

Complications of an Nd:YAG Capsulotomy

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CASE PRESENTATION

A 26-year-old woman with a history of uncontrolled diabetes mellitus for 10 years was initially referred to us after she reported a gradual decline in bilateral visual acuity over the course of approximately 4 years. The patient's visual acuity was hand motions in her right eye and pinhole to 20/80 in her left eye. Her IOP was normal. The ophthalmic examination suggested bilateral proliferative diabetic retinopathy, which was subsequently confirmed on fluorescein angiography.

The patient underwent a pars plana vitrectomy, laser photocoagulation, and a membrane peel in her right eye to control a diabetes-related vitreous hemorrhage and tractional retinal detachment. Postoperatively, she reported no changes in her visual acuity. Three months later, however, she complained of a further decrease in visual acuity. Upon examination, the patient's IOP measured 30 mm Hg OD and 14 mm Hg OS. We started the patient on Cosopt (Merck & Co., Inc.) and Alphagan (Allergan, Inc.).

A subsequent visit 1 month later showed an improvement in IOP (18 mm Hg OD and 12 mm Hg OS). One week thereafter, however, the patient complained once again of decreasing visual acuity. Her IOP was 36 mm Hg OD and 12 mm Hg OS, and we diagnosed neovascular glaucoma (NVG) in her right eye that was unresponsive to medical treatment. She was scheduled for the placement of a Baerveldt glaucoma implant (Abbot Medical Optics Inc.) in her right eye to address the elevated IOP. Postoperatively, the patient's IOP was 8 mm Hg OD and 13 mm Hg OS. She simultaneously underwent a pars plana vitrectomy and pars plana lensectomy with silicone oil in her fellow eye for a diabetic vitreous hemorrhage with combined tractional and rhegmatogenous retinal detachment.

Two months later, the patient's visual acuity was stable, with IOPs of 16 mm Hg OD and 15 mm Hg OS. One month later, she had developed a dense nuclear sclerotic and posterior subcapsular cataract in her right eye. Subsequent cataract extraction with IOL implantation improved her visual acuity from count fingers at 2 m preoperatively to 20/200 1 month postoperatively. Given the posterior capsular opacification, we performed an Nd:YAG capsulotomy in her right eye 3 months postoperatively.



Figure. Distal occlusion of a Baerveldt implant following a routine Nd:YAG capsulotomy.

At the routine follow-up visit 1 month later, the patient had no complaints. Her visual acuity was 20/80-2, and her IOP measured 48 mm Hg OD. The examination revealed an open 360° grade 3 angle without the formation of new vessels in the angle or peripheral anterior synechiae. Although the Baerveldt implant was properly positioned, there was an occlusion distal to the opening, and there appeared to be a complete occlusion with remnant cortical material, vitreous, or the material liberated from the posterior capsular opacification (Figure).

HOW WOULD YOU PROCEED?

In a young pseudophakic patient with a history of proliferative diabetic retinopathy and uncontrolled IOP secondary to NVG, how would you treat a continued elevation in IOP and a possible occlusion of the drainage device?

- Would you continue topical therapy with observation?
- Would you surgically correct the presumed occlusion?

CLINICAL AND SURGICAL COURSE

We prescribed topical ocular hypotensives to decrease the patient's IOP to 32 mm Hg OD. Three days later, at the follow-up visit, the Baerveldt implant remained occluded distally, but the IOP had improved to 28 mm Hg. Removing the occlusion, however, remained the ultimate treatment for the patient's recent elevation in IOP. We used an Nd:YAG laser to fragment the occlusion (two shots, 2.4 mJ total energy). The procedure displaced the occlusive material upstream toward the scleral patch graft and out of view. The distal tube appeared to be patent with very minor nicking of the tube itself. Immediately after the procedure, the patient's IOP measured 32 mm Hg. Topical treatment was continued. The

(Continued on page 26)

(Continued from page 23)

next day, the Baerveldt implant remained patent, and the IOP measured 6 mm Hg OD.

OUTCOME

Following intervention, the Baerveldt implant functioned normally. After the discontinuation of the topical therapy, the patient's IOP remained stable, ranging from 10 to 14 mm Hg OD, and her BCVA measured 20/30 OD.

DISCUSSION

The placement of an aqueous tube is a viable alternative to trabeculectomy for controlling IOP in eyes with glaucoma refractive to medical, laser, and prior surgical therapy. Based on level 1 evidence, aqueous shunts have benefits (IOP control, duration of benefit) comparable with those of a trabeculectomy for managing complex glaucomas, defined as phakic or pseudophakic eyes after failed trabeculectomy procedures.¹ The most frequent complications of implanting aqueous tube shunts are overfiltration, excessive capsular fibrosis, and erosion of the tube. Case reports in the literature describe the incarceration of vitreous² and the iris,³ leading to occlusion of aqueous tube shunts.

In this case, a Baerveldt implant became occluded after a routine Nd:YAG capsulotomy. Known complications of an Nd:YAG capsulotomy include retinal tear, retinal detachment, intraocular inflammation, ocular hypertension, and dislocation or damage to the IOL. Nd:YAG treatment of the opacified posterior capsule frees the endothelial membrane from its insertion. Typically, the membrane falls from the posterior capsule and is eventually absorbed in the posterior chamber. Our review of the literature did not reveal a prior case of the complication presented herein. ■

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