

Treatment of endophthalmitis after Baerveldt glaucoma implant surgery using immediate tube withdrawal and temporary subconjunctival tube placement

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BACKGROUND

Endophthalmitis is an uncommon complication after glaucoma drainage device (GDD) implantation. Tube exposure is a major cause of endophthalmitis and the rate of endophthalmitis following GDD tube exposure has been reported to range from 0.9 to 6.3%¹. There is debate over whether GDDs should be removed or left in place when we treat endophthalmitis².

PURPOSE

We herein report a case of endophthalmitis secondary to tube exposure following Baerveldt glaucoma implant surgery that was successfully treated using prompt tube withdrawal and temporary subconjunctival tube placement.

METHODS

An observational case report.

RESULTS

A 65-year-old Japanese male, who had a 25-year history of glaucoma secondary to uveitis in his right eye and had been treated with several classes of eye drops, was referred to our hospital for further consultation. He had been treated for hypertension and had a 36-year history of smoking with about 60 cigarettes a day. He had undergone several glaucoma surgeries for advanced glaucoma, including 3 mitomycin C-augmented trabeculectomies and 2 bleb revisions, followed by an unspecified bleb-related infection (Fig. 1). He had nuclear and posterior subcapsular cataract. His corrected decimal visual acuity was 0.2 and IOP was 30 mmHg in his right eye despite maximal medical management at the first visit.

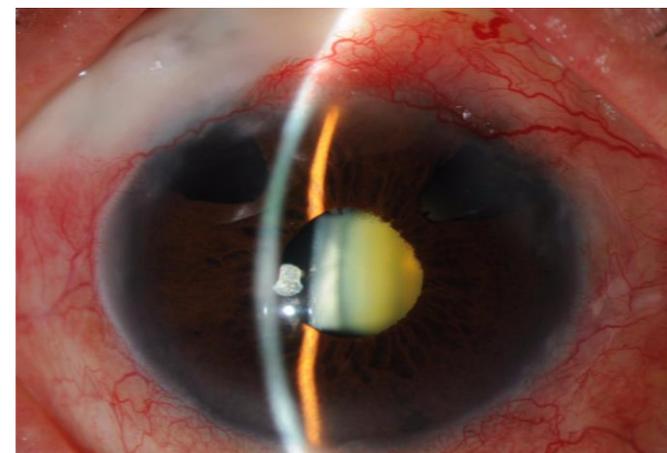


FIGURE 1. Right eye at the first visit, which had several glaucoma surgeries and a bleb-related infection.

We performed Baerveldt glaucoma implant surgery with a sclera patch graft in the inferonasal quadrant of his right eye, in combination with phacoemulsification with temporal clear corneal incision, which resulted in an IOP decrease to the low teens.

Ten months following surgery, his right eye presented with a conjunctival dehiscence over the tube along with tube exposure (Fig. 2).

Eleven days after tube exposure, there were 3+ cells and 2+ flares in the anterior chamber (AC) and cells in the anterior vitreous body, and the tube was surrounded by the plaque in the AC (Fig. 3).

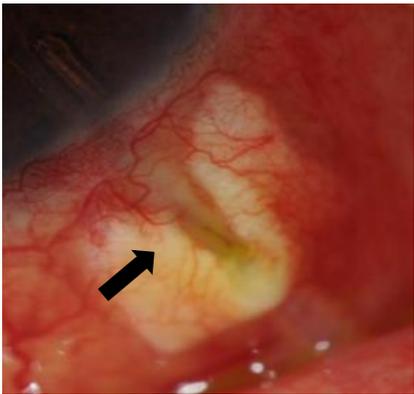


FIGURE 2. A conjunctival dehiscence over the tube along with tube exposure (arrow).

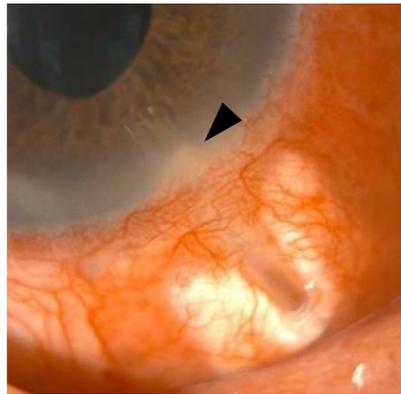


FIGURE 3. The tube was surrounded by the plaque in the anterior chamber (arrowhead).

He was diagnosed with endophthalmitis secondary to tube exposure. He was started on medical therapy with topical cefmenoxime (0.5%) every two hours and topical gatifloxacin (0.3%) every two hours, and pimaricin (1%) ointment five times daily.

Two days later, the tube was removed from the AC and tucked into the subconjunctival space (Fig. 4). The growth of *Corynebacterium* species was identified on the specimen of an AC needle aspiration. Complete resolution of the infection was achieved 1.5 months later.

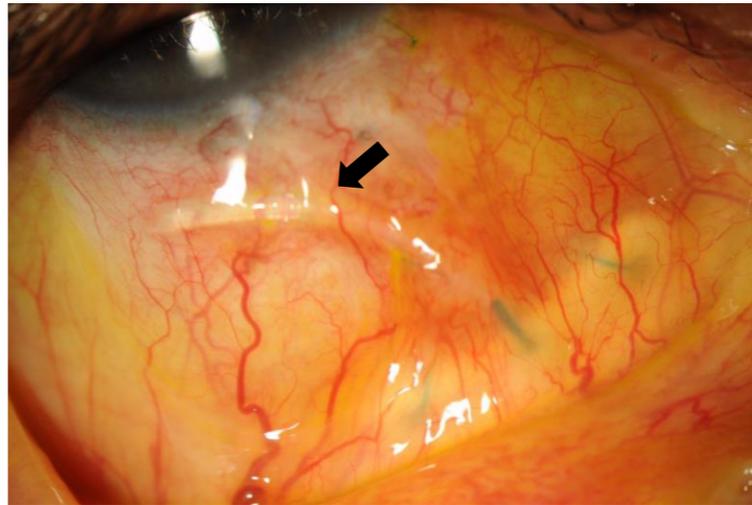


FIGURE 4. The tube was tucked into the subconjunctival space (arrow).

Thereafter the tube was reinserted into the AC nasally and covered with donor sclera and a free limbal conjunctival autograft harvested from his left eye (Fig. 5). No infection or tube erosion have recurred since tube reinsertion, although the donor sclera has diminished in size to some extent (Fig. 6).

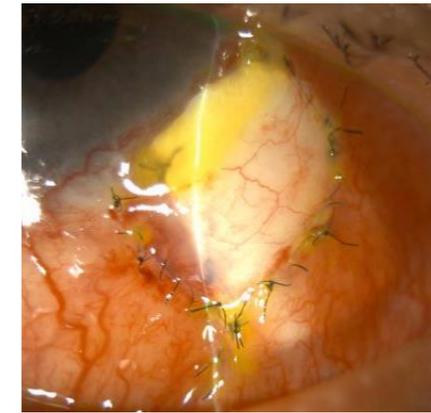


FIGURE 5. The tube was reinserted into the anterior chamber nasally and covered with donor sclera and a free conjunctival autograft.

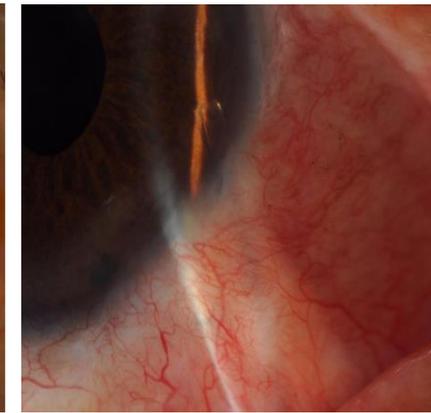


FIGURE 6. No infection or tube erosion have recurred since tube reinsertion.

Ten months after the reinsertion of the tube, his corrected decimal visual acuity was 0.7 and IOP was 11 mmHg in his right eye.

DISCUSSION

We presented a case of endophthalmitis secondary to tube exposure following Baerveldt glaucoma implant surgery combined with phacoemulsification. Immediate removal of the tube from the AC led to the complete resolution of endophthalmitis. In addition, good IOP control was achieved by reinserting the tube that had been tucked into the subconjunctival space.

Risk factors for tube exposure have been reported to be ocular inflammation, steroid use, smoking history, prior ocular surgery, concomitant surgery, and inferior quadrant placement of GDDs³. Since our patient had several risk factors, including previous ocular inflammation, multiple prior ocular surgeries, concomitant surgery, inferior quadrant placement of the GDD, and a smoking history, he was likely to be predisposed to tube exposure.

Regarding the treatment for endophthalmitis secondary to tube exposure, previous reports have shown that endophthalmitis may be successfully treated using prompt repair of tube exposure with good tissue coverage and intravitreal injection of antibiotics, even without removing GDDs^{4,5}. In contrast, Gedde et al. and Perkins et al. have suggested that it is necessary to eliminate GDDs because they may serve as a reservoir for infectious organisms^{6,7}. Nevertheless, once GDDs are removed due to endophthalmitis, an additional glaucoma surgery, usually another tube shunt surgery or cyclophotocoagulation, is needed.

However, it is challenging to control IOP even with additional glaucoma surgery in most cases. The treatment for endophthalmitis secondary to tube exposure is still controversial. Seeing that multiple prior glaucoma surgeries, including 3 trabeculectomies and 2 bleb revisions, seemed to prevent us from performing additional glaucoma surgeries, we retained the GDD and managed to treat our case using temporary tube withdrawal along with topical antibiotic therapy.

CONCLUSION

Immediate tube withdrawal and temporary subconjunctival tube placement may be an effective treatment for tube extrusion associated endophthalmitis following Baerveldt glaucoma implant surgery.

REFERENCES

- 1) Oana S, Vila J, et al. Tube Exposure Repair. *J Curr Glaucoma Pract.* 2012;6:139-42.
- 2) Al-Torbak AA, Al-Shahwan S, et al. Endophthalmitis associated with the Ahmed glaucoma valve implant. *Br J Ophthalmol.* 2005;89:454-8.
- 3) Bains U, Hogue A. Aqueous Drainage Device Erosion: A Review of Rates, Risks, Prevention, and Repair. *Semin Ophthalmol.* 2018;33:1-10.
- 4) Ranganath A, Hashim A. Late-Onset Endophthalmitis Secondary to Exposed Glaucoma Tube Implant in a Rare Case of Paediatric Glaucoma. *Case Rep Ophthalmol Med.* 2011.
- 5) Krebs DB, Liebmann JM, et al. Late infectious endophthalmitis from exposed glaucoma setons. *Arch Ophthalmol.* 1992;110:174-5.
- 6) Gedde SJ, Scott IU, et al. Late endophthalmitis associated with glaucoma drainage implants. *Ophthalmology.* 2001;108:1323-7.
- 7) Perkins TW. Endophthalmitis after placement of a Molteno implant. *Ophthalmic Surg.* 1990;21:733-4.