Dealing with Toric IOL Misalignment

Optical Options for Managing Residual Corneal Astigmatism after Toric IOL Implantation

- Glasses
- Toric soft contact lenses
  - Spherical soft lenses don’t work as they only correct spherical errors.
  - Rigid contact lenses won’t work as they unmask lenticular astigmatism.

Surgical Options for Managing Residual Corneal Astigmatism after Toric IOL Implantation

- Toric IOL repositioning
- Toric IOL exchange
- Corneal relaxing incisions (PCRI, LRI, AK)
- Laser keratorefractive surgery
  - PRK
  - LASIK
  - SMILE

Toric IOL Repositioning

- This is best if the spherical equivalent refractive error is within 0.5 D of the target.
- The patient is not too far out from cataract surgery.
- The capsular bag is intact.

Toric IOL Exchange

- Best if the spherical equivalent refractive error is greater than 0.5 D from the target.
- The patient is not too far out from cataract surgery.
- The capsular bag is intact.

Financial Disclosures

- Abbott Medical Optics
- Alcon Laboratories
- Calhoun Vision
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Corneal Relaxing Incisions
- Best if the spherical equivalent refractive error is within 0.5 D of the target.
- The patient is far enough out from cataract surgery that toric IOL repositioning would be difficult.
- The status of the capsular bag is unimportant.

Laser Refractive Surgery
- Best if the spherical equivalent refractive error is more than 0.5 D from the target.
- The patient is far enough out from cataract surgery that toric IOL repositioning would be difficult.
- The status of the capsular bag is unimportant.

How would you manage this patient?
- She is a 74 year old woman.
- She was bilaterally myopic at a young age.
- A toric IOL was implanted in her right eye years earlier to maintain myopia.
- Now she has a visually significant cataract in her left eye.
- The refractive error of the right eye is -3.00 +1.25 x 145.
- Now she wants to target her left eye for emmetropia at the time of cataract surgery and correct her right eye for emmetropia during a subsequent procedure.

How would you manage this patient?
- His is a 62 year old man.
- He had vertically steep corneal astigmatism in his right eye before cataract surgery.
- A toric IOL was implanted during surgery which flipped his axis, but left him with uncorrected VA of 20/25, with which he was happy.
- Several years later his vision dropped to 20/50- and he is no longer happy.
- The refractive error of his eye is -1.00 +1.75 x 180.

What is the effect of Toric IOL Misalignment?

<table>
<thead>
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<th>Misalignment (°)</th>
<th>Loss of Cylinder Correction (%)</th>
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<tr>
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<tr>
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<td>141</td>
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<td>90</td>
<td>200</td>
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Why do toric IOLs end up off axis?
- Sometimes they are positioned incorrectly at the time of surgery.
- Sometimes they rotate after implantation.
- Sometimes the steep axis of postoperative corneal astigmatism is calculated incorrectly.
How do Toric IOLs Rotate Off Axis?

- **Lens design issues**
  - Rotations are more likely if the lens material is slick or slippery.
  - Rotations are more likely if the haptics are too small for the size of the capsular bag.

- **Capsular bag issues**
  - The equator of the bag often has an elliptical rather than circular cross section.
  - The haptics will generally seek out the long axis of the capsular bag.

- **Surgical issues**
  - Retained viscoelastic
  - Leaky incisions

Toric Rotation Propensity for IOLs Available in the United States

Toric IOLs and Small Pupils

Toric IOL Repositioning

Adding a Capsule Tension Ring for Stability

Pearls for Dealing with Toric IOL Misalignment

- Match the problem with the appropriate corrective procedure.
- Don’t ignore spherical refractive errors.
- If you rotate a toric IOL, align it with the axis of steepest postoperative corneal astigmatism.
- Consider implanting a CTR in large eyes.

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Thank You