

Leftover mitomycin-c sponge causing blebitis

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Trabeculectomy is the commonest surgical intervention performed worldwide for the treatment of open-angle glaucoma. However, the use of antimetabolites during trabeculectomy has been associated with various bleb related complications. We report this interesting case to highlight unique clinical presentation and management of a leftover mitomycin-C sponge causing blebitis.

Key words: Blebitis, endophthalmitis, mitomycin C, trabeculectomy

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Case Report

A 20-year-old boy reported to us with a history of right eye (RE) uneventful mitomycin-C (MMC)-assisted trabeculectomy done 21 days before for medically uncontrolled secondary glaucoma. He had undergone vitrectomy with silicone oil tamponade for traumatic retinal detachment 4 months back. His chief complaint was gradual blurring of RE vision since last 1 week. Left eye (LE) ophthalmic history was unremarkable.

On examination his best corrected visual acuity (BCVA) in RE was 6/36 and 6/6 in LE. Intraocular pressure (IOP) in RE was 36 mm Hg (with maximum tolerated topical and oral antiglaucoma therapy) and 12 mm Hg in LE. Anterior segment examination of RE revealed a superior filtering bleb with a 2 mm area of yellowish infiltration suspicious of blebitis [Fig. 1]. Anterior chamber was quiet. Small silicone oil bubble and subluxated traumatic cataract were the other significant findings. Posterior segment examination revealed optic disc cupping of 0.7, attached retina with old laser scars, and silicone oil-filled vitreous cavity without any signs of vitreous inflammation. LE ocular examination was unremarkable.

Anterior segment ocular coherence tomography (AS-OCT) of RE revealed low reflective inner cavity with a thick

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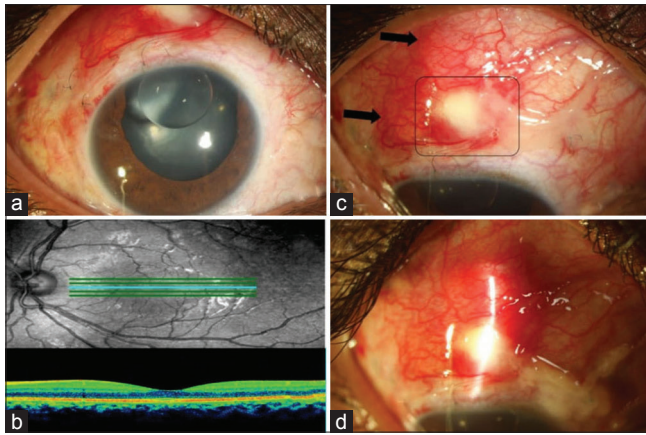


Figure 1: (a) Anterior segment photograph of right eye showing yellowish suppurative material under the bleb superiorly, silicone oil bubble in anterior chamber with traumatic superior sectoral aniridia and cataractous lens. (b) Posterior segment OCT documenting normal foveal contour with attached macula. (c and d) Magnified images of the bleb area documenting irregularly elevated bleb areas (arrows) with central yellowish suppurative material (rectangle)

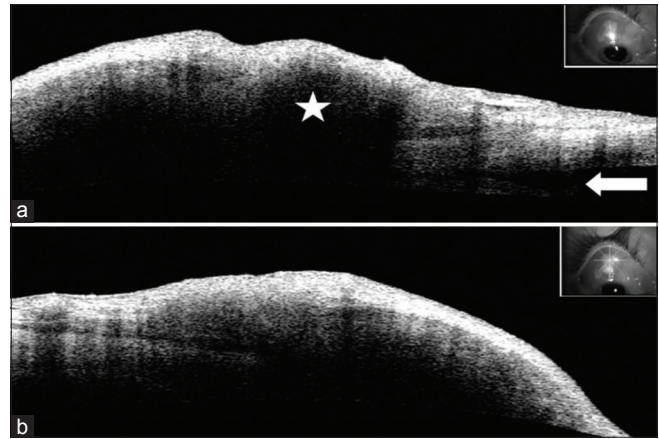


Figure 2: (a) Anterior segment OCT of the bleb area vertical scan showing thick irregular hyperreflective bleb wall with underlying multiple low-reflective echoes in the area of suppurative material (starred area) and patent surgical fistula (arrowhead). (b) Horizontal raster AS-OCT scan showing detailed morphology of leftover MMC sponge

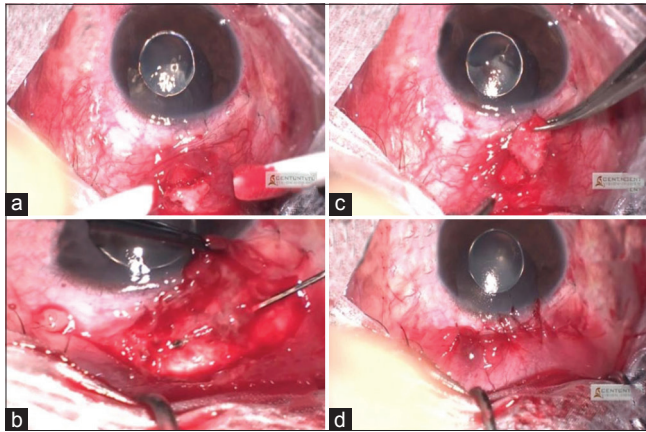


Figure 3: Intraoperative photographs showing: (a) Conjunctival opening over the area of suppurative material. (b) Leftover mitomycin-C sponge being removed with forceps. (c) Confirmation of patency of inner scleral filtering window with the help of spatula. (d) Watertight conjunctival sutured filtering bleb at the end of the procedure

hyperreflective bleb wall with irregular bumpy surface suggestive of failing filtering bleb [Fig. 2].

He was on topical moxifloxacin eye drops three times a day and cyclopentolate eye drops once at night. With a provisional diagnosis of blebitis, we planned RE bleb revision and scleral patch grafting with retinal re-intervention backup. After opening up the conjunctival flap over the bleb area, we found three leftover MMC sponges in the area of yellowish infiltration [Fig. 3]. The MMC sponges were sent for pathological assessment and the subconjunctival space was thoroughly washed with balanced salt solution. The trabeculectomy fistula was found to be patent and functional intraoperatively. Lastly the conjunctiva was closed with watertight sutures. Since we could not see posterior segment inflammation intraoperatively, retinal re-intervention was not done.

Postoperatively, the RE BCVA improved to 6/18 at 2 weeks. The IOP was 10 mm Hg with a diffuse filtering bleb [Fig. 4].

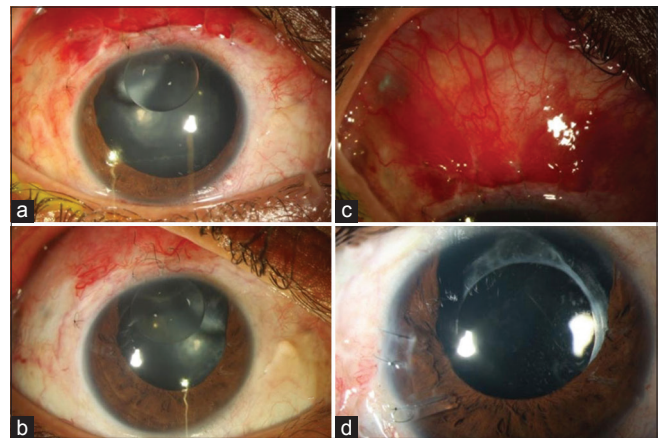


Figure 4: (a and b) 2 weeks postoperative photographs showing good filtering bleb without any evidence of intraocular inflammation. (c) 3 months postoperative follow-up photograph showing quiet eye with superior filtering bleb. (d) 1-year follow-up photograph of the same patient following cataract surgery, Ahmed glaucoma valve, and silicone oil removal

The MMC sponge did not yield any positive growth on culture. He maintained BCVA of 6/18 and stable IOP in normal range at 3 and 6 months follow-up visits on topical anti-glaucoma medications without any recurrences of inflammation. One year later he underwent combined cataract surgery, Ahmed glaucoma valve shunt with silicone oil removal and is presently maintaining BCVA of 6/12 and stable IOP.

Discussion

Trabeculectomy with the use of antimetabolite agents is the most successful and popular treatment for the glaucoma.^[1] However, its high success rate is being confounded by various antimetabolite-related complications such as hypotony maculopathy, cataract, and various bleb-related complications specially bleb related endophthalmitis.^[2,3] The incidence of bleb-related infections has been reported to be 0.55% for blebitis and 0.45%–1.3% for bleb-associated endophthalmitis.^[4]

Various devices like scleral shields, methyl cellulose sponges, gel foam discs, and cellulose sponges are available to deliver antimetabolite agents. When used in surgical procedures, very fine particles of this lint frequently become dislodged. It stays at the site as foreign particles which may potentially initiate inflammation and contribute to early postoperative failure of the filtering bleb.

Choudhary S, *et al.* has reported a case of granulomatous inflammation 3 weeks postoperatively after combined phacoemulsification and trabeculectomy surgery with MMC due to retained microfragments of methyl cellulose sponge.^[5]

Similarly Shin, *et al.* has reported a case of a retained cellulose sponge in the subconjunctival space 3 weeks after the primary surgery.^[6]

In our case, yellowish infiltration was seen exactly on the filtering bleb caused due to retained sponges presented after 3 weeks. We suspected it to be a case of blebitis because of its location and appearance. Anterior chamber was quiet and there was no bleb leak. We believe that the leftover MMC sponge acted as a mechanical barrier preventing migration of cellular debris and inflammatory cells into the anterior chamber. Furthermore, AS-OCT helped us in suspecting that it is not only a failing bleb but also something else. Functioning filtering bleb is described as having multiform wall reflectivity with the pattern of multiple internal layers and microcysts on AS-OCT.^[7] Here, AS-OCT showed low reflective inner cavity with a thick hyperreflective bleb wall with irregular bumpy surface [Fig. 2].

Needless to say, it is very important to differentiate blebitis and endophthalmitis to plan the treatment protocols. Commonly accepted definition of blebitis is anterior segment inflammation with mucopurulent material in or around the bleb, with anterior chamber cells but without hypopyon. Thus anterior chamber and vitreous examination for hypopyon and inflammatory cells can aid to differentiate the above two entities.^[8]

Various methods have been described in the literature to avoid retained antimetabolite sponges. Shin *et al.* has suggested thorough irrigation and inspection of the subconjunctival space and counting the sponge.^[6] Poole *et al.* suggested use of polyvinyl alcohol (PVA) microsurgical sponge for antiproliferative agent delivery as its cut pieces do not leave behind any microfragments, when soaked with antimetabolite.^[9]

Intraoperative use of MMC injection has also been studied showing equal efficacy as MMC sponges.^[10] This can also be considered as a useful procedure in view to avoid retained MMC sponges.

We usually count the MMC sponges while placing under the conjunctiva and match the number during the removal and wash the area thoroughly using continuous irrigation after removing the sponges.

Regular follow-ups and detailed clinical examination help in titrating treatment protocols. We believe early surgical reintervention coupled with frequent postoperative follow-ups and good patient compliance favored good visual outcome in our case scenario.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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