Case report

Intra-ocular lens opacification in the anterior chamber leading to loss of vision in an adolescent

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Abstract

Objective: To report a rare case of intraocular lens (ACIOL) opacification in the anterior chamber in an adolescent and to discuss the possible mechanism of its occurrence and the ways of its prevention. **Case:** A 16-year-old male underwent cataract surgery for developmental cataract with placement of a foldable posterior chamber IOL in the anterior chamber. There was subsequent opacification of the IOL, which was replaced by a scleral fixated posterior chamber intraocular lens. The post-operative visual acuity improved to 6/18. **Conclusion:** The posterior chamber IOL implanted in the anterior chamber can get opacified possibly due to postoperative intraocular inflammation.

Keywords: IOL opacification, hydrophilic lenses, IOL explantation

Introduction

Intraocular lens (IOL) opacification has regularly been reported over the last decade. All IOL materials have been reported to be affected by opacification (Thanathanee et al, 2010). However, most of the cases involve a particular type of IOL, especially the hydrophilic type (Nakome et al, 2008). Opacification of the IOL is a visually devastating complication as it renders the expensive procedure useless. It also subjects the patient to sight-threatening complications from a technically-challenging procedure of IOL explant and exchange. (Gashau et al, 2006).

Case report

We report an unusual case of a posterior chamber intraocular lens (PCIOL) placed in the anterior chamber undergoing opacification in a young adolescent male operated for developmental cataract. A 16-year-old male with pseudophakia presented with the chief complaint of dimness of vision in his left eye for the past one year. He had had an operation for developmental cataract in the left eye six years ago somewhere else with implantation of a PCIOL in the anterior chamber. Postoperatively his vision improved initially followed by a gradual diminution over a period of time. On clinical examination, his best-corrected visual acuity (BCVA) in the left eye was perception of hand movements only. In the right eye, it was 6/9. A slit-lamp examination showed a totally opacified foldable PCIOL present in the anterior chamber covering the pupillary area (Fig 1). On gonioscopic examination, the haptic of the intraocular lens (double arrow) was seen eroding the inferior angle along with a whitish fibrous membrane (single arrow) with presence of blood vessels

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over its surface (Fig 2). The membrane was encroaching upon the intraocular lens. The rest of the details of the posterior segment including the fundus were not appreciable. The ultrasound B-scan showed the presence of a normally-attached retina. The intraocular pressure (IOP) as measured by Tonopen was 12 mm of Hg in the left eye and 14 mm of Hg in the right. The patient was subjected to IOL explantation with thorough anterior vitrectomy with scleral fixated posterior chamber IOL. Post-operatively, the patient developed a Grade IV reaction which was controlled with systemic and topical steroids along with non-steroidal anti-inflammatory agents. At the end of two months, his vision in the left eye improved to 6/18.

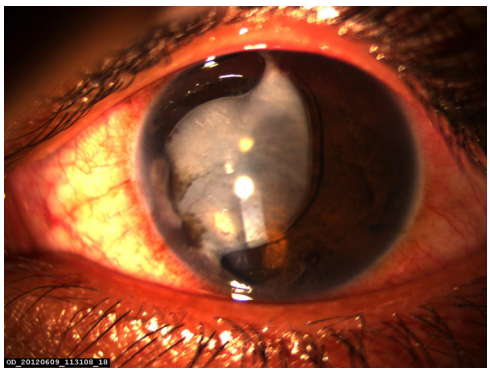

Figure 1

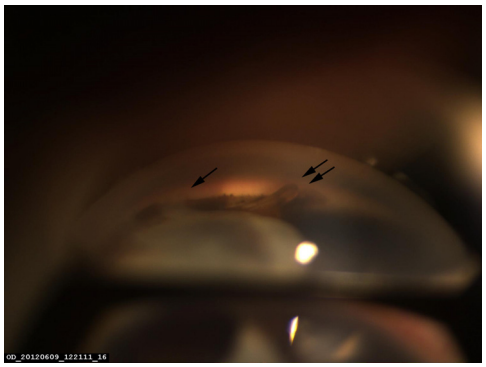

Figure 2

Discussion

Intraocular lens opacification was listed as the most common cause for IOL exchange in 2001 in the annual survey of complications associated with foldable intraocular lenses (IOLs) requiring explantation or secondary intervention sent to members of the American Society of Cataract and Refractive Surgery and the European Society of Cataract and Refractive Surgeons (Mamalis, 2002). However, the improvement in manufacturing standards and a decrease in the use of hydrophilic IOLs has lowered its incidence. In a recent study, IOL opacification was found to be the fourth common cause for IOL exchange (Mamalis et al, 2008).

The origin of IOL opacification is multifactorial, starting from its manufacturing to storage, type of IOL design, viscoelastic and irrigation fluid used, surgical trauma and inflammation, damage to the IOL optic during handling and insertion and biocompatibility of IOL (Werner, 2007). Diabetes mellitus, asteroid hyalosis, glaucoma and uveitis are postulated to be predisposing intrinsic factors (Thanathanee et al, 2010). If a number of the above factors combine in a particular patient, it can leading to a biochemical cascade ultimately resulting in IOL opacification.

Studies on explanted IOLs suggest that the surface hydroxyl groups of the polyacrylic polymeric components of the IOLs are capable of inducing surface nucleation and crystal growth of calcium phosphates (Gartaganis et al, 2008). A breach in the blood aqueous barrier caused by inflammation could expose the IOLs to high levels of calcium, phosphate, proteins and thus initiate the development of deposits (Nakome et al, 2008). Aqeous supersaturation leads to diffusion of calcium and phosphate ions inside the hydrophilic IOLs (Drimtzias et al, 2011). Absorption of albumin is deep in the hydrophilic acrylic IOL matrix but superficial in polymethyl-methacrylate (PMMA) and silicone IOLs (Luensmann et al, 2009). A study conducted on rabbits showed that when IOLs were implanted subcutaneously, there was a tendency of hydrophilic lenses towards calcification while the hydrophobic lenses had membrane formation over the surface. It was found that calcification of hydrophilic IOLs deteriorates optical performance while

membrane formation over hydrophobic lenses does not affect optical performance significantly (Tanaka et al, 2012).

The patient in the present study was a young male who had undergone an operation for developmental cataract. We presume that there must have been intraoperative posterior capsular dehiscence. So the operating surgeon put a foldable intraocular lens in the anterior chamber. It is postulated that severe postoperative inflammation must have led to opacification of the IOL over a period of time.

Conclusion

This report highlights that the posterior chamber IOL implanted in the anterior chamber can get opacified possibly due to intraocular inflammation.

Due consideration should be given to systemic and ocular risk factors while selecting the type of IOL to be implanted. In cases where an iris fixated or sulcus fixated lens cannot be placed during the primary surgery, it is better to leave the patient aphakic and implant a secondary IOL in a quiet eye, rather than place a PCIOL in the anterior chamber.

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