ICL implantation in a long standing and challenging pseudophakic ametropia

Abstract

I examined a 36-year-old pseudophakic male patient with ectopic pupil, high myopia and astigmatism in left eye at December 2017. He had an ophthalmic surgery history before he came to me. First one had an extracapsular cataract extraction and PMMA IOL implantation into his left eye in 14 years old hence blunt eye trauma. Four years after this operation he had to go bilateral strabismus surgery for divergent strabismus probably due to low vision. He came to me after 18 years from his last operation with the intend of a good vision without glasses or contact lenses. His visual acuity was 18/20 in right eye and counting fingers from 2meters in left eye without correction. As for with glasses 20/20 in right eye with -0.25(-0.25x180) and 2/20 in left eye with -7.25(-3.25x170). Intraocular pressure (IOP) was 12mmHg in both eyes. Then the left eye was implanted posterior chamber VTICMO13.7 Staar Toric ICL. Even in the first postoperative day his refraction was +1(-2.00x20) and uncorrected distance visual acuity UDVA was 10/20 whereas corrected distance visual acuity CDVA was 16/20. IOP was 18mmHg and no complications were detected.

Keywords: traumatic cataract, pseudophakic, intraocular collamer lens (ICL), recovery of visual acuity

Introduction

Pseudophakic ametropia may be a devastating problem in time after childhood cataract surgeries, which must be corrected.1 Spectacles are inconvenient options and contact lenses too.2,3 IOL exchange cannot be advised because of its serious complications.4 Corneal refractive surgery can be applied only in suitable corneas and dipters.5 In higher refractive situations, the posterior chamber implantable collamer lens (ICL V4c) is an advisable alternative option, even if corneal thickness is inadequate. The new central hole design in ICL V4c allows the flow of aqueous humor without additional a peripheral iridotomy.6 This research examines the correction of indecent refractive errors in pseudophakic ametropia using TICL V4c.

Case report

A 36-year-old pseudophakic male who had exhibited slightly oval and temporally ectopic pupil with high myopia and astigmatism in the left eye since the age of 14 was examined in 2017 December, His visual acuity was counting fingers from 2meters without correction while the intraocular pressure (IOP) was 12mmHg in this eye. He had an open visual axis and clear cornea, his white to white measurement was 12.4mm. Moreover, his Anterior Chamber Depth (Endo) was 4.66mm. His earlier PC IOL was in the bag properly but there was a minimal capsular fibrosis and adhesion. No pathology was detected in the posterior segment by direct fundus examination, ultrasonography, or optical coherence tomography. His manifest refraction was -7.25(-3.25x170) and his UDVA was counting fingers from 2meters and his CDVA was 2/20 in left eye. He had an urgent desire to get better visual ability without glasses. Corneal surgery was inappropriate because of the steep and thin lower cornea (Figure 1). Then ICL was implanted in the sulcus, right in front of the already implanted IOL. Diopter of ICL was calculated using STAAR Surgical Vertex formula and its length was found according to the patient’s anterior chamber depth (ACD) and white-to-white (WTW) measurement. The pseudophakic eye has larger ACD because of the absence of the natural lens. Hence, the ACD of the right eye was referred to that of the left eye. So, VTICMO13.7 Staar Toric ICL was implanted (Figure 2). Even in the first postoperative day his refraction was +1(-2.00x20) and uncorrected visual acuity was 10/20 whereas corrected one was 16/20. IOP was 18mmHg and no complications were detected.
**Discussion**

Refractive surgery options strictly depend on certain conditions in each patient. Excimer Laser and SMILE surgeries are not appropriate in this patient because of significantly thinner and steeper lower cornea.7,8 On the other hand, due to a long time between the surgeries, intraocular lens replacement was not thought about. Once the adhesion occurs between IOL, lenticular capsule and iris in the eye major complications might occur such as capsular tear and IOL drop, vitreous loss, and retinal detachment etc.9,10

Implantation of supplementary IOL is another option for the correction of pseudophakic refractive error. This technique is known as “piggyback.” But here there may be a formation of interlenticular opacification between two IOLs. Hence, this option also was not chosen. Intraocular pressure increasing and endothelial cell loss are common complications of anterior chamber IOL because of this, this option was not chosen too.11,12 Because of all the reasons stated above, ICL toric implantation was chosen. However, sometimes ICL may rotate and this wrong positioning in pseudophakic eye may bring a new astigmatism. So, these patients may have severe vision loss or disturbances and readjustment of toric ICL position may be needed.13 In former models, intraocular pressure increasing was a problem and needed peripheral iridotomy. But fortunately the ICL in our patient has a central hole which allows the flow of the aqueous humor without peripheral iridotomy.14,15

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**Conflict of interest**

Author declares that there is no conflict of interest.

**References**


