

Case report

Posterior capsular calcification without opacification of intraocular lens

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Abstract

Background: Posterior capsular clarity is important for long-term visual gain. Postoperative visual acuity could be reduced due to posterior capsular or intraocular lens opacification, which occur months or years after cataract surgery. We report early occurrence of posterior capsular calcification without opacification of intraocular lens.

Case: We report the case of a 78-year-old male who had undergone phacoemulsification with implantation of hydrophilic intraocular lens (IOL) in the left eye for cataract. The patient was non-diabetic, and the surgical procedure was uneventful. On the third postoperative day, fine granular deposits were found on the mid-peripheral part of the posterior capsule. No deposits were found on IOL. The patient presented with diminished vision four months after surgery. Slit-lamp examination revealed distinct areas of calcification with an early opacification of the posterior capsule and no IOL calcification. Neodymium doped: YAG capsulotomy was done to clear posterior capsular opacification, and the patient regained visual acuity of 20/20. To the best of our knowledge, this report is the first to investigate posterior capsular calcification without opacification of IOL in a patient without any known etiological factors.

Conclusion: This case is reported to stimulate future study on the use of BSS plus and the development of posterior capsular or IOL calcification.

Keywords: Calcification on posterior capsule, calcification of intraocular lens, balanced salt solution.

Introduction

Intraocular lens (IOL) and posterior capsular clarity are important for long-term visual gain after cataract surgery. Postoperative visual acuity could be reduced due to opacification of posterior capsule or IOL. Delayed calcification of IOL was noted in hydrogel, polymethyl methacrylate, silicon and hydrophilic acrylic lenses (Yu et al, 2002; Apple et al, 2002; Striham et al, 2010; Lee et al, 2002). Precise etiological factors responsible for calcification

are unknown. Various factors considered responsible for IOL calcification include asteroid hyalosis in the vitreous cavity, silicone gasket used for packing of IOL, balanced salt solution plus and systemic factors like long-term diabetes (Striham et al, 2010; Lee et al, 2002; Izak et al 2001; Olson et al, 1998).

Intraoperative calcification of the posterior capsule is occasionally seen in hypermature or morgagnian cataract, which is associated with the calcification of the anterior capsule.

In this case report, we have described early calcification of posterior capsule without the involvement of IOL.

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Case report

A 78-year-old patient, with no history of diabetes, underwent uncomplicated temporal clear corneal phacoemulsification with implantation of a hydrophilic acrylic intraocular lens (Galaxy Fold, Ellis Ophthalmic Technologies Inc., Jamaica, NY, USA) for cataract. The patient had a good postoperative recovery and achieved an unaided visual acuity of 20/20. Clinical assessment of the anterior segment on slit-lamp bio-microscopy was uneventful during the follow-up visits except for fine granular white deposits on the posterior lens capsule. These deposits were noted on the mid-peripheral part of the posterior capsule on the third postoperative day. There were no deposits on the IOL. Four months later, the patient presented with reduced vision (20/60) in the operated eye. A pupillary dilatation slit-lamp examination showed that the areas of granular calcification on the posterior capsule interspersed with opacification of the posterior capsule. Calcification was also seen on the undersurface of the rim of the capsulorhexis at 6 o'clock position (Figure 1). The IOL was not opacified, and no areas of calcification were present on the surface. Retinal examination by indirect ophthalmoscopy was found to be normal.

Neodymium doped (ND): YAG laser posterior capsulotomy was performed for posterior capsular opacification. The patient regained 20/20 vision, which was stable at the 6-month follow-up. The right eye was pseudophakic with visual acuity of 20/30. Posterior capsule exhibited a 4 mm circular opening of ND:YAG laser capsulotomy. However, no areas of calcification were noted. Examination of the fundus was normal.

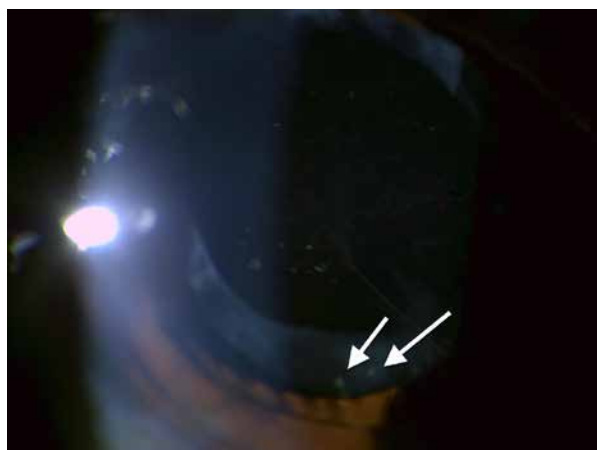


Figure 1: Posterior capsular calcification (Arrow showing calcification on the rim of capsulorhexis)

Discussion

Our case suggests early occurrence of calcification on the posterior capsule after uneventful cataract surgery. The source of calcification could not be ascertained. Stringham et al, studied and reported a strong association between calcification of IOL and asteroid hyalosis. In their study, 22 cases of calcification of silicone lenses involving eight designs manufactured from different silicone materials were noted. Our case did not show asteroid hyalosis in the vitreous cavity on ophthalmoscopy. The deposits of calcium were on the surface of posterior capsule touching the IOL and not on the vitreous side.

Some investigators have studied the role of silicone gasket for the packaging of IOL in the development of calcification. They have postulated that minute amounts of silicone material might catalyze a reaction that lead to the deposition of calcium. However, calcification in such cases is of longer duration (Izak et al, 2001; Apple et al, 2001). In our study, IOL was provided in a glass bottle and no IOL calcification was noted.

Yu and associates (2001) in a series of 46 eyes with calcified hydrogel lenses, noted that 23 patients had diabetes mellitus. Lee and associates (2002) has also shown the deposition of calcium and phosphates on the optic and haptics of IOL in patients with long standing diabetes. Breakdown of blood-aqueous barrier has been thought to be a causative factor leading to early inflammation after surgery (Lee et al, 2002). However, the precise role of diabetes in the pathogenesis of calcification is unknown. Our patient did not have diabetes when investigated before performing cataract surgery and also when calcification was noted on the posterior capsule.

Bucher and associates (1995) observed granular deposits of hydroxyapatite on IOL and posterior lens capsule following the use of thymoxamin solution during cataract surgery. In a physician survey, Olson had elaborated the intraoperative crystallization of calcium ions on the IOL surface after the use of balanced salt solution (BSS) plus, suggesting the possible role of oversupply of calcium and phosphate in the irrigating solution (Olson et al, 1998). In our case, BSS (Intasol, Intas Pharmaceuticals Limited, Matoda, Ahmedabad, India) was used during and post cataract surgery for the anterior chamber formation. Presently, cataract surgery is performed by phacoemulsification technique under topical anesthesia. For immediate postoperative recovery, anterior chamber is formed by BSS instead of sterile air. We hypothesize that the prolonged contact between BSS and posterior lens capsule could be a possible cause for the granular deposits of calcium crystals on the posterior lens capsule. This is substantiated by the presence of deposits on the third day of follow-up when the cornea became clear and posterior capsule was seen clearly on the slit-lamp. No measures were taken to clear them, as they did not have any effect on visual acuity.

The diagnosis of calcification was on clinical basis, as our case had no indications for the removal of IOL and posterior capsule. The calcified areas were elevated from the surface with sharp edges.

Intraoperative calcified posterior capsule is seen in patients undergoing cataract surgery for hypermature cataract. They are seen as a plaque like opacities. Our case underwent phacoemulsification for immature senile cataract and no intraoperative areas of calcification were seen on the posterior capsule.

Conclusion

To the best of our knowledge, this report is the first to investigate posterior capsular calcification without opacification of IOL in a patient without any known etiological factors. Moreover, this case is reported to stimulate future study on the use of BSS plus and the development of posterior capsular or IOL calcification.

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