Transitioning from DSAEK to DMEK

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Reasons to Transition
- DMEK (Descemet membrane endothelial keratoplasty) Has emerged as a technique that offers certain advantages over DSAEK
  - Improved visual acuity-
    - 6 months post-op DMEK: 95% >20/40, 50% >20/25
    - 6 months post-op DSAEK: 43% >20/40, 6% >20/25
  - Less hyperopic shift-
    - DMEK: 0.25-0.50
    - DSAEK: 0.7-1.50
  - Decreased rejection rate-
    - DMEK: 0.7%
    - DSAEK: 9%
  - Comparable cell loss- 30-40% for both at 6 months
  - More rapid post-op visual rehabilitation


DSAEK DMEK

DMEK Challenges
1. Tissue preparation
   - Strip Descemet’s membrane from the donor without destroying endothelial cells or ripping the membrane
2. Graft Manipulation
   - The tissue scrolls into a tight roll with the endothelium on the outside and behaves unlike DSAEK graft

Overcoming DMEK Challenges
- Tissue preparation
  - Multiple eye banks are offering “pre-stripped” tissue for use in DMEK
  - Removes the burden of corneal tissue loss during preparation from the surgeon

Overcoming DMEK Challenges
- Graft Manipulation
  - There is a learning curve to be overcome with DMEK graft manipulation
  - Courses
  - Videos
  - Discussions
  - Trial and Error
DMEK surgical steps

- Temporal clear corneal incision- 2.4mm depending on injector
- Descemet’s Stripping similar to DSAEK, non-overlapping, some use air, some use OVD
- Stain graft with trypan blue
- Trephine graft and re-stain
- Place graft in injector
- Insert graft in anterior chamber
- Unfold graft making sure to verify orientation (S stamp makes it much easier)
- Place air or gas under the graft
- High five surgical tech

DMEK injectors

- Dutch Ophthalmic (DORC) glass pipette- 2.4mm incision size
- Modified Jones tube- 3.2mm
- Viscoat system- 2.4mm
- Modified IOL injectors
- Visian ICL injector- 3.0mm

DMEK manipulation techniques

- Shallow A/C is the key to unscrolling
- No air, tapping technique
- Bubble below
- Bubble above
- Use small bursts of BSS to flip the graft or open a tight scroll

Initial Cases

- Start out with uncomplicated pseudophakic patients with Fuch’s dystrophy or PBK
- DMEK is possible but more difficult in the presence of glaucoma tubes
- DMEK is possible but more difficult in cases of failed prior PKP
- Avoid patients with prior PPV/ACIOL

References


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