LESS-THAN – PERFECT OUTCOMES AFTER UNEVENTFUL CATARACT SURGERY:

WHAT ARE WE MISSING??

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WHAT ARE WE MISSING?

1. PATIENT SPECIFIC FACTORS
2. OCULAR SURFACE DISEASE
3. KERATITIS MEDIOSA 
4. REFRACTIVE SURPRISES
5. EARLY PCO
6. DYSPHOTOPSIA
7. SUBTLE CORNEAL PATHOLOGIES
8. IOL DECENTRATION
9. PROBLEMS WITH MP IOLS
10. SUBTLE MACULAR PATHOLOGIES
How Do We Manage?

**PCO ASSESSMENT**

- S/L Biomicroscopy
- Retroillumination
- Distant Direct Ophthalmoscopy
- Direct Ophthalmoscopy
  - Clarity of Fundus View

**EARLY PCO**

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**PCO PROPHYLAXIS**

- Complete Removal of LEC
- Surgical
- Pharmacologic
- Immunologic
- LCOP
  - Laser Capsular Opacity Prevention
- Inhibition of LEC Proliferation / Migration

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**Laser Capsular Opacity Prevention (LCOP)**

ARC Nd:YAG laser photolysis

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**Cetus Nanolaser Phaco**

(A.R.C. Laser GmbH, Nurnberg, Germany)
Laser Capsular Opacity Prevention (LCOP)

ARC Nd:YAG laser photolysis

WHAT WAS KNOWN
- LP is capable of removing LECs from the Ant Capsule & the capsular bag
- LP capsule polishing can be performed safely during in vivo cataract surgery

WHAT THIS PAPER ADDS
- Circumferential LP capsule polishing provides complete and sustained prevention of PCO in an in vitro setting.
- Thorough ablation of LECs from the capsular bag fornix can be achieved in vitro using a standardized, stepwise surgical approach.

PCO PROPHYLAXIS

- Complete Removal of LEC
  - Surgical
  - Pharmacologic
  - Immunologic
  - LCOP
- Inhibition of LEC Proliferation / Migration
  - Surgical Approach
  - IOL Strategy
  - Capsular Rings/Devices & IOLs

Capsulorhexis
- Regular, Round, Well-cent., 360° IOL Optic Overlap

Hydrodissection: Thorough Cortical Cleaving Hydrodissection

I & A: Thorough Cortical Clean – up to ↓ S Ring

Role of Posterior Capsular Polishing:

Role of Anterior Capsular Polishing:

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PCO Prophylaxis - Capsulorhexis

- Regular
- Round
- Well-cent.
- 360° IOL Optic Overlap

Capsular Sequestration
- "Shrink Wrap" the Capsule Around IOL Optic

Proper Sizing of the Capsulorhexis

- Rhexis Dia = 1 mm < IOL Optic Dia ≥ 4 mm

Verus Capsulorhexis Device
(Mile High Ophthalmics, Denver) Malik Y Kahook... JCRS 2014(May)

PCO Prophylaxis – Cortical Cleaving Hydrodissection

techniques

Cortical cleaving hydrodissection

Cleaving Front Ultrasound

DUE 2010 P M
Capsulorhexis: Regular, Round, Well-centered, 360° IOL Optic Overlap
- Capsular Sequestration
- "Shrink Wrap" the Capsule Around IOL Optic

Hydrodissection: Thorough Cortical Cleaving Hydrodissection
I & A: Thorough Cortical Clean – up to 2-5 Ring

Role of Posterior Capsular Polishing:
- Controversial

Role of Anterior Capsular Polishing:
- Many Would Like to Avoid It

PCO Prophylaxis – Role of PC Polishing

PCO Prophylaxis – Role of AC Polishing
- Controversial
- Many Would Like to Avoid It
PCO Prophylaxis – Role of AC Polishing

Role of anterior capsule polishing in residual lens epithelial cell proliferation

CONCLUSIONS: Anterior capsule polishing, although it removed many LECs, did not decrease residual cell growth and, conversely, enhanced cell proliferation in capsule bag cultures. This might explain why polishing does not reduce PCO in clinical studies.

PCO PROPHYLAXIS

IOL Issues

- IOL Optic Geometry
  - Square, Truncated Edge

- Maximal IOL Optic Contact
  - Posterior Angulated Haptic

- Posterior Convexity of the Optic

- Adhesive Biomaterial (Shrink Wrap)

- Biocompatible IOL Material
  - ↓ Stimuli of Cellular Proliferation

- Small Haptic-Optic Junction
PCO PROPHYLAXIS

- Complete Removal of LEC
  - Surgical
  - Pharmacologic
  - Immunologic
  - LCOP (Laser Caps Opacity Prevention)
- Inhibition of LEC Proliferation / Migration
  - Surgical
  - Pharmacologic
  - Immunologic
  - IOL Strategy
  - Capsular Rings/Devices & IOLs

Possible PCO Prevention Mechanisms

- No Space, No Cells
- Square-Edged Barrier Effect
- Mechanical Compression of the Capsular Bag
- Maintaining the Postoperative Contour of the Capsular Bag (CTR Effect)
- Enhanced Endocapsular Circulation of Aqueous Humor

Possible PCO Prevention Mechanisms—MEENA

Endocapsular Rings/Devices
- Endocapsular Square Ring
- Capsule Adhesion-Inhibiting Ring
- Capsular Sealing Ring

IOLs
- Open Capsule Device
- Protective Membrane
Possible PCO Prevention Mechanisms

**Endocapsular Rings/Devices**
- Spring-Loaded IOL
- Zephyr IOL
- Concept IOL
- New Tension Haptic IOL

**IOLs**
- Fluid Vision IOL
- Synchrony IOL
- Plate Torsion Haptic IOL

PCO: MANAGEMENT

Decision More Complex in a MF IOL Pt

- ? Cause of Visual Disability
  - Early PCO
  - Other Mechanism
  - Early PCO + Other Mechanisms

YAG Capsulotomy for Early PCO (When PCO wasn’t the Cause)

- Complicate Further Mx if IOL Exchange is Needed

YAG Capsulotomy: Definitive

MANAGEMENT: Post YAG Capsulotomy

- Well Centered + Adequate Size
- Topical Steroids
- NSAIDs
- Topical IOP Lowering Agents
- Guard Against CME & other Retinal Complications
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CONCLUSION: MANAGEMENT of EARLY PCO

• “Early PCO” Assumes Significance in the Context of MF IOL.
• Prophylaxis – Good Surgical Technique, Strategy - Appropriate IOL Design
• YAG Capsulotomy is Definitive but the Decision Process is Complex

Thanks for your Attention

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