Cataract Surgery In Eyes With Low Endothelial Count

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Preoperative Corneal Evaluation

- S/L Biomicroscopy - Specular Reflection
- Specular Microscopy...
  - Endothelial Cell Density/Count
  - Image Magnification (100 x)
  - Computer Storage of Image
- Pachymetry

Corneal Edema after Cataract Surgery

A. Mechanical Injury
   A. Surgical Trauma
   B. IOL Syndromes
   C. DM Detachment
   D. Contact with Other Ocular Tissues
   E. Membranous Ingrowth or Downgrowth
B. Inflammation / Infection
   A. Endophthalmitis
   B. Retained Lens Material
   C. Brown-McLean Syndrome
C. Chemical Injury
   A. Toxic Endothelial Cell Destruction Syndrome (TECDS)
D. Concurrent Eye Disease
   A. Primary Corneal Endothelial Disease
   B. Glaucoma/High IOP

Thorough Wash of Pov-Iodine from Conj Sac
Scleral Tunnel is Preferred by Some Surgeons

Ophthalmic Viscosurgical Devices (OVDs)

- **High Viscosity-Cohesive OVDs**
  - Super Viscous-Cohesive OVDs (> 1 million mPs)
    - Healon GV
  - Viscous-Cohesive OVDs (100000 - 1000000 mPs)
    - Healon, Provisc

- **Lower Viscosity-Dispersive OVDs** (Low MW & Shorter Mol. Chains)
  - Medium Viscosity-Dispersive
    - Viscoat
  - Low Viscosity-Dispersive
    - HPMC

- **Viscoadaptive OVDs** (e.g. Healon 5)

Use of BSS/BSS+

**Endothelial Protection in Fuchs’**

Soft Shell Technique – 0.23

**Small Capsulorhexis & Gentle Hd to Prevent Nucleus Proplapse**

Prolapse of Nucleus

0.38
0.28
Choice of Phaco Technique:
All Manipulations Performed: Endocapsular

- Endocapsular Phaco
- Multiple Small Fragments

Choice of Phaco Technique:
Least Traumatic to the Endoth in the Surgeon’s Hands

Phaco Chop (2.10)

Phaco Power Modulation

- Hyperpulse / Micropulse
- Variable Duty Cycle
- Wave Form

WhiteStar Technology
Torsional Phaco
OZiL™
INFINITI PLATFORM from ALCON

Transversal
SIGNATURE PLATFORM from AMO

Post occlusion surge is minimized
Chamber stability is maintained.

Prevent Endothelial Trauma
Avoid Instrument Touch

Prevent Endothelial Trauma
Avoid Chatter

Nucleus Chatter (0.41)
Prevent Endothelial Trauma
Avoid Chatter

Nucleus Chatter (0.41)
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Prevent Endothelial Trauma
Avoid Chatter

Nucleus Chatter at I/A (0.35)
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When is it Safe to Perform Cataract Surgery Alone in a Pt with Cataract & Low Endothelial Count (eg Fuchs' Dystrophy)

- Pachy < 640 μ & No Peripheral Corneal Edema

- Operate Before Nucleus too Hard
- Enhanced Endothelial Protection...
  - Soft Shell Tech (Combn of Viscodispersive & Viscoretentive)
- Experienced Surgeon...
  - Efficient Technique
  - Minimise Phaco Time
  - Minimise Irrigation

Seitzman GD, Gottsch JD, Stark WJ: Ophthalmology March 2005

Postoperative

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• Meticulous Preop Workup
• BSS/BSS+
• Soft Shell Technique
• Endocapsular Phaco Techniques
• Appropriate Power Modulation and Fluidics
• Avoid Factors Known to be Detrimental to Endothelium

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Thank You