Transition to DMEK
How to transition to the ultimate in posterior lamellar keratoplasty

• Neda Shamie, MD
• Nicole Fram, MD

ASCRS 2014

• Brandon Ayres, MD
• Micheal Straiko, MD

Course Objectives

Transition to DMEK

Give surgeons the information they need to transition from:

• Discuss advantages of DMEK over DSAEK
• Review important steps of DMEK including
  • Patient Selection
  • Donor preparation, insertion techniques, and unfolding techniques
  • Postoperative care

ASCRS 2014
Course Objectives

- Faculty members will present different aspects of DMEK
- Discuss how it may differ or be similar to DSAEK
- Give examples
- Give opportunity for other faculty members to comment or show examples

Course Faculty

- Residency training at UMDNJ, New Jersey Medical School
- Fellowship in Cornea, External Disease, and Refractive Surgery at Wills Eye Institute, Philadelphia PA
- Cornea Service at Wills Eye Institute, Philadelphia, PA
- Private Practice at Ophthalmic Partners of Pennsylvania

Neda Shamie, MD
Keck School of Medicine of the University of Southern California
Department of Ophthalmology Doheny Eye Institute
Residency at University of California, Irvine
Fellowship in Cornea and Anterior Segment Refractive surgery with Peter McDonnell @ UCI
Associate Director of the Corneal Services at Devers Eye Institute 5 yrs
Transition to DMEK

Course Faculty

Michael Straiko, MD

Residency at Washington University in St. Louis
Fellowship in Cornea and Refractive Surgery at Devers Eye Institute, Portland OR
Private practice for one year before returning to Devers Eye Institute
Current Interests include all forms of corneal transplantation, anterior segment reconstruction, and refining posterior lamellar surgery including DMEK

Nicole Fram, MD

Residency at Wills Eye Hospital
Fellowship in Cornea and External Disease and Uveitis at Francis I. Proctor Foundation UCSF
Clinical Instructor at Jules Stein Eye Institute UCLA
Expertise in premium cataract surgery, cornea and external disease, as well as anterior segment reconstruction

Brandon Ayres, MD

Is Thinner Really Better

ASCRS 2014

Disclosure

I have no financial interest in the subject matter of this talk

Brandon D. Ayres, MD
Cornea Service WEI

ASCRS 2014
What are the Greatest Innovations?

Brandon D. Ayres, MD
Cornea Service WEI ASCRS 2014

The Airplane/Air Travel
The Internet
The Smartphone
What are the Greatest Innovations?

- The Airplane/Air Travel
- The Internet
- The Smartphone
- The Cookie

Brandon D. Ayres, MD

Cornea Service WEI ASCRS 2014

Posterior Lamellar Keratoplasty

Descemet’s Stripping Endothelial Keratoplasty

DMEK

Brandon D. Ayres, MD

Cornea Service WEI ASCRS 2014
Posterior Lamellar Keratoplasty

Why Endothelial Keratoplasty?

Surgical Video
Descemet’s Membrane Endothelial Keratoplasty (DMEK)

- Layer for layer endothelial replacement
- Surgically much more challenging than DSEK
- May allow for better vision and faster recovery and reduced rejection rate

DMEK may allow for reduced risk of rejection (0.7%) as compared to DSEK (9%) and PKP (17%) Price (2012)

Melles in 2011 Reported 75% of patients seeing 20/25 or better at 6 months

Only 10-20% of DSEK patients will achieve 20/20 vision
Over the next few years DMEK will gain wider acceptance. At this time a motivated surgeon and a well selected patient can perform DMEK with good, but not excellent reliability. As surgical techniques evolve DMEK will become more prevalent. Clinical results are “stunning” with DMEK. If my mom or dad had Fuchs’ dystrophy, I would perform DMEK.
Transition to DMEK
Donor Insertion Technique
Brandon Ayres, MD
Cornea Service
Wills Eye Institute
ASCRS 2014

Disclosure
I have no financial interest in the subject matter of this talk

General Steps of DMEK
• Is DMEK worth the time and effort
• Patient selection factors
• Donor preparation

Donor Insertion
General Steps of DMEK

Donor Insertion Technique

Unfolding Frustration

Donor Insertion Technique

- Insertion of the endothelial graft is one of the most challenging steps of the surgery
- Donor orientation can be difficult
- Visualization in the anterior chamber
- Unscrolling of the graft can be difficult...but not impossible.

Donor Insertion Technique

- Staining with trypan blue is essential to visualize EK in the anterior chamber
- Graft can be injected through IOL injector as long as it is a sealed system (ICL injector or B&L injector)
- Staining of graft will fade as grafts unfolds...time is ticking!

Donor Insertion Technique

Using an injector to insert DSAEK graft

Endoserter by Ocular Systems Inc.

Wills Eye Institute
Donor Insertion Technique

Using an injector to insert DMEK tissue
Staar ICL injector

Donor Unfolding Technique

Unfolding using air-bubble assist

Wills Eye Institute

Donor Insertion Technique

Unfolding using air-bubble assist

1 2 3

Donor Insertion Technique

• Unpredictable scrolling of endothelial graft
• Potential for damage or loss of graft in the injector system
• DMEK graft can get damaged or caught by plunger in injector

Wills Eye Institute
Donor Insertion Technique

Using an glide to insert DSAEK graft
Busin Glide by Moria

Donor Insertion Technique

Using an glide to insert DMEK graft
Busin Glide by Moria

Donor Unfolding Technique

No air, tap technique
Busin Glide by Moria

Donor Unfolding Technique

No air, tap technique
Busin Glide by Moria
Donor Insertion Technique: Glide

- Even with a glide, the orientation of the DMEK tissue is not assured
- It is possible to tear tissue when grabbing with forceps
- Use smooth forceps, no teeth or serrations
- Keep glide wet or DMEK graft will stick and possibly tear

Tap technique seems to me more reliable than air bubble (in my hands)

- Try and efficiently unfold graft as vision blue will fade

Comments

- Use of a microscope mounted slit beam may help with orientation of graft
- Price in Cornea Feb 2012 described use of hand held slit lamp assistance for DMEK and DALK