathy (PVR) (**Figure 3**).
- His most recent visual acuity 7 months after the procedure was 0.88 logMAR unaided in the RE and was expected to improve further following removal of corneal graft sutures.

Postoperative management and outcomes

Postoperative treatment:

- hourly preservative free topical steroid
- 4 times a day preservative free topical Levofloxacin
- Twice a day preservative free topical cycloplegics

Due to presence of AC inflammation, subconjunctival dexamethasone injection was given.

Pulsed intravenous (IV) methylprednisolone followed by oral Prednisolone taper was required to control the inflammation.

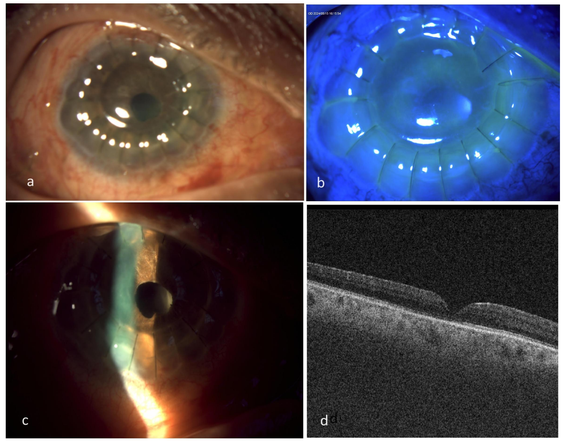


Figure 3

Conclusion

- Intraoperative posterior dislocation of DMEK graft is a real risk in vitrectomised eyes with unstable lens-iris diaphragm.
- DMEK graft can migrate via weak zonules, iris defect or posterior capsulotomy in pseudophakic eyes, not only in aphakic patients.
- It is uncertain whether DMEK graft can be left in the posterior segment without causing retinal complications, although there is stronger evidence that DSAEK graft needs to be removed if it is dislocated into the posterior segment.
- A posteriorly dislocated DMEK graft can be safely retrieved via a standard 23-gauge pars plana approach with a temporary keratoprosthesis, and then a penetrating keratoplasty performed at the same setting.
- Intense steroid treatment regime is desirable in complex corneal transplant procedures to reduce risks of inflammation and corneal graft rejection.

References

Anshu A, Price MO, Price Jr FW. Risk of corneal transplant rejection significantly reduced with Descemet's membrane endothelial keratoplasty. Ophthalmology. 2012 Mar 1;119(3):536-40. DOI: 10.1016/j.ophtha.2011.09.019.
Vasquez-Perez A, Brennan N, Ayoub T, Allan B, Larkin DFP, da Cruz L. Descemet Membrane Endothelial Keratoplasty (DMEK) Graft Dislocation Into the Vitreous Cavity. Cornea 2019. DOI: 10.1097/ICO.0000000000001788.