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• Strip DESCEMET
• Microkeratome lamellar DONOR preparation – AUTOMATED
• Stromal Disc Carrier of ENDOTHELUM – 8mm disc – Donor inserted and deployed
The 4 D’s of DSAEK

• Depth
• Deployment
• Dislocation
• Donor

Depth

• Deep anterior chamber
  – Anterior chamber maintainer
• Goal=soft eye with no posterior vitreous pressure
  – Massage
• Choice of lid speculum
  – Jaffe

Deployment

• Disc inserted with 60/40 fold
  – Healon evacuated PRIOR to insertion
  – Stromal interface haze if not evacuated?
• **FORCEPS Do not work well with Ultrathin tissue
• Eye sutured
  – 3 sutures
Problems with Deployment

• Close the wound prior to deploying
  – Otherwise graft can come out of eye

Inversion of Graft

• Can happen with any method of deployment
• Look for “S” Mark to confirm proper orientation
• With Forceps: look for 60/40 fold

Inverted Graft

STEPS to Re-invert
1. Leave graft in eye
2. Leave air lying above graft
3. Bent needle on air to catch edge of graft
4. Pull needle back, graft will flip over around air bubble
5. Inject air through needle to re-deploy
Bubble Management

• Make sure that cannula is directed posterior
  – Avoid bubble in interface

• Leave bubble In?
• Remove completely?
• Partially inflate?
• What IOP?

Iridotomy?

• Yes!
  • AVOID PUPILLARY BLOCK
  • CAN ALSO DILATE AT END OF CASE
  • Currently placing iridotomy with FUGO BLADE
Dislocation: What makes it stick?

• Air surface tension, then:
  – Endothelial pump pressure
• “roughing up periphery”
  – Creates stromal fibrils that promote adherence
  • Terry
• Full thickness paracentesis
  – Drainage of fluid from interface
  • Price
  • ? Risk of ingrowth/infection

Potential Causes of Dislocation

• Primary Graft Failure/ Trauma
• Optisol GS/Viscoelastic in Interface?
• Loss of Bubble?
  – Aphakia/One chamber
  – Large superior iridotomy
  – Tube shunt: Leave large bubble
  AVOID HYPOTONY

Dislocation: Diagnosis

• Usually obvious
  – Gap can be identified at slit lamp
  – Edema of overlying cornea/epithelium
  – Visante OCT
Dislocation

- Timing to re-bubble
  - Not urgent
  - Graft is being bathed in aqueous

How many times?

- After 1st attempt, if graft not sticking; may be primary graft failure
- 3 strikes = MAX
  - Rebubble can be performed in minor OR

Donor Issues

- Inspect Donor
- Review Donor Information Sheet
  - How large is stromal bed?
    - Determines maximum trephine size
  -Irregular cut?
    - Usually noted on prep sheet from eye bank
Donor: Diameter

- **What diameter should disc be?**
  - Smaller: easier to deploy
  - Larger: more endothelium; may “stick” better
  - Ideal: 8.25-8.75mm
  - Larger diameter could compromise angle
  - Use smaller diameter for smaller (hyperopic eyes) cornea
    - <11mm may need to use 7.5 to 8.0
    - W-W minus 3mm
  - **TREPHINE UNDER MICROSCOPE**
  - Visualize stromal bed marks placed by eye bank

Donor: Thickness

- **How thick should donor disc be?**
  - Too thick: endothelium has to work harder
  - Too thin: difficult to deploy
- **Does Thickness influence BCVA??**
  - Currently: TREND TOWARDS THINNER TISSUE
    - 64 microns average

**DSAEK DONOR: Rejection**

- Transplanted tissue is placed in the AC
  - no exposure to the surface where APC and antibodies are present
- No sutures connecting the host and donor tissue
- Reduced immunogenicity of the donated tissue due to absence of epithelium
Recognizing Rejection in DSAEK

- Corneal edema
- Mild to moderate AC rxn; may be limited
- Injection: often mild
- KP: variable

VA in DSAEK

- Typically around 20/30
- Vision improves over time (1-2 years)
  - What limits vision?
    - Interface?
    - Decentration?
    - Edge effects?
    - HOA?

Controversies in DSAEK

- Does Decentration matter?
  - Uncertain
  - Probable not if small
  - If pupil transected by edge of graft; may cause visual problems
Visual Acuity

- Is thinner better?
  - Neff et al: Comparison of central corneal thickness to visual acuity outcomes in endothelial keratoplasty
  - Grafts < 131 um have better BSCVA
  - Not confirmed by other studies

Why aren’t we all doing DMEK?

- Problems:
  - Steep learning curve (unfolding)
  - High dislocation rate (>50% rebubble)
    - Complete dislocation = loss of graft
  - Surgical time to prepare donor
  - Tissue wastage > 8%
    - Melles: 30% failure in early case series
  - Terry: Cornea 2011 (Why aren’t we all doing DMEK?)

When not to do DMEK

- Eyes with tube shunts
- AC IOL
- Post vitrectomy or 1 chamber eye
  - Can lose graft in posterior chamber
Ultrathin DSAEK: DMEK for mortals

- Advantages:
  - Standard tissue preparation
  - Inserts and unfolds similar to standard DSAEK
- ULTRATHIN
  - < 100 microns
  - Prepared with a double pass technique

In Vitro OCT

- Examples of Double Pass Central Thickness

Current Issues

- Is it really better?
  - If the issue is ANY stromal interface: NO
  - If VA limited by central thickness, irregularities in cutting, centration: MAYBE
- Insertion techniques need to be refined
  - CURRENT: TAN ENDOGLIDE
    - Maintain anterior chamber
  - Difficult to insert with FORCEPS
SHEETS GLIDE

- ADVANTAGES: Easy to insert
- Easy to Deploy
- Must have incision about 5 to 5.5 mm
- ?Endothelial Trauma?

Contact Information

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