Case Report

Spontaneous 90° Rotation of a Toric Intraocular Lens in Congenital Aniridia: A Surgical Challenge

Ratnali Gandhi[1], Neha Shilpy[2], Abhishek Chandra[3*], Govind Khalko[2]

[1]JR2

[2]Consultant Netrodaya The Eye City

[3]Director Netrodaya The Eye City

Abstract

Purpose: To report a rare case of spontaneous 90° rotation of a toric intraocular lens (IOL) in a patient with congenital aniridia and highlight the importance of capsular support.

Methods: An 18-year-old female with bilateral congenital aniridia presented with cataract. The left eye underwent phacoemulsification with toric IOL implantation without a capsular tension ring (CTR).

Results: On postoperative day 1, the toric IOL showed spontaneous 90° rotation from the intended axis, resulting in significant alteration of astigmatic correction. The case highlighted capsular instability in the absence of CTR.

Conclusion: Eyes with congenital aniridia are at high risk of zonular weakness and IOL instability. Use of CTR is crucial in maintaining rotational stability of toric IOLs and optimizing postoperative outcomes.

Keywords: Congenital aniridia, toric intraocular lens, capsular tension ring, IOL rotation, cataract surgery

Introduction

Congenital aniridia is a rare disorder characterized by the partial or complete absence of the iris and is frequently associated with cataract, foveal hypoplasia, limbal stem cell deficiency, and zonular weakness.[1] Cataract surgery in these patients is challenging due to compromised capsular and zonular support.

Toric intraocular lenses (IOLs) are widely used for the correction of corneal astigmatism; however, their success depends on precise alignment and rotational stability. Even minor postoperative rotation can significantly affect visual outcomes. Eyes with inherent zonular weakness, such as those with aniridia, are particularly prone to IOL instability.

We report a rare case of spontaneous 90° rotation of a toric IOL on the first postoperative day.

Case Report

An 18-year-old female presented with bilateral blurring of vision. On examination:

- **Right eye (OD):** BCVA 6/60 with posterior subcapsular cataract (Figure 1).
- **Left eye (OS):** Vision limited to hand movements with total mature cataract (Figure 2).
- **Both eyes:** Congenital aniridia.

Anterior segment evaluation revealed a clear cornea and absent iris tissue in both eyes. Fundus examination was within normal limits.

The patient underwent phacoemulsification with toric foldable IOL implantation in the left eye under topical anesthesia. No capsular tension ring (CTR) was used intraoperatively.

Postoperative Findings

On postoperative day 1 (Figure 3).

Address for correspondence: Abhishek Chandra
Director Netrodaya The Eye City
E-mail: abhishekvinita@gmail.com

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- The toric IOL was found to have rotated spontaneously by 90° from its intended axis
- A marked change in refractive cylinder was noted
- No signs of inflammation or capsular compromise were present

Keratometry Readings

- K1: 40.50 D @ 171°
- K2: 42.50 D @ 81°

Refraction

- Preoperative: −2.00 D @ 81°
- Postoperative: −4.75 D @ 172°

The patient was kept under close follow-up and advised regarding further intervention.

Discussion

Toric IOLs require precise alignment, as each degree of misalignment results in approximately 3.3% loss of astigmatic correction. A 90° rotation leads to complete loss of intended effect and may worsen refractive error.

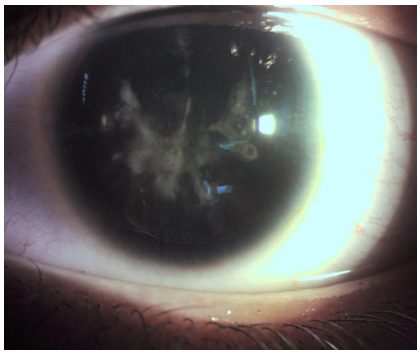

Figure 1 : OD showing Posterior sub capsular cataract with aniridia

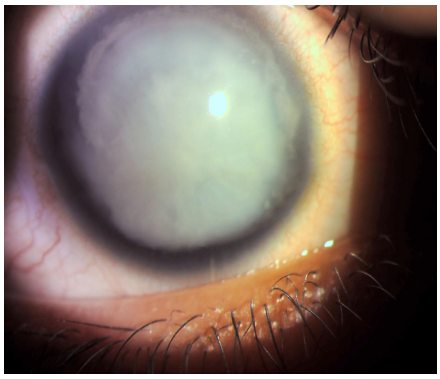

Figure 2 : OS showing Mature cataract with aniridia

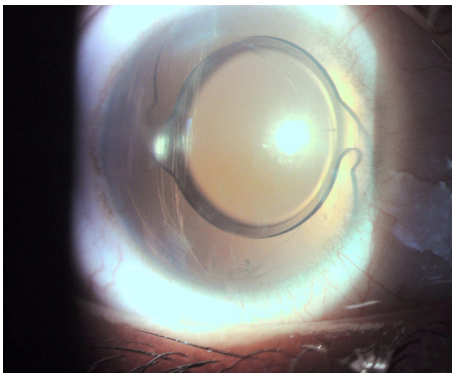

Figure 3 : Post op day 1

Congenital aniridia presents several intraoperative challenges:

- Zonular weakness
- Capsular bag instability
- Increased risk of IOL decentration and rotation

Capsular tension rings (CTRs) are designed to stabilize the capsular bag by evenly distributing zonular forces, particularly in eyes with compromised zonules.[2] In this case, the absence of CTR likely contributed to early postoperative IOL rotation.

Previous studies have emphasized the role of CTRs in improving capsular stability and preventing IOL-related complications in complex cases.[2] Given the structural abnormalities in aniridia, prophylactic CTR implantation should be considered.

Management options include early IOL repositioning and secondary stabilization procedures.

Conclusion

Cataract surgery in congenital aniridia is associated with significant challenges due to zonular and capsular abnormalities. This case highlights a rare but important complication of early spontaneous 90° rotation of a toric IOL.

Routine use of capsular tension rings in such high-risk cases is strongly recommended to ensure rotational stability and optimal visual outcomes.

References

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