

Use of Single Donor Cornea for 2 Lamellar Transplantation Procedures: DMEK and DALK

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Dr. Teichman, Ms. Menant-Tay, Dr. Teja, and Dr. Conlon have no financial relationships to disclose

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Introduction

- Donor corneal tissue is a limited resource which may affect wait times
- Single-purpose corneal tissue:
 - One corneal tissue per procedure
- Dual-purpose corneal tissue:
 - In 2011, Heindl *et al.* reported splitting donor cornea tissue for multiple procedures



Methods

- Retrospective chart and operating room video review
- Inclusion criteria
 - Patients who had either DALK or DMEK using a dual-purpose donor cornea
- A trephine-peel SCUBA technique was first used to harvest the DMEK grafts, and the remaining tissue was used for the DALK procedures
- Tissue preparation and operative use occurred on the same day
- Tissue preparation challenges, intraoperative complications, and visual recovery were assessed



Results

- Five dual-purpose corneoscleral rims were used to prepare tissue for 5 DMEK procedures and 5 DALK procedures
- Preoperative diagnoses
 - DALK:
 - 3 - Keratoconus
 - 1 - Pellucid marginal degeneration
 - 1 - HSV scar
 - DMEK:
 - 4 - Fuchs' endothelial dystrophy
 - 1 - Pseudophakic bullous keratopathy



Results

- 5 donor tissues for 10 patients
 - No donor tissue loss
 - No intraoperative complications
- At six-month follow-up, mean best corrected spectacle distance visual acuity improved from
 - 20/250 to 20/80 ($p = 0.10$) in the 5 DALK patients
 - 20/300 to 20/25 ($p = 0.02$) in the 5 DMEK patients



Surgical Experience

- Sequential graft and patient preparation (same day)
- DALK procedure performed first
- Dual-purpose versus single-purpose tissue
 - Same pre-operative evaluation
 - Same patient criteria
 - Shorter graft preparation time with dual-purpose tissue



Flow Chart

	Single-Purpose		Dual-Purpose	
Procedure	DALK	DMEK	DALK	DMEK
Donor Ordered (optical quality)	A	B	A	B
Surgery Outcome	✓ X	✓	✓ X	✓
Donor Used	A	B	A B	A
Tissue Saved	-	-	B -	-



Conclusions

- Success of dual-purpose method depends on if DALK needs to be converted to full-thickness transplant and if DMEK peel performed without incident
- In this study, all saved donor tissues were used for other patients
- A single donor corneal graft can be used for both DMEK and DALK, and is a promising strategy to improve the efficiency of corneal transplantation
- Complications with the preparation of dual-purpose corneal tissue were not encountered



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