Demystifying DMEK
Making The Transition

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• Consultant (ad hoc)
  • Allergan
  • Avellino Laboratories
• Research Funding
  • National Eye Institute
• Speaker’s Bureau
  • Alcon
  • Allergan
  • Avellino Laboratories
• Travel Support
  • Thea Laboratories

Demystifying DMEK
Why make the Transition?
• Does not require lamellar corneal dissection
  • Microkeratome not required for automated lamellar dissection
• Better visual acuity
• Lower incidence of endothelial rejection
Figure 2. Flow diagram of patient selection. A total of 673 consecutive cases were included in the study. Starting with 500 cases of DMEK, 34 cases were excluded due to incomplete data (6 cases) or a poor visual outcome (28 cases). This left a final cohort of 466 patients. Figure 2 shows the patient selection process. 1. DMEK: Descemet's membrane endothelial keratoplasty. 2. DSAEK: Descemet stripping automated endothelial keratoplasty. 3. Post-op: postoperative.

Table 3. Visual Outcome after Descemet’s Membrane Endothelial Keratoplasty

<table>
<thead>
<tr>
<th>BCVA</th>
<th>Preoperative</th>
<th>6-Months</th>
<th>Preoperative</th>
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<th>Preoperative</th>
<th>6-Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥20/40 (≥0.5)</td>
<td>40% (n=151)</td>
<td>96% (n=136)</td>
<td>90% (n=225)</td>
<td>92% (n=136)</td>
<td>68% (n=136)</td>
<td>96% (n=121)</td>
</tr>
<tr>
<td>&gt;20/20 (≥0.3)</td>
<td>8% (n=9)</td>
<td>7% (n=10)</td>
<td>7% (n=11)</td>
<td>7% (n=10)</td>
<td>9% (n=10)</td>
<td>7% (n=8)</td>
</tr>
<tr>
<td>≥20/20 (≥0.3)</td>
<td>2% (n=2)</td>
<td>1% (n=1)</td>
<td>1% (n=1)</td>
<td>1% (n=1)</td>
<td>2% (n=2)</td>
<td>1% (n=1)</td>
</tr>
</tbody>
</table>

Table 4. Complications after Descemet’s Membrane Endothelial Keratoplasty (DMEK) Within the First 6 Months Postoperatively (N = 500)

<table>
<thead>
<tr>
<th>Overall Group (Cases: 6-Months)</th>
<th>Group I (Cases: 6-Months)</th>
<th>Group II (Cases: 6-Months)</th>
<th>P Value</th>
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<tbody>
<tr>
<td>Donor graft failure*</td>
<td>5.2% (20)</td>
<td>6.0% (12)</td>
<td>3.6% (9)</td>
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<tr>
<td>Retinal detachment</td>
<td>3.0% (10)</td>
<td>3.2% (10)</td>
<td>2.8% (8)</td>
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<tr>
<td>Secondary DSEK</td>
<td>0.4% (1)</td>
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</tr>
<tr>
<td>Primary PKF</td>
<td>0.0% (0)</td>
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</tr>
<tr>
<td>Intracocular complications</td>
<td>1.4% (5)</td>
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<td>Localized retinal detachment</td>
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Demystifying DMEK
Tip # 1

Be Prepared
Have a Back Up Plan

DSEK Post-Operative Complications


Table 2. Main and Ancillary Outcomes in Eyes Treated With Prednisolone Acetate 1% Suspension or Loteprednol Etabonate 0.5% Gel

<table>
<thead>
<tr>
<th></th>
<th>Prednisolone Acetate 1%</th>
<th>Loteprednol Etabonate 0.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyes (%)</td>
<td>0.05 (0)</td>
<td>0.05 (0)</td>
</tr>
<tr>
<td>IOP elevation</td>
<td>0.03 (0)</td>
<td>0.03 (0)</td>
</tr>
<tr>
<td>N = 116</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IOP ≥24 mm Hg</td>
<td>0.03 (0)</td>
<td>0.03 (0)</td>
</tr>
<tr>
<td>N = 116</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IOP ≥18 mm Hg</td>
<td>0.03 (0)</td>
<td>0.03 (0)</td>
</tr>
<tr>
<td>N = 116</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IOP ≥10 mm Hg</td>
<td>0.03 (0)</td>
<td>0.03 (0)</td>
</tr>
<tr>
<td>N = 116</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Kruskal-Wallis test.
†If fiber must test.
‡Statistical intervention on POD 1 or later.

Demystifying DMEK
Tip # 1

Be Prepared
Demystifying DMEK

Patient Selection

- Look for
  - Isolated endothelial failure
  - Pseudophakic corneal edema
  - Fuchs corneal dystrophy
  - Iridocorneal endothelial syndrome
  - Minimal stromal edema
  - Multifocal IOL
  - Unhappy DSEK patients

- Avoid
  - Previous vitrectomy
  - Prior glaucoma surgery
  - Prior keratoplasty
  - ACIOL
  - Need for IOL exchange

Donor Cornea Selection
Older is Better
Demystifying DMEK
Tip # 3

Donor Cornea Selection

• Donor
  • Age between 65 and 75 years
  • Negative serologic evaluation
  • No history of prior corneal surgery

• Donor cornea
  • ECC > 2500/mm²
  • DTP < 12 hours
  • DTS < 7 days
  • S stamp

Preoperative
Inferior PI

Demystifying DMEK
Tip # 4

Preoperative Inferior PI

Plan an Escape
Demystifying DMEK

Tip # 5

Donor Preparation

Half is a Whole Lot Better Than Nothing


Tip # 6

Donor Insertion

Bubble = Trouble
Demystifying DMEK

Tip # 6

Donor Insertion

Bubble = Trouble

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Demystifying DMEK

Tip # 7

Determining Donor Orientation

Seeing is Believing
Demystifying DMEK

Tip # 7

Determining Donor Orientation

- S stamp
- Vision blue
- Slit beam
  - Hand held
  - Microscope mounted

www.slitlamp.com

Demystifying DMEK   Tip # 7
Determining Donor Orientation

Donor Unfolding

Patience is a Virtue

Demystifying DMEK   Tip # 8
Donor Unfolding
Donor Centration
Patience is Still a Virtue

Donor Centration Interface Technique

Postoperative Management
If It Ain’t Broke, Don’t Fix It
Making the Transition

- Although associated with a steep learning curve, DMEK offers advantages over DSEK that make it a technique worth learning
  - Does not require lamellar corneal dissection
  - Better visual acuity
  - Lower incidence of endothelial rejection
- As many eyes with endothelial decompensation are not candidates for DMEK, the corneal transplant surgeon should be able to perform both DSEK and DMEK
Thank You For Your Attention!

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