Modern Cataract Surgery Secrets: Technical Success

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Have done research, consulting, or speaking for: Allergan, AMO, Calhoun Vision, DLI-GA, ESI-Humaneoptics, Galen, BDO, quarter, TLC.

Some of the information may represent off-label uses of approved drug or devices.

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Ask Questions

- Questionnaire
- Simple Choices
- Identify the Goal

1. I don’t care
2. Really want your best effort at Distance
3. Distance w/Astig
4. Distance and Near

Think One Step Ahead

Chess, game Similarly, with presbyopia IOLs!

- Always try to think/anticipate several moves ahead of the patient
- Perform surgery on dominant or worst eye first
- Allow recovery in less than 1 week
- Maximize speed of recovery (cool phase, viscoelastic, posterior chamber phaco, NSAID)
- Have a plan for unhappy patients
- Time Enhancements with LVC
- Time PCO management
- Address dry eye

[Diagram of chess game]
Cataract Patient

Understand that even patients you don’t think should have a presbyopic IOL may have similar desires and also deserve a discussion about options.

- Diabetic with past PRP and focal laser treatment
- Wet ARMD in one eye, smoker, soft drusen and RPE changes in other eye
- Otherwise normal healthy eye
- One eyed patient with severe macular scar

Custom Cataract Surgery

>70% of patients have > 0.5 D of pre-op astigmatism

Critical to Address For Good Uncorrected Vision

Hoffmann & Hutz
JCRS 2010;36:1479

Astigmatic Keratotomy

Only current option with Presbyopic IOLs

- Same Nomogram
  - Femto-AK
  - Blade-AK

<table>
<thead>
<tr>
<th>On-axis Incision</th>
<th>1-2.2 mm</th>
<th>0.35 D</th>
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<tr>
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<td>0.50 D</td>
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<td>On-axis Incision Plus</td>
<td>1 X 30 CRI</td>
<td>0.75 D</td>
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<tr>
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<td>1 X 45 CRI</td>
<td>1.00-1.50 D</td>
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<td>On-axis Incision Plus</td>
<td>1 X 60 CRI</td>
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Astigmatic Keratotomy

Only current option with Presbyopic IOLs

- Same Nomogram
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Toric IOLs

Astigmatism

• Up to 4 D of astigmatism
• Regular Astigmatism
• Typical teaching is to use the K’s
• Often K’s, topo astigmatism, tomo astigmatism don’t match
• Be prepared for enhancement

Timing of Secondary Intervention

Astigmatism Correction after IOLs

• Enhance large corrections earlier
• Small corrections – wait longer
• Typically I wait 1-2 months to do IOL Rotation or IOL exchange for large corrections
• Typically I wait 3-6 months to do laser vision correction
  Capsule considerations – contraction or PCO
  Yag first in many patients

Residual Astigmatism after Toric IOL

Questions to Ask

1. Is it Regular or Irregular?
2. Is the Spherical Equivalent where you want?
3. Is it correctable by rotation of the IOL?

Example: SN6AT5 at 150 degrees
WSR: -2.89 + 4.05 x 90
MR: -2.00 + 3.00 x 85 = 2040-2
HOA: 0.46 µ @ 4.75mm pupil
Humphrey Akg 4.12 D at 80 degrees
Irregular Astigmatism

SBEATS at 180 degrees
Pentacam Astig 2.3 D at 54 degrees
WSR: -2.69 + 4.05 x 90
Humphrey Astig 4.12 D at 80 degrees

Options – Irregular Astigmatism

Toric after PRK. - Options?
- Rotate Toric based on Reflection
  (115° = 0.84 D x 115)
  www.astigmatismfix.com
- Rotate Toric based on WaveScan
  (105° = 1.45 D x 106)
- Easier to rotate based on change of position
  Change from 150 to 115 is 35 degrees clockwise
- Perform totally based on intraoperative analysis for best accuracy
- Remove toric IOL (baseline astig of eye likely 3.5 to 4 D)
- PRK (only 4.75 mm capture) - Might be useful for irregular component
- Exchange IOL for higher powered toric?

Occasionally Confusion on Preop Axis
Management of Regular Astigmatism Example

Preop Steep Axis OD
- K's = 101°
- Pentacam = 113°
- Humphrey Topography = 101°
- IOL Calculator suggests
  100° based on K and topo
  113° based on Pentacam
- Placed at 108°
- Postop at 108°
- Residual refraction: -1.75 + 1.75 x 150
- Residual Wavescan: -1.64 + 1.75 x 153

Options – Regular Astigmatism

Options for Regular Astigmatism after Toric IOL??

- Rotate Toric based on Refraction
  Δ 10° to 12° (4.5 to 5.5 D)
  Rotation: Δ 11° (1.28 D)
- Rotate Toric based on Wavescan
  Δ 10° to 12° (4.5 to 5.5 D)
  Rotation: Δ 11° (1.28 D)
- Change from 108° to 120° is 12° counterclockwise
- Perform totally based on intraoperative analysis for best accuracy
- Remove toric IOL (baseline ahead of eye likely 4.5 to 5.4D)
- PRK: Refraction based results suggests rotation likely to be useful
- Exchange IOL for higher powered toric? – not available here

Toric IOL Rotation Procedure

Moving from Axis 108° to 120°

- Rotate
  12° Counterclockwise
  168° Clockwise
- UCVA = 20/20
  -0.50 + 0.50 x 116

www.astigmatismfix.com
Illuminating Surgical Keratoscope
Helpful for axis identification

Residual Sphere and Cylinder
After Toric IOL
- PRK or LASIK
- Wavefront usually possible

Post-Operative Management
Laser Vision Correction: Off Label
- PRK
  - No issues with prior LRI incision
- LASIK
  - May be issues with prior LRI
  - More rapid recovery
Timing of Secondary Intervention

Multifocal IOLs
- Enhance large corrections earlier (piggyback or IOL exchange if very large)
- Small corrections – wait longer
- Typically I wait 6 months to do laser vision correction
  Capsule considerations – contraction or PCO
  Yag first in many patients
- Typically I wait 1-2 months to do piggyback or IOL exchange for large corrections

Post-Operative Management

Laser Vision Correction: Off Label
- PRK
  No issues with prior LRI incision
- LASIK
  May be issues with prior LRI
  More rapid recovery
- IOL rotation in toric IOLs – usually minimal effect if close to correct axis

Results

All Patients with Pre-existing IOL 422 eyes of 252 patients

Enhancement 10 eyes (16.7%)
No Enhancement 52 eyes (83.3%)

No Prior CRS
342 eyes of 209 patients Mean follow-up: 23±17 mo

 Enhancement 56 eyes (16.4%)
No Enhancement 286 eyes (83.6%)

Type of Enhancement

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<tr>
<td>PRK</td>
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Results

Over 25% capsulotomy rates in these very demanding patients

% Clear Capsule

Days

0 500 1000 1500 2000

Crystalens
ReSTOR
ReZoom
Tecnis MF

Continue Understanding Listening Learning Postoperatively

Management

• Decreased BCVA
  • YAG
    • Treat Cystoid Macular Edema (OCT helpful)
    • Treat Dry Eyes
    • Epiridal Membrane
  • Normal BCVA
    • Glare/Halos – Trial in spectacles
    • Residual Refractive Error – Trial in spectacles

Tincture of Time
Neuro-adaptation
IOL Exchange

Don’t be Afraid to Finally Admit Failure

Offer Removal of Presbyopic IOL if Needed

• Your brain may not be adaptable enough to make this work for you
Pearls for Success

Refractive IOL Practice
- Keep in touch with the patient until you know they are happy
- Fix small issues for satisfaction
- Yag for mild PCO
- PRK/LASIK for mild refractive errors
- Schedule follow-up
- Happiness breeds happy referrals
- Make each patient an ambassador for your practice
- Exceed their expectations

Summary

Understanding Needs of Refractive IOL Patient
- Learning about people takes true interest in them and time to learn about them
- Accept the fact that these needs/wants are real
- Patients want the discussion
- Understanding a patients needs helps you choose better patients for the trip through correction of presbyopia and astigmatism
- This helps you and your staff be more comfortable with the process of helping the patients achieve their goals
- Continue to assess their needs by listening, asking, understanding & then celebrating success through the process