Residual Astigmatism after Toric IOL – Now what?

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

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

Wrong Lens
- Poor Measurements
- Surprising SIA
- Posterior Ks

Treat Disease

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

John Berdahl M.D.
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**Will Rotating IOL Help?**

- IOL Exchange or LVC

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Toric IOL Misalignment

Ideal Axis of Toric IOL

Actual Axis of Toric IOL

Toric Misalignment of T9

0° 5° 10° 15°

IOL Misalignment

<table>
<thead>
<tr>
<th>Misalignment</th>
<th>% Loss</th>
<th>Absolute Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>T3 (1.03D)</td>
<td>0%</td>
<td>0D</td>
</tr>
<tr>
<td>T9 (4.11D)</td>
<td>17.5%</td>
<td>0.18D</td>
</tr>
<tr>
<td>5deg</td>
<td>35%</td>
<td>0.36D</td>
</tr>
<tr>
<td>10deg</td>
<td>50%</td>
<td>0.51D</td>
</tr>
<tr>
<td>15deg</td>
<td>100%</td>
<td>1.03D</td>
</tr>
</tbody>
</table>
Math Frowns on Misalignment

- $5^\circ$ misalignment = 0.4% loss of power
- $5^\circ$ misalignment = 17% loss of power

Residual Astigmatism

- POM #1 SN6AT9 Toric IOL @ 110°
- $V_{asc}$ 20/60
- MRX = -1.00 + 1.75 x 150 20/25

Mark Current and Ideal Axis

- Rotate IOL 10° CCW
- Predicted MRX = -0.29 + 0.32 x 150

www.astigmatismfix.com
Before Rotation

-1.00 + 1.75 x 150  \( V_a \)sc  20/60

After Rotation

plano +0.50 x 112  \( V_a \)sc  20/20

Residual Astigmatism #2

POW#1 SN6AT9 Toric IOL @ 158°

\( V_a \)sc  20/70

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

-1.75 + 3.50 x 92
Plano

After Rotation

VA_{sc} 20/70
VA_{sc} 20/20

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

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

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
Thank you

OPDIII