An Infected Scleral Patch Graft Over a Glaucoma Valve

BY PARUL ICHHPUJANI, MD; ANUJ SHARMA, MD; AND SURESH KUMAR, MD

CASE PRESENTATION

A 67-year-old Asian Indian man presented to our center’s emergency services complaining of redness, watering, discharge, diminished vision, and marked pain for 2 days in his left eye. He had no light perception in his right eye, and the visual acuity in his left eye was hand motion close to the face with inaccurate projection of rays. On slit-lamp examination, the conjunctival sac was full of greenish discharge along with circumciliary congestion and corneal stromal edema. The anterior chamber had an inflammatory reaction of 4+ cells with fibrin and streak hypopyon. There was a bleb in the superotemporal quadrant and an area of scleral thinning with necrosis in the region of the scleral patch graft (Figure 1A and B). Media clarity was poor, so the posterior segment could not be evaluated. The patient’s records revealed that an Ahmed Glaucoma Valve (model FP7; New World Medical) had been implanted in his left eye 4 days prior to presentation for refractory postpenetrating keratoplasty glaucoma.

The patient’s right eye had been lost following penetrating keratoplasty in 1984 and was phthisical. He underwent an optical keratoplasty in the left eye in March 2012 that resulted in a gain in visual function. He was pseudophakic and had had a BCVA of 20/200 before the glaucoma valve was implanted. The corneal graft had a clarity of grade 2 with no evidence of corneal edema. The graft-host junction was well apposed, and the suture marks could be seen.

Before the glaucoma valve was implanted, the IOP as measured by Goldmann applanation tonometry ranged between the high 20s and low 30s on maximal antiglaucoma medication. The patient has been a type 2 diabetic for 20 years and was on insulin therapy. An evaluation of the posterior segment at the time of surgery showed a cupping of 0.85 with concentric loss of the neuroretinal rim and mild nonproliferative diabetic retinopathy.

HOW WOULD YOU PROCEED?

• Would you perform a pars plana vitrectomy with explantation of the glaucoma valve?
• Would you perform a vitreous tap with an intravitreal injection of antibiotics and explantation of the glaucoma valve?
• Would you eviscerate the eye?
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CLINICAL AND SURGICAL COURSE
We collected conjunctival discharge from the fornices for microbiological assessment and started the patient on intravenous piperacillin and tazobactum (3.375 g every 6 hours), as we were highly suspicious of a pseudomonal infection. We also started topical therapy with fortified tobramycin (14 mg/mL) and ceftazidime (50 mg/mL). Gram staining of the conjunctival discharge revealed gram-negative cocobacilli, and the culture was positive for *Pseudomonas aeruginosa*.

B-scan ultrasonography showed the presence of exudates in the vitreous cavity of the left eye. We explanted the glaucoma valve along with the necrotic scleral patch graft and started intravitreal antibiotics (vancomycin 1 mg/0.1 mL and ceftazidime 2.25 mg/0.1 mL). A microbiology report revealed the presence of *P. aeruginosa* in the valve and the scleral patch. A three-port pars plana vitrectomy was planned, but the patient did not give consent for the procedure.

OUTCOME
No benefit from the explantation was observed, and progressive scleral necrosis was noted at the site of scleral thinning. Three months later, the patient’s left eye also became phtisical.

DISCUSSION
Gedde and Perkins recommend removing a drainage implant at the time of treatment because of concerns that it might serve as a reservoir for infectious organisms. Despite doing this, the outcome for our patient was devastating. There is a paucity of literature regarding the best method to resolve such a challenging problem.

Scarring at the implant’s site and poor conjunctival status due to the long-term use of medication and previous surgeries greatly increases the risk of postoperative complications. Because the onset of infection was in the immediate postoperative period and the deterioration in the area overlying the patch graft was rapid, it is quite possible that the sclera used for the patch harbored the pathogenic agent. Eye banks should evaluate the condition of the sclera prior to freezing or ethanol fixation.1

We recommend sclera preserved in dehydrated glycerin and also advise surgeons to check the preserving date on the vial.

Endophthalmitis is a relatively uncommon complication after glaucoma valve implantation, with rates ranging from 0.8% to 6.3%. *Pseudomonas* as a causative agent in endophthalmitis related to tube shunts is uncommon; a literature search shows few case reports.

The reported advantages of pericardial patch grafts include uniform size and quality, commercial availability without dependence on an eye bank, potentially lower costs and a processing method that enhances immunologic safety and reduces the risk of viral transmission. The use of sclera, whether preserved in alcohol or glycerine, is not without risk of viral transmission, even with donor screening.6 Donor patch grafts can induce an immunological reaction in the recipient that can result in graft melting, shrinkage, necrosis, and absorption.7 The take-home message of this challenging case is to exercise extreme caution when examining preserved sclera from an eye bank. We recommend the use of a pericardial patch graft if one is available.

Parul Ichhpujani, MD, is an assistant professor in the Department of Ophthalmology, Government Medical College, Chandigarh, India. She acknowledged no financial interest in the products or companies mentioned herein.

Dr. Ichhpujani may be reached at parul77@rediffmail.com.

Anuj Sharma, MD is a resident in the Department of Ophthalmology, Government Medical College, Chandigarh, India. He acknowledged no financial interest in the products or companies mentioned herein.

Dr. Sharma may be reached at dr.anuj18@gmail.com.

Suresh Kumar, MD, is an associate professor in the Department of Ophthalmology, Government Medical College, Chandigarh, India. He acknowledged no financial interest in the products or companies mentioned herein.

Dr. Kumar may be reached at dsuresh.kumar.gupta@gmail.com.