



Opacification of Akreos Hydrophilic Acrylic Lens After Retinal Detachment Repair with Silicone Oil Tamponade: A Case Report

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ABSTRACT

We report localized opacification of a sclera-fixed Akreos[®] hydrophilic acrylic intraocular lens after successful repair of rhegmatogenous retinal detachment with silicone oil tamponade in a nondiabetic patient. No intraoperative lens opacification during air–fluid exchange or lens dislocation was encountered. Granular opacities within the optic were noted at 5 months after surgery, and did not relent to scrubbing with a vitrector during oil removal. Akreos lens opacification under silicone oil is not well documented in the literature. Surgeons must be aware of this potential complication, which is known to occur with various types of hydrophilic acrylic lenses after exposure to air or gas.

Keywords: Akreos lens; Hydrophilic acrylic intraocular lens; Opacification; Rhegmatogenous retinal detachment; Silicone oil tamponade

INTRODUCTION

Four-point scleral fixation of a hydrophilic acrylic IOL, Akreos[®] AO60 (Bausch & Lomb, Bridgewater, NJ, USA) using Gore-Tex (polytetrafluoroethylene) sutures has recently gained popularity in eyes without zonular support [1]. However, reports of late opacification of various hydrophilic acrylic lenses, including Akreos IOLs, are concerning. Opacification has been reported to occur due to UV blocker aging [2], calcium deposition [3–5], silicon (Si) and silicone (SiO) deposition from IOL packaging [6], after implantation in diabetics [5, 7], due to intracameral injection of tissue plasminogen activator (tPA) [8], and after instillation of air [9], SF₆, or C₃F₈ gas in vitreoretinal surgery [10] or Descemet stripping keratoplasties [4, 9].

Opacification of an Akreos IOL under silicone oil is a less well-known phenomenon, with only three cases published in the literature so far, two in diabetics. Here we report our experience with the use of silicone oil in a 70-year-old nondiabetic patient presenting with rhegmatogenous retinal detachment after scleral fixation of an Akreos AO60 lens.

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CASE REPORT

A 70-year-old male was referred to the Miami Veterans Affairs Hospital due to recurrent episodes of anterior chamber inflammation, hyphema, and vitreous hemorrhage in his left eye associated with endocapsular one-piece PCIOL dislocation. Twenty-eight years before presentation, his left eye underwent a scleral buckle-vitreotomy-gas procedure complicated by infectious scleritis, necessitating scleral buckle removal and later cataract extraction with one-piece acrylic PCIOL placement. Previously he also received radial keratotomy in both eyes.

On presentation, best-corrected visual acuity was 20/20 in the right and 20/70 in the left eye. Left eye examination revealed radial keratotomy scars, trace anterior chamber cells, atrophic iris, an inferiorly dislocated PCIOL-capsular bag complex (Fig. 1), vitreous hemorrhage, and an attached retina with peripheral laser-induced chorioretinal scarring.

We performed an uncomplicated 23-gauge pars plana vitrectomy, explanted the dislocated bag-PCIOL complex through a scleral tunnel, and fixated the Akreos lens with CV-8 Gore-Tex sutures, as previously described [1, 11]. No retinal breaks were noted on scleral indentation.

Eleven days later the patient presented with a total retinal detachment with grade B proliferative vitreoretinopathy due to multiple retinal

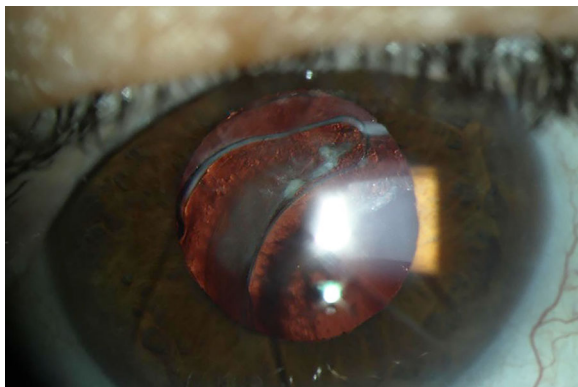


Fig. 1 One-piece intraocular lens implant and capsular bag subluxation at the preoperative visit. Radial keratotomy scars are visible

breaks. Intraocular pressure (IOP) was 10, and white blood cells (WBC) in the anterior chamber (AC) were graded 1+. No hyphema or vitreous hemorrhage was present. A pars plana vitrectomy with a 5000 centistoke silicone oil tamponade was performed. One month later, the retina was attached with a well-centered Akreos lens and a moderate-size silicone oil droplet in the AC. The IOP was 12 and rare pigment and WBCs without a hyphema were present in the AC. The lens appeared clear. At 4.5 months after retinal detachment repair, whitish granular opacification was noted in the lens optic (Fig. 2). The silicone oil droplet in the AC was stable in size, IOP was 13, rare pigment was present in the AC, and the retina was well attached. Immediate silicone oil removal was scheduled. During the procedure, we were unable to scrape the opacities with the vitrector by scrubbing the anterior or the posterior IOL surface. One week after oil removal, the uncorrected VA was 20/150, trace WBCs were seen in the AC, the retina was attached, and the lens opacities appeared stable (Fig. 3). These opacities have not enlarged since silicone oil removal and have been stable for at least 3 months postoperatively.

Our patient was informed of the delicate nature of his ocular condition and gave his consent to publish this report. The case report

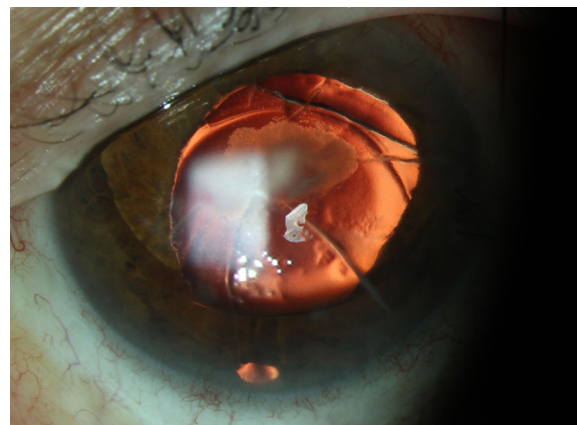


Fig. 2 Granular whitish opacification is noted within the sclera-fixated optic of an Akreos AO60 lens implant seen at 4.5 months after retinal detachment repair with 5000 centistoke silicone oil. Oil droplet is seen in the anterior chamber

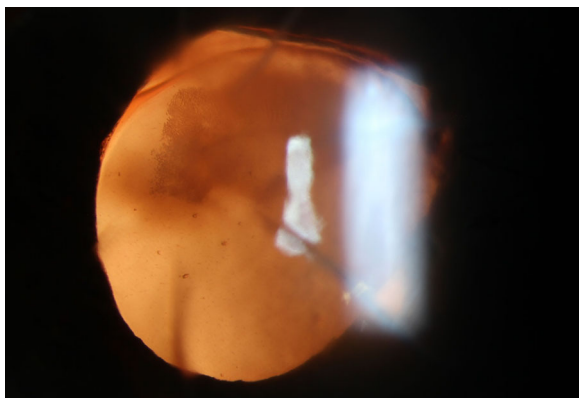


Fig. 3 Stable granular opacification is seen at 1 week after silicone oil removal. These opacities remained stable in appearance for at least 3 months after oil removal

complies with the guidelines for human studies and was conducted ethically in accordance with the World Medical Association Declaration of Helsinki.

DISCUSSION

The surgical technique of Akreos AO60 hydrophilic lens scleral fixation with off-label Gore-Tex (polytetrafluoroethylene) sutures has recently become popular in the vitreoretinal community for eyes without sufficient zonular support [1]. Centration and surgical outcomes have been favorable [11]. Unfortunately, hydrophilic acrylic lenses are prone to opacification. Various hydrophilic acrylic IOLs have been reported to develop calcium deposition on the surface and subsurface in diabetics, in association with intracameral injection of tissue plasminogen activator (tPA), and after exposure to intracameral or intravitreal air, SF₆, or C3F₈ gas [4, 8, 10, 12, 13].

A recent report of two cases documented Akreos lens opacification at 6 weeks and 3 months postoperatively after intravitreal 20% SF₆ gas instillation during lensectomy and Akreos lens scleral fixation in nondiabetic patients with ectopia lentis [10]. In the second patient, the opacification increased between month 3 and month 5 and was associated with symptomatic photophobia. This is the first report of sclera-fixated Akreos AO60 IOL

opacification in the presence of a gas tamponade without a capsule present. Dhital et al. reported a case of Rayner (Hove, UK) C-flex 570C hydrophilic lens opacification after vitrectomy with SF₆ gas injection for the repair of a traumatic retinal detachment [13]. Several authors have documented calcium and phosphate deposition within hydrophilic acrylic lenses, including “in-the-bag” Akreos AO IOLs, after straightforward phacoemulsification or vitrectomy without any tamponade in diabetic patients [5, 7, 14].

However, the interaction of hydrophilic IOLs with silicone oil is not well documented. Only three reports (two with an Akreos AO lens) were found in the literature at the time we performed a literature search while planning surgical repair for our patient. In 2010 Lee et al. reported a case of calcium deposits on the surface of an explanted C-flex 570C hydrophilic lens, which developed 6 months after silicone oil removal in a 24-year-old myopic female who had oil in the eye for 3 months after retinal detachment repair [12]. In 2010, Park et al. reported two cases of Akreos AO MI60 opacification in diabetic patients who had silicone oil placed for tractional retinal detachment repair [5]. Explanted lenses were shown to contain calcium and phosphate deposits within the anterior surface.

Since our patient was a nondiabetic and there were no other reports of Akreos opacification under silicone oil, we chose to utilize silicone oil rather than gas during the surgery. Unfortunately, at 5 months postoperatively we noted an obvious patch of granular whitish opacities within the lens optic (Fig. 2). These opacities did not enlarge after silicone oil removal and remained stable in appearance for at least 3 months postoperatively.

Two months after we treated our patient, Rubin and Baker published their case of a nondiabetic 80-year-old male who had a clinical course very similar to that of our 70-year-old nondiabetic patient [15]. Both patients underwent Akreos lens suturing to treat a single-piece IOL subluxation, and both developed a retinal detachment within 2 weeks of implantation (9 days in Rubin’s case report). Thus, metabolic changes in the anterior chamber and

blood–aqueous barrier breakdown after a recent intraocular surgery may have led to the development of opacification.

CONCLUSIONS

Surgeons need to be aware of the possibility of Akreos IOL opacification with silicone oil tamponade. As more cases of Akreos opacification are published, our understanding of patient factors and clinical scenarios leading to the development of deposits will improve. It remains to be determined whether silicone oil limits the risk of developing lens opacification in the short and long term compared to the incidence or severity of this complication with intraocular gas.

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Disclosures. Ninel Z. Gregori, Jose J. Echegaray, and Harry W. Flynn Jr have nothing to disclose.

Compliance with ethics guidelines. This case report complies with the guidelines for human studies and was conducted ethically in accordance with the World Medical Association Declaration of Helsinki. The patient was informed and has given his written informed consent to publish his case (including publication of lens images). No photographs by which the patient may be identified are included in this submission.

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