

Spontaneous Rotation of Toric Implantable Collamer Lens (Toric IPCL) in a Post-traumatic myopic eye

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Key words

Myopic astigmatism, Toric Implantable Phakic Contact Lens, Rotation, IPCL complications

Abstract

We present a case of toric implantable phakic contact lens (Toric IPCL) spontaneous rotation in a patient with myopic astigmatism. A 35 year male with a history of trauma in right eye underwent Toric IPCL implantation in same eye. Preoperative uncorrected visual acuity (UCVA) was 5/60 and 6/24 respectively, while best corrected visual acuity (BCVA) was 6/9 and 6/6 with -7.00D sph/ -3.00D cyl@70° and -1.00D sph/-1.00D cyl @135°. After implantation of toric IPCL his right eye achieved BCVA of 6/6 with -0.75D cyl@170°. After 2 weeks the patient presented with sudden decrease of vision in his right eye. His BCVA was 6/18 with correction of +1.00D sph/-4.00D cyl @50°. It was seen that the lens had rotated. We decided to reposition the Toric IPCL and after repositioning we obtained BCVA of 6/6 with correction of 0.75D cyl @140°. But again Toric IPCL rotated after 3 months and repositioning was done. This again happened after few weeks. So there were three episodes of Toric IPCL rotation. After discussing with patient we planned for Toric IPCL explantation and performed clear lens extraction with toric IOL implantation. Patient achieved UCVA of 6/6 and N6 with near addition of +2.50 D. TIPCL can present a considerable rotation that compromises visual acuity. The relocation of TIPCL is a safe and effective procedure to recover visual acuity due to significant spontaneous TIPCL rotation. In post traumatic eyes, the anterior chamber depth may be unpredictable and hence the chance of rotation of toric IPCL should be explained to the patient so as to avoid future issues.

Introduction:

Phakic IOLs (pIOLs) are an accepted treatment modality for correction of ametropia, particularly in patients not suitable for corneal refractive procedures [1-7]. They have gained popularity amongst refractive surgeons due to significant advantages such as stability of correction, better quality of vision, reduced aberrations, preservation of accommodation, less dry eye and reversibility [8,9]. However, there are certain complications associated with them which are reported in literature. Complications of phakic IOLs have been extensively studied and are unique depending upon their anatomical location inside the eye [10]. Anterior chamber pIOLs are associated with risks such as chronic endothelial cell loss, secondary glaucomas, pigment dispersion etc, whereas main issues with posterior chamber pIOLs are low or inadequate vault leading to anterior sub capsular cataract, high vault or oversized pIOL leading to angle closure glaucoma and rarely dislocation of the lens into the vitreous [10-16]. Short term complications such as IOP spikes and steroid response seen in early postoperative period are treatable and do not lead to visually significant sequelae, whereas long term complications such as cataract, glaucoma, corneal decompensation seen in late postoperative course may be visually significant and severe enough necessitating the explantation of the pIOL. Long term studies have generally found these lenses to be efficacious and safe[17,18].

Here we present a case report of TIPCL spontaneous rotation in a post traumatic eye.

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Case report:

A 35/M presented to our clinic with decreased vision OU (OD>>OS). There was h/o trauma with firecracker 14 years ago. His UCVA was 5/60 and 6/24 in OD and OS respectively while BCVA was 6/9 (-7.00D sph/ -3.00D cyl @ 70°) and 6/6 (-1.00D sph/-1.00D cyl@135°) in OD and OS respectively. We planned for implanting TIPCL in OD. Anterior segment and fundus examination was unremarkable. Pre-operative evaluation:

	OD	OS
ACD (mm)	3.96	3.79
Axial length (mm)	28.58	25.34
W-W diameter (mm)	11.49	

Details of Toric IPCL: Cylinder: 3.0 Length: 12.50 Power: -9.50 Optical diameter: 6.20

Surgery was uneventful and post operatively topical antibiotic- steroid combination and cycloplegics were given. On 1 week post op follow up BCVA in OD was 6/6 with correction of -0.75cyl@170°. Steroid was tapered and patient was called after 3 weeks. Patient came after 2 weeks with decreased vision in OD. His BCVA was 6/18 with correction of +1.00D sph/-4.00D cyl @50°. Toric IPCL was rotated by 45° so repositioning was planned (Fig 1). Vision improved to 6/6 with correction of -0.75D cyl @140°. Patient was advised post op medications and was asked to review after 3 months.

On follow up after 3 months again his Toric IPCL was found rotated by 50° (Fig 2) and repositioning was done. But again after few weeks Toric IPCL rotated. So now we planned for removal of TIPCL and clear lens extraction with IOL (Tecnis-1, +9.00D) implantation. Post operatively BCVA was 6/6 and N6 with -1.00 D cyl@70° and near addition of +2.50D.

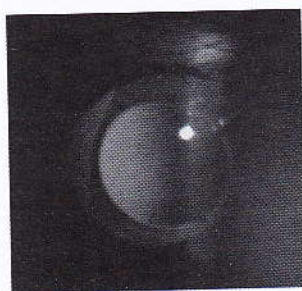


Fig 1: Spontaneous rotation (45°) after 2 weeks of surgery



Fig 2: Spontaneous rotation (50°) after 3 months of surgery

Discussion:

The most popular method of determining ICL size involves predicting sulcus diameter using the horizontal white to white (WTW) distance, which can be measured manually with calipers or automated devices like Orbscan topography system, IOL Master and AS-OCT [19]. However, it has been observed that there is no correlation between WTW and sulcus diameter [20-22]. Ultrasound biomicroscopy (UBM) has been validated for ciliary sulcus diameter measurement and has been shown to be more accurate for assessment of the same [23]. Reinstein., et al. have recently evaluated the usefulness of very high frequency UBM (Artemis II, Ultralink, LLC) as a tool for accurate sulcus to sulcus diameter estimation [20]. It may also be helpful in measuring sulcus diameter in both horizontal and vertical axis. It has been demonstrated that most eyes have vertical sulcus diameter larger compared to horizontal [23]. Hence, it may be important to measure both diameters, especially in cases of toric ICLs with large fixation angle. Mori., et al. showed

that intraoperative fixation angle was highly correlated with rotation of TICL in postoperative period and they suggested that toric phakic IOL with minimum intraoperative fixation angle should be used to prevent postoperative rotation [24].

It is well accepted that a rotation in the cylinder axis of more than 30° is enough to decrease the optical effect and once again achieve 100% of the cylinder power [25–27]. Here we presented a case of Toric IPCL spontaneous rotation of 45° from its original surgical position 2 weeks after surgery and 50° rotation after 3 months of surgery. Our patient had a past history of trauma in his right eye which we thought could be the cause of unpredictable measurement of ACD and W-W diameter. We also planned to exchange the Toric IPCL with a larger diameter Toric IPCL as smaller Toric IPCL could be the cause of spontaneous rotation. But as the measurements were not very reliable and larger diameter Toric IPCL could rotate again so after discussing the risks and benefits of both the surgeries we planned for clear lens extraction and IOL implantation.

IPCL implantation has shown to be as effective as LASIK and surface ablation [28–30]. Although Toric IPCL is a safe, effective and excellent alternative in patients with myopic astigmatism, rotation can occur with time especially in post-traumatic cases. However, rotation can easily be solved by repositioning the Toric IPCL. The chances of rotation especially in post traumatic case should be borne in mind and explained to the patient so as to avoid future concerns of the patient.

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