



Management of Ciliary Staphyloma as a Complication of Silicone Oil Infusion During Retinal Detachment Surgery - A Case Report

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Abstract

Silicone oil infusion is a frequently used modality for intraocular tamponade in various vitreoretinal surgeries. This surgical tool is by and large safe and effective but is associated with various complications like raised intraocular pressure (IOP), cataract, deterioration of vision due to emulsification of oil etc. especially if retained for longer periods. We would like to report a case of a young male who underwent surgery for retinal detachment with silicone oil used as endo-tamponade, who presented with a painful blind right eye due to a rare complication of ciliary staphyloma secondary to raised IOP after being lost to follow up with silicone oil in situ due to COVID 19 pandemic. We present an unconventional approach of managing this complication by opting for filtering surgeries to lower IOP before going for more destructive procedures.

Keywords: Silicone Oil Infusion; Complications; Staphyloma; Trabeculectomy; Retinal Detachment

Introduction

Staphyloma refers to localized bulging of weak outer wall of eyeball (cornea and sclera). The underlying uveal tissue shines through the thinned out outer fibrous wall which gives the bluish color to the eyeball. According to location staphyloma may be classified [1] as

- Anterior
- Intercalary
- Ciliary
- Equatorial
- Posterior

The etiology of formation of staphyloma is unclear. There is postulation that local choroidal factors and decreased resistance of sclera leads to protruding Bruch's membrane resulting in staphyloma.

High myopia is the most common cause of staphyloma. Other causes can be scleritis, ocular trauma, absolute glaucoma, corneal ulcer.

Silicon oil can cause raised IOP by various mechanisms like pupillary block, infiltration of trabecular meshwork by silicon oil, trabeculitis, synechial angle closure, rubiosis iridis and migration of oil in anterior chamber [2]. Raised IOP can in turn cause staphyloma due to stretching of fibrous sclera.

The glaucoma needs treatment either medical or surgical. Most common surgical management is trabeculectomy. It is a filtering surgery to decrease IOP by creating pathway for aqueous to drain out of anterior chamber.

Materials and Methods

A young boy underwent pars plana vitrectomy, endo-laser and silicone oil infusion for R/E retinal detachment 2 years back. He lost

the follow up track due to covid-19 pandemic. Subsequently he developed complaints of redness, watering, pain in R/E along with increased size of R/E and loss of vision. He presented elsewhere with the above complaints and was advised enucleation. He returned to us for second opinion.

On examination visual acuity (VA) in R/E was PL positive and PR inaccurate in superior, inferior, nasal quadrants and 6/6 in L/E. The intraocular pressure (IOP) in R/E was 56mmHg on applanation tonometry (mires distorted). On slit lamp examination there was circumcorneal congestion, staphyloma from 7o'clock to 4o'clock, cloudy cornea and anterior chamber was full of emulsified oil. We couldn't assess further details due to hazy media. USG B scan showed increased lens thickness, silicon oil filled globe and attached retina. He was given intravenous mannitol (5 ml/kg body weight) stat. He was started on tablet acetazolamide 250 mg TDS, eye drop brimonidine, timolol for a week. There was no decrease in IOP. Then the patient was taken for trabeculectomy under local anesthesia to control IOP, remove silicon oil and prevent staphyloma getting bigger. To our surprise the staphyloma regressed markedly on table on removal of silicon oil via Trab ostomy. The anterior chamber was cleared of emulsified oil through side port. The lens was found cataractous.

On post-op day 1 there was remarkable decrease in pain. The VA in R/E was finger counting at 1 meter with PR accurate in all quadrants. The IOP measured 22 mmHg. There was cataract. Patient was kept on two antiglaucoma drugs (dorzolamide and timolol), antibiotic and steroid combination for a week. Cataract surgery was planned a month later.

Discussion

Silicon oil is a vitreous substitute used for providing long term tamponade in retinal surgeries. Secondary glaucoma post silicon oil infusion is very common. Secondary glaucoma can occur anytime in post op period. IOP and vision loss can be variable. It causes glaucoma due to various mechanisms like pupillary block, silicon oil emulsification and oil in anterior chamber leading to corneal touch, exacerbation of pre-existing glaucoma [3,4]. This rise in IOP can be managed by either medical therapy, prophylactic peripheral iridectomy, silicone oil removal, glaucoma filtration surgery, glaucoma drainage devices, cyclo-destructive procedures.

Silicone oil removal after the increase in IOP may or may not benefit. Some of the studies suggest silicone oil removal alone is sufficient to normalize IOP whereas others suggest silicone oil removal alone to be insufficient to alleviate glaucoma [4,5]. It is generally accepted norm to early remove the emulsified oil because this causes reversal of mechanical trabecular blockage by oil particles and contains damage to filtration channels. With increasing contact between trabecular meshwork and emulsified oil bubbles, silicone oil removal may not have any role in IOP control. Patients who undergo silicone oil removal alone for IOP control are more likely to have persistent elevation of IOP and require re-surgery for glaucoma [4,5].

In our case trabeculectomy was performed because the IOP and pain were uncontrollable on medical management. Trabeculectomy can be designed around the injury or site and shape of pathology. We performed a superior fornix based trabeculectomy. Very gentle cautery was done keeping in mind the thinned-out sclera. Hexagonal scleral flap was made. The flap was kept thin. Rectangular shaped sclerotomy of size 8 mm * 3 mm was made. Silicon oil was removed through this ostomy. To our surprise the staphyloma regressed on table with silicon oil removal via ostomy.

Silicon oil enters anterior segment due to zonular weakness or iatrogenic damage due to anterior traction forces during surgery [6]. The anterior chamber was cleared of oil through side ports. The ostomy and conjunctival flap were then sutured. Lens was found cataractous.

We were able to bring IOP from 56 mmHg to 22 mmHg on 1st post- op day. The patient didn't complaint of eye pain. There was no staphyloma on clinical examination. The bleb was well formed on 1st post-op day. Patient was then kept on regular follow up. The follow up IOP with dorzolamide and timolol came down to 16-18 mmHg.



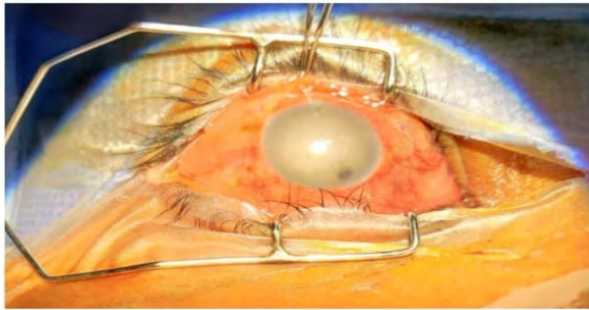


Figure 1: Pre-operative picture: A superior ciliary staphyloma and emulsified silicone oil filled anterior chamber of right eye.



Figure 3: Post operative day 1 pictures in different gazes.

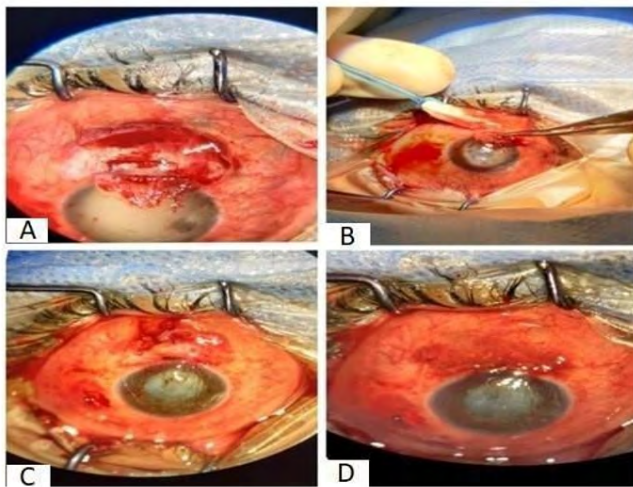


Figure 2: Steps of Trabeculectomy. A) Construction of the scleral flap; B) Raising the scleral flap; C) Trabeculectomy with gush of silicone oil coming out of the window decompressing the staphyloma D) Post Trabeculectomy Bleb.



Conclusion

- Timely removal of silicon oil is imperative for better results.
- Maintaining IOP in normal limits essential for better visual outcome.
- A trial of filtering surgery should be given for staphylomata’s eyes due to raised IOP before proceeding to destructive procedure.

Consent

We confirm that the patient has provided us with their written informed consent to use their anonymized information to be published in this article

Conflict of Interest

The author declares that there is no conflict of interests regarding publication of this paper.

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