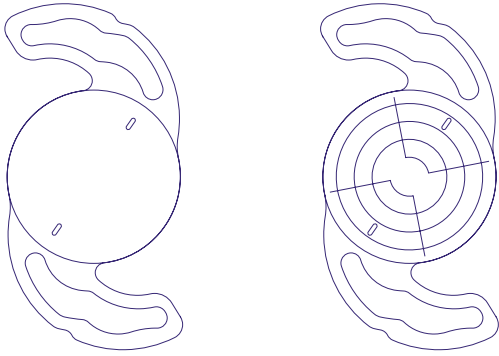




Toric IOLs in cataract surgery

Keys to success

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Keys to success - Introduction

Astigmatism correction in cataract surgery can be challenging. Every step - from planning to implantation - demands precision. Toric intraocular lenses (IOLs) offer the most effective solution for patients with astigmatism, providing sharper vision and reduced dependence on glasses. However, the margin for error is small.

Even a slight misalignment of a toric lens - just a few degrees off - can significantly reduce its corrective power and compromise visual outcomes. This makes astigmatism control not only time-consuming but also technically demanding.

As a surgeon, you can optimize your results with toric IOLs, by focusing on six critical success factors:

1. Patient selection
2. Preoperative assessment
3. IOL Design
4. IOL Calculation
5. Intraoperative IOL alignment
6. Surgical technique

With practical tips and proven strategies, this guide supports you in minimizing errors, saving time, and delivering consistently excellent outcomes for your patients.

Before Surgery

Patient selection

- Toric IOLs are recommended for patients with:
 - WTR corneal astigmatism ≥ 1.0 D
 - ATR corneal astigmatism ≥ 0.75 D
- Avoid toric IOLs in patients with:
 - Irregular astigmatism or keratoconus
 - Zonular instability or posterior capsular dehiscence, due to potential IOL misalignment. If a toric IOL is still considered, a capsular tension ring (CTR) such as Ringject is recommended.
- Always review the contraindications listed in the manufacturer's Instructions for Use.

Preoperative assessment

Accurate keratometry measurements are critical, as they determine both IOL power and implantation axis.

- Ensure a stable tear film. Treat dry eye disease prior to measurement. Poor ocular surface quality leads to unreliable data.
- Measure both anterior and posterior corneal astigmatism to avoid under- or over-correction.
- Use multiple devices to validate measurements:
 - At least one should be a corneal topographer. Focus on average keratometry values over the central 3–4 mm zone
 - Look for consistency across devices—significant variation may indicate ocular surface disease or other comorbidities
- Proper patient positioning is essential. Ensure the head is properly aligned during measurements to avoid axis miscalculation
- Discontinue contact lens wear prior to diagnostics (1 week for gas permeable lenses; 48 hours for soft lenses).

IOL Design

The mechanical properties and geometry of the toric IOL play a crucial role in rotational stability and long-term visual outcomes.

- Match IOL size and design to the patient's anatomy. Larger axial lengths often correlate with larger capsular bags, which increase the risk of IOL rotation. In these cases we recommend to use a CTR such as Ringject.
- Select an IOL with:
 - Haptics that offer broad contact angles and firm capsular adhesion, such as the Precizon Family.
 - A design capable of compensating for capsular bag contraction to minimize postoperative rotation, such as the Precizon Family IOLs.
- For post Lasik avoid toric IOLs with strongly negative aspheric surfaces, which may exacerbate visual aberrations due to altered corneal profiles.

Precizon Family Toric IOLs feature large modified C-loop haptics that enhance capsular stability and minimize postoperative rotation. Their design accommodates capsule contraction up to 9 mm, helping to reduce refractive surprises.



IOL Calculation

Accurate calculation of both the spherical and cylindrical power—as well as the intended axis of implantation—is critical to achieving optimal outcomes.

- Use modern toric IOL calculators that account for Surgically Induced Astigmatism (SIA) and posterior corneal curvature
- We advise you to calculate your SIA. You can use the [SIA Calculator](#) for such purpose.
- Always base cylinder correction on corneal astigmatism (anterior + posterior), not refractive astigmatism.
- Be cautious about overcorrecting WTR astigmatism. Postoperative axis shift toward ATR may be less well tolerated visually.

Ophtec's Online Calculator for Precizon IOLs is based on the Abulafia-Koch Regression Formula. This calculator incorporates both SIA and posterior corneal curvature to increase accuracy.



During Surgery

Precise alignment is critical. Even minor deviations from the intended axis can significantly reduce the effectiveness of astigmatic correction. The following surgical guidelines help ensure accurate alignment and postoperative stability of toric IOLs.

Intraoperative IOL alignment



Intraoperative Axis Alignment

- Use reliable marking and alignment techniques such as advanced manual marking tools, image-guided techniques or intraoperative aberrometry.
- To address **cyclotorsion** (ocular rotation from upright to supine), place preoperative reference marks with the patient seated and fixating straight ahead.

Robomarker is an advanced one-step marking tool that offers precise, sterile and fast corneal marking, improving toric IOL outcomes.



Surgical technique



Corneal Incisions

Create clear, self-sealing, astigmatically neutral incisions at a consistent location and size to limit surgically induced astigmatism (SIA). We advise you to calculate your SIA. You can use the [SIA Calculator](#) for such purpose.



Capsulorhexis (CCC)

Perform a centered, round capsulorhexis with ~0.5 mm of optic overlap on all sides to improve lens stability and reduce postoperative rotation.



IOL Centration

Center the IOL using the first Purkinje image - critical for toric multifocal IOLs to avoid visual disturbances.



Vertical vs horizontal axis

Vertical axis placement (e.g., WTR astigmatism) has been linked to more postoperative rotation; take this into account when placing your tIOL based on the design of the platform.



Saline injection

Careful filling of the anterior chamber is preferred in toric IOL cases to reduce the likelihood of lens rotation.



Viscoelastic Removal

Thoroughly remove OVD (particularly behind the IOL) to prevent postoperative rotation. Anticipate slight clockwise rotation during removal—implant the lens 5°–10° counterclockwise from the target axis, and make final alignment adjustments after complete OVD removal.



Capsular Tension Ring

CTRs are recommended in toric IOL implantation as they contribute significantly to IOL stability and prevent rotation. They are strongly recommended in long eyes and larger capsular bags, weak zonulas or vertical implantation axis.

Ophtec's RingJect, a high-precision preloaded capsular tension ring (CTR), enhances the stability of premium IOLs. It also offers reliable capsular support in cases of zonular weakness or capsular dehiscence.



Incision Sealing & Chamber Pressure

Ensure incision sealing to avoid depressurization of the chamber and possible lens rotation. When hydrating the incisions, avoid over-pressurizing the anterior chamber which can rotate the IOL.



Blepharostat Removal

Remove blepharostat gently to maintain stability and prevent IOL rotation.

Need support? We are here

At Ophtec, we know that every case is different. Whether it's your first procedure, a complex situation, or an unexpected result — we're by your side. Our team of product specialists and clinical experts is ready to help you move forward with confidence.

We are here, for you to do the best job possible.

Ophtec. Clearly.

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