Residual Astigmatism after Toric IOL – Now what?

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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
- SIA
- Posterior Ks
- IOL Rotated
- Poor IOL Placement
- Ocular Surface Disease
- ABMD
- Irregular Astigmatism

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

Treat Disease
Causes of Residual Astigmatism

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Surgically induced Astigmatism

Will Rotating IOL Help?
- IOL Exchange or LVC
- Rotate IOL
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>
</thead>
<tbody>
<tr>
<td>0°</td>
<td>0%</td>
<td>0D</td>
</tr>
<tr>
<td>5°</td>
<td>17.5%</td>
<td>0.36D</td>
</tr>
<tr>
<td>10°</td>
<td>35%</td>
<td>1.43D</td>
</tr>
<tr>
<td>15°</td>
<td>50%</td>
<td>2.05</td>
</tr>
<tr>
<td>30°</td>
<td>100%</td>
<td>4.11D</td>
</tr>
</tbody>
</table>

IOL Misalignment
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°

VasSc  20/60

MRX -1.00 + 1.75 x 150  20/25

Mark Current and Ideal Axis

Prior MRX  -1.00 + 1.75  x 150

Predicted MRX  -0.29 + 0.32  x 150

Rotate IOL 10° CCW
Before Rotation

After Rotation

Residual Astigmatism #2

POW#1 SN6AT9 Toric IOL @ 158°

Va_sc 20/70

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

-1.75 + 3.50 x 92  Vasc 20/70

After Rotation

Plano  Vasc 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