

## CASE REPORT

### A RARE CAUSE OF HIGH ASTIGMATISM IN PSEUDOPHAKIA

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We present a case of a 65-year-old Pakistani woman who underwent an uneventful standard left phacoemulsification with posterior chamber intra-ocular lens placement for a mature senile cataract. She was observed to develop post-operative astigmatism secondary to a tilted intra-ocular lens and required repeat surgical intervention to correct the malposition. Per-operatively, the lens was found to be defective with a fixed bend at the haptic-optic junction which necessitated the need for an intra-ocular lens exchange procedure that restored adequate vision. The study highlighted defects in the structural integrity of intra-ocular lenses as an important differential to consider in such cases, and established lens replacement as a successful intervention to improve visual outcome.

**Keywords:** Cataract; Corneal Opacity; Lenses; Surgery; Tilt

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## INTRODUCTION

The term 'cataract' refers to the opacification of the lens of the eye or its surrounding capsule<sup>1</sup>, owing to protein denaturation of the lens<sup>2</sup>. Cataracts are a common ocular pathology and remain a significant cause of blindness worldwide. Approximately 95 million people are affected by cataracts globally.<sup>3</sup> In Pakistan alone, 570 000 people are estimated to be blind and 3 560 000 eyes have impaired visual acuity (<6/60) owing to cataracts.<sup>4</sup>

Surgery is the definitive treatment for cataracts. However, it poses the risk of both per- and post-operative complications, one of which is mal-positioning of the IOL (intra-ocular lens). A tilted or decentred IOL may produce unsatisfactory optical outcomes in an otherwise successful cataract surgery and is one of the indications for either the repositioning or exchange of a posterior chamber IOL.<sup>5</sup> Therefore, effectively diagnosing and promptly managing this condition is of prime importance.

Herein, we present a case of a patient who developed post-operative astigmatism secondary to an intrinsically defective and tilted IOL with a fold at its haptic-optic junction who was managed successfully by an IOL exchange procedure.

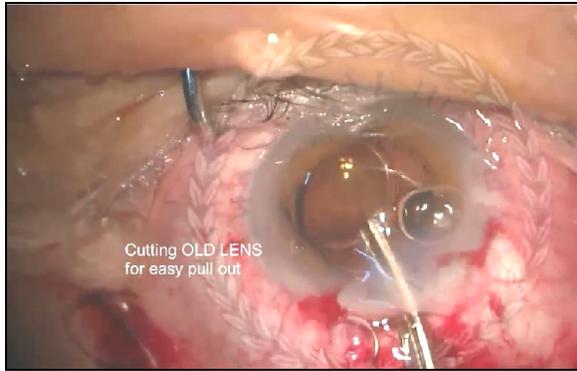
## CASE REPORT

A 65-year-old female patient from Rawalpindi presented to the clinic with progressive loss of vision. On examination, her best-corrected visual acuity (BCVA) was 6/12 in the right eye and 6/60 in the left eye. She was diagnosed with bilateral senile mature cataracts and underwent an uneventful standard left phacoemulsification with posterior chamber IOL placement on 16<sup>th</sup> November 2019. No complications were observed on the first post-operative day. On the post-operative visit one week after the surgery, the

patient had no active visual complaints, however an odd refraction was noted with a refractive error of -2.0 diopters (D) combined with a cylinder of -6.0 D at 95° in the left eye. Slit-lamp bio-microscopy revealed that the lens was tilted. The posterior capsule was intact and the fundus was unremarkable. Cyclopen eye drops were discontinued and the patient was reassessed one week later but the problem persisted. Subsequently, informed consent was obtained and the patient underwent repeat surgery on 3<sup>rd</sup> December 2019 in an attempt to reposition the IOL. During the surgery, an attempt was made to rotate the lens but to no avail, so the possibility of remnant viscoelastic was explored. However once again, the IOL remained tilted. Ultimately, a fixed bend at the haptic-optic junction of the lens was identified. After multiple failed attempts to release the bend, an IOL exchange procedure was deemed the best possible option. First, a new IOL was inserted below the defective one as shown in figure-1. The optic of the tilted IOL was then divided with intraocular scissors as seen in figure-2 and the segments removed. The surgery was unremarkable, and the patient was observed to have 6/6 vision but no complications the following day.



**Figure-1: Intra-operative photograph showing insertion of a new IOL below the pre-existing lens**



**Figure-2: Intra-operative image showing the use of scissors to divide the optic of the IOL**

## DISCUSSION

In this study, we highlighted a relatively rare cause of post-operative astigmatism in a patient who underwent an otherwise uneventful phacoemulsification, namely a defective and malfigured IOL. We also proposed the necessary intervention of lens replacement to correct the refractive error and successfully restore satisfactory vision.

Proper positioning and alignment of posterior chamber intra-ocular lenses is imperative for adequate visual outcomes following cataract surgery. Decentration and mal-positioning of the lens is a complication that has been encountered post IOL placement, and an estimated 50 percent of cases that require an IOL replacement are associated with improper positioning of the lens.<sup>6</sup>

Intra-ocular lens tilt with resulting astigmatism post cataract surgery can be attributed to number of causes, such as asymmetric lens placement, incomplete unfolding of the haptics following insertion, pupillary capture of the optic or malfigured haptics, vitreous strands or retained lens matter, or incomplete capsulorhexis.<sup>7</sup> It is important to note that multiple steps are involved during the implantation of foldable IOLs, both during their folding and loading and then during their unfolding and intra-ocular delivery.<sup>8</sup> This makes them more susceptible to damage as opposed to rigid IOLs. As is evident from this study, possible deformities in the structure of the intra-ocular lens are an important

differential to consider in patients presenting post-operatively with astigmatism.

Numerous studies have mentioned IOL malpositioning as one of the possible causes of decreased visual acuity post cataract surgery. For example, Goodman *et al.* reported IOL malpositioning as one of the late complications of cataract surgery.<sup>9</sup> However, no cases have been reported so far in Pakistan regarding post-operative tilting and resultant astigmatism of the IOL secondary to a structural deformity of the foldable lens itself.

In conclusion, this study is the first to report tilting of the IOL and subsequent astigmatism in a patient post cataract surgery secondary to a defect at the haptic-optic junction of the IOL. It is a possibility to consider as a cause of post-operative astigmatism, and it necessitates the need for IOL exchange to establish satisfactory vision.

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