

Pre-loaded DMEK Tissue

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DMEK vs. DSEK





DMEK

• Over the past 3 years, there has been a sharp increase in the number of DMEK surgeries being performed



2015 Eye Banking Statistical Report. Eye Bank Association of America. 2016. Washington DC.

DMEK – improved visual acuity

6-month BSCVA: DSAEK vs. DMEK



N=200; First 100 cases of each procedure (retrospective case series).

Hamzaoglu EC, Straiko MD, Mayko ZM, Sáles CS, Terry MA. Ophthalmology. 2015;122(11):2193-9.



DMEK – Reduced rejection risk



Anshu A, Price MO, Price FW. Ophthalmology. 2012;119(3):536-40.

DMEK

• DMEK still only accounts for 23% of all EK procedures performed in the US



Endothelial Keratoplasty (EK)





- DMEK is a technically difficult surgery
 - -New surgical maneuvers
 - -DMEK graft tissue is very fragile
 - Minimize manipulation



So why don't we do DMEK on every case?









DMEK

- Optimal tissue delivery
 - Prestripped and pretrephined
 - Eye-bank preparation of prestripped tissue has aided in acceptance and increased conversion to DMEK
 - Similar to precut DSAEK nearly a decade ago



DMEK

- Optimal tissue delivery
 - Prestripped and pretrephined
 - Preloaded
 - Container type
 - Trypan staining



PURPOSE

 To determine the endothelial safety of prestaining DMEK grafts with Trypan Blue prior to preloading

Wolle M, DeMill D, Woodward M, Mian, S. The Endothelial Safety of Using Preloaded Descemet Membrane Endothelial Keratoplasty Graft. *Cornea* (in press)





- Twenty seven cadaveric corneas
- Prepared for DMEK using a standardized technique
 - Experienced DMEK eye bank technician





METHODS

- Twenty seven cadaveric corneas
- Prepared for DMEK using a standardized technique
- Loaded in Straiko Modified Jones Tube injector (Gunther Weiss Scientific Glass, Portland, OR)
 - Filled with Optisol GS





METHODS

- Twenty seven cadaveric corneas
- Prepared for DMEK using a standardized technique
- Loaded in Straiko Modified Jones Tube injector
- Stored with silicone caps covering each end







- Corneas divided into three groups of nine
 - Group 1—Preloaded prestained DMEK Graft (psDMEK)
 - Pre-stained with Trypan Blue 0.06% (DORC International) for 3 minutes prior to preloading and storage in the modified jones tube for 24 hours
 - Group 2—Preloaded DMEK Graft (pDMEK)
 - Directly preloaded in the injector prior to storage for 24 hours
 - Group 3—Immediately Injected DMEK Graft (Control)
 - Immediately injected into vital dye



RESULTS







• Appearance of preloaded and prestained DMEK tissue after 24 hours of storage







Table 1. Endothelial Cell Loss (%)*			
	Preloaded		Immediately
	prestained	Preloaded	Injected DMEK
	DMEK Grafts	DMEK Grafts	Grafts- Control
	(Group 1)	(Group 2)	(Group 3)
Average (SD)	16.78 (7.11)	20.16 (7.52)	18.47 (6.36)
Range	6.86-32.27	12.81-33.29	10.27-30.50
p-value	0.67	0.57	REF



CONCLUSION

- DMEK tissue can be stored in Optisol GS within the Straiko Modified Jones Tube for 24 hours without increased ECL
- Prestaining DMEK tissue with Trypan Blue 0.06% prior to preloading does not result in increased ECL
- DMEK Grafts retain sufficient blue coloration after 24 hours



Surgical Technique





 Pilot study to assess feasibility and efficacy of pre-loaded corneal donor grafts for Descemet Membrane Endothelial Keratoplasty





- Prospective study
- Eye bank pre-stripped, pre-stained, pretrephined donor tissue
- Outcome measures
 - Primary endpoints: rates of detachment, primary graft failure, rebubbling
 - Secondary endpoint: specular microscopy at 3 months





Surgeon Receipt of a Pre-loaded DMEK Graft

RESULTS

- 14 eyes of 13 patients
- Follow up: 7 weeks (1 week to 3 months)
- Primary Endpoints
 - Detachment: 4/14 (28.6%)
 - Rebubble: 1/14 (7.1%)
 - Primary graft failure: 0/14
- Secondary Endpoints
 - Specular at 3 months:
 - Mean ECD 2530 (-11.4%)



Complications

- CME: 1/14 (ERM)
- Pupillary block: 1/14





 Pre-stripped, pre-stained, pre-loaded DMEK (p3DMEK) may be a safe and efficacious alternative



Training Resources

www.eversightvision.org/onlinetraining

Journal articles, tissue prep options, demonstration videos and more



Questions?

