Residual Astigmatism after Toric IOL – Now what?

John Berdahl M.D.

Causes of Residual Astigmatism

Wrong Location
- Poor Measurements
- Poor Calculations
- Surprising SIA
- Posterior Ks
- IOL Rotated
- Poor IOL Placement

Wrong Lens
- Poor Measurements
- Poor Calculations
- Surprising SIA
- Posterior Ks

Wrong Eye
- Ocular Surface Disease
- ABMD
- Irregular Astigmatism

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Cure Disease
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Will Rotating IOL Help?
- Rotate IOL

IOL Exchange or LVC
- IOL Exchange
- LVC
Toric IOL Misalignment

Ideal Axis of Toric IOL  
Actual Axis of Toric IOL

Toric Misalignment of T9

<table>
<thead>
<tr>
<th>Misalignment</th>
<th>% Loss</th>
<th>Absolute Loss</th>
</tr>
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<tbody>
<tr>
<td>0deg</td>
<td>0%</td>
<td>0D</td>
</tr>
<tr>
<td>5deg</td>
<td>17.5%</td>
<td>0.18D</td>
</tr>
<tr>
<td>10deg</td>
<td>35%</td>
<td>0.36D</td>
</tr>
<tr>
<td>15deg</td>
<td>50%</td>
<td>0.51D</td>
</tr>
<tr>
<td>30deg</td>
<td>100%</td>
<td>1.03D</td>
</tr>
</tbody>
</table>
Math Frowns on Misalignment

5° misalignment = 0.4% loss of power
5° misalignment = 17% loss of power

Residual Astigmatism

POM #1 SN6AT9 Toric IOL @ 110°
Vasc 20/60
MRX = -1.00 + 1.75 x 150 20/25

Mark Current and Ideal Axis
Before Rotation

-1.00 + 1.75 x 150  \( \text{Vas}_{\text{sc}} \) 20/60

After Rotation

plano +0.50 x 112  \( \text{Vas}_{\text{sc}} \) 20/20

Residual Astigmatism #2

POW#1 SN6AT9 Toric IOL @ 158°

\( \text{Vas}_{\text{sc}} \) 20/70

MRX -1.75 + 3.50 x 092  20/25
Before Rotation

After Rotation

By the way....
Step By Step
1. Measure MRX
2. Measure IOL Axis and know its toricity
3. Plug info to Astigmatismfix.com
4. Does Rotating IOL Neutralize Astigmatism?
5. Is Spherical Equivalent Acceptable?
6. Can IOL be Easily Rotated?
7. Mark Current and Ideal Axis
8. Loosen IOL with Viscoelastic
9. Rotate IOL
10. Remove Viscoelastic

Summary
- Rotate IOL
- S.E. near target
- Astigmatism Neutralizable
- Laser Vision Correction
- S.E. not at target
- Astigmatism not neutralizable
- IOL cannot be rotated easily

Final Thought
- Much more important with higher powered toric IOLs and toric multifocals

An ounce of prevention....
- Mark in upright position
- Use multiple confirmatory K Sources
- Use intraoperative aberrometry Know SIA, including how it affects the axis
Thank you

OPDIII