PREPERIMETRIC PIGMENTARY GLAUCOMA

Panelists get two cracks at this tough case.

BY STEVEN R. SARKISIAN JR, MD; JASON BACHARACH, MD; AND MARCOS REYES, MD

CASE PRESENTATION

A 62-year-old white man presented in January 2018 with a complaint of decreased vision in his right eye. The patient had a history of pigmentary glaucoma in his right eye that had been treated with selective laser trabeculoplasty (SLT) in August 2011, ab externo canaloplasty with a canal suture in June 2014, Nd:YAG laser goniopuncture in March 2015, and microincisional suture trabeculotomy in October 2015.

Upon presentation, in his right eye, the BCVA was 20/40, the refraction was essentially plano, and the IOP was 17 mm Hg. The patient had no history of glaucoma in his left eye, in which BCVA was 20/20 with a refraction of +1.25 D, and the IOP was 22 mm Hg. Pachymetry readings were 500 µm OD and 580 µm OS.

Examination revealed a somewhat narrow anterior chamber angle in the right eye, Schaffer grade 2, that opened with compression. No peripheral anterior synechiae were visible, although a 3+ to 4+ brunescent cataract was evident. OCT imaging in both eyes was stable compared with the results of previous scans (Figure 1). Visual field testing remained essentially normal, aside from a worsening mean deviation because of the significant cataract in his right eye (Figure 2).

The patient's drug regimen consisted of pilocarpine in his right eye. He was intolerant of or allergic to all other IOP-lowering medications, including brimonidine, dorzolamide, brinzolamide, latanoprost, travoprost, bimatoprost, and preservative-free timolol.

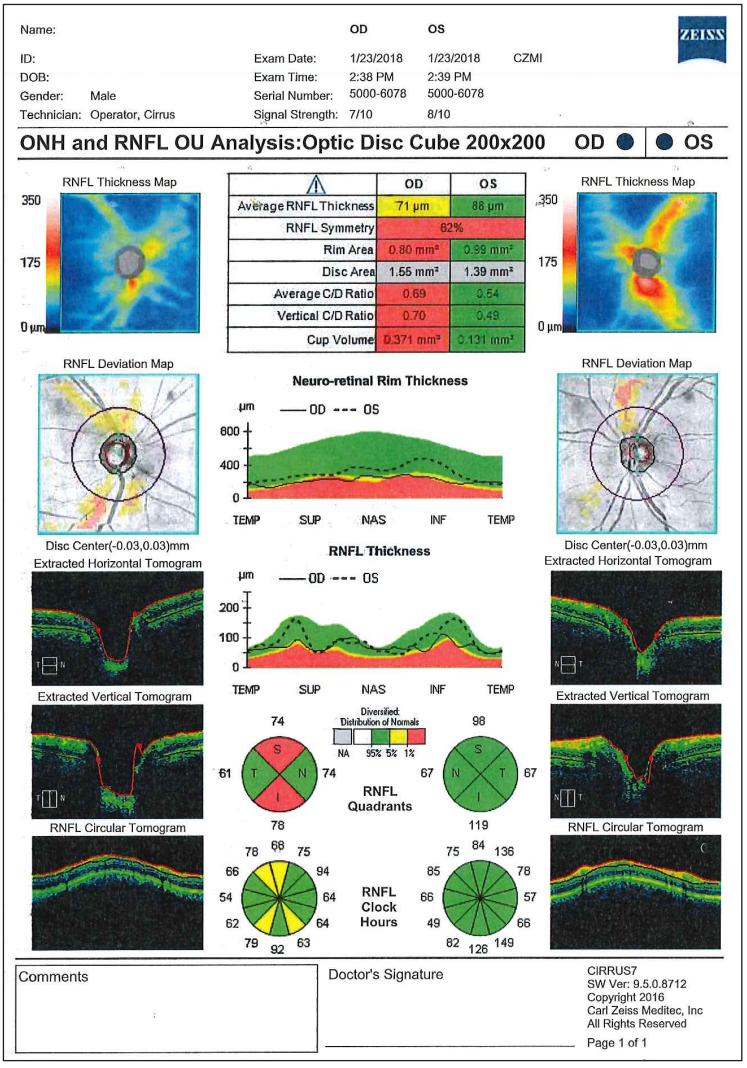

Figure 1. Preoperative OCT imaging in both eyes was stable compared with the results of previous scans. Nerve fiber layer thinning was visible in the right eye.

CASE PRESENTATION, CONTINUED

The patient stated that he would like to undergo cataract surgery on his right eye. The possibility of receiving the CyPass Micro-Stent (Alcon) at the time of cataract surgery was discussed, but he declined the option because it was not covered by his insurance plan. How would you proceed?

—Case prepared by Steven R. Sarkisian Jr, MD

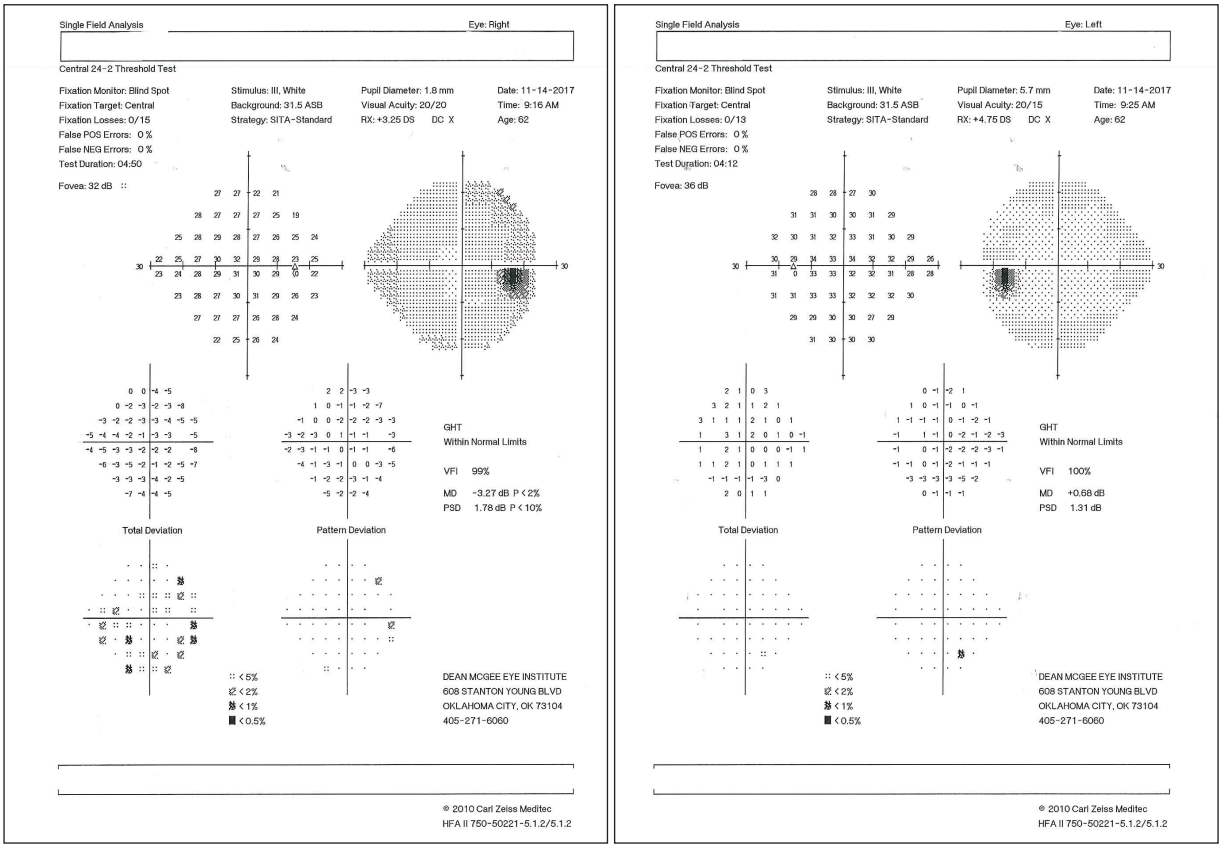

Figure 2. Visual field testing remained essentially normal, aside from a worsening mean deviation because of the significant cataract in the patient's right eye.

JASON BACHARACH, MD

This eye with preperimetric pigmentary glaucoma has undergone multiple procedures that most likely had limited success in terms of IOP control, considering that additional maneuvers are still needed in an attempt to reach the target IOP. Imaging with OCT has been stable recently, the IOP is in the teens, and pachymetry measures 500 µm. Nevertheless, a dense cataract is causing visual symptoms and narrowing the angle approach.

I assume that the patient's intolerance of drops was identified sometime before his SLT procedure. It is probably not a benzalkonium allergy because the patient is tolerating pilocarpine. Although this drug is part of an excellent therapeutic class for treating pigmentary glaucoma, the miosis that pilocarpine induces is likely exacerbating the patient's visual symptoms.

In addition to SLT, other nonpenetrating surgical approaches to IOP control, including ab externo canaloplasty (with subsequent goniopuncture) and suture trabeculotomy, provided short-lived benefit, if any.

Cataract formation can help reduce pigment shedding in pigmentary dispersion syndrome by moving the iris forward, away from the anteriorly oriented zonular fibers. In this case of pigmentary glaucoma with optic nerve abnormality noted on OCT, however, the outflow system has probably incurred significant permanent damage over the years. Such damage in a relatively young patient would incline me to choose a combined approach versus cataract surgery alone. My target IOP would be in the midteens.

Cataract surgery combined with endoscopic cyclophotocoagulation (ECP) might be a reasonable option, but I do not have access to that equipment.

My approach would therefore be to combine cataract surgery with a penetrating glaucoma procedure. I would consider performing ab externo trabeculectomy with or without an Ex-Press Glaucoma Filtration Device (Alcon), implantation of a glaucoma drainage device, or placement of a Xen Gel Stent (Allergan). Because the patient is only 62 years old and has a history of multiple failed glaucoma surgeries, preserving conjunctival real estate is crucial. My preference would therefore be a Xen Gel Stent with adjunctive low-dose mitomycin C (0.2 mg/mL). Before proceeding to surgery, I would make sure that the patient thoroughly understood that subsequent bleb needling is required in one-third to one-half of cases.

MARCOS REYES, MD

The patient has mild-stage pigmentary glaucoma in his right eye and pigment dispersion syndrome in his left eye. His apparent sensitivity to medication is a real problem because it leaves very little wiggle room.

Based on the information provided, I would offer combined phacoemulsification and ECP in the hope that opening the space in this crowded angle would decrease the IOP by 2 to 5 mm Hg more than would cataract surgery alone. I would be wary of using the CyPass Micro-Stent (a moot point in this particular case and because it was recently withdrawn from the market), the Xen Gel Stent, or another drainage device if there is no trabecular meshwork barrier because that absence could lead to persistent hyphema in the postoperative period or even longer.

WHAT I DID: THE CASE CONTINUED

When determining how to approach the patient's right eye, I considered the slightly narrow angle, the significant cataract, the level of IOP control with pilocarpine alone, the relative stability of the glaucoma, and the preperimetric glaucoma status. I decided to perform cataract surgery alone, with an expectation that the procedure would decrease the IOP.

Cataract surgery, performed in February 2018, was uneventful. On postoperative day 1, IOP measured 41 mm Hg, and UCVA was 20/200. At the slit lamp, I released some aqueous from the surgical paracentesis after povidone-iodine preparation to remove any retained OVD, and I started the patient on acetazolamide and timolol. On postoperative day 2, UCVA was 20/70, and the IOP measured 10 mm Hg. Because the right eye had developed significant corneal edema, I started the patient on sodium chloride hypertonicity ophthalmic ointment 5% (Muro 128, Bausch + Lomb).

One week after surgery, the patient had stopped using timolol and acetazolamide because of side effects from the former, and IOP measured 40 mm Hg. I prescribed acetazolamide sequels 500 mg twice daily. When he returned 4 days later, IOP measured 17 mm Hg, UCVA was 20/30, and the corneal edema had improved significantly (Figure 3).

With the benefit of hindsight, what would you have done differently? If the patient becomes symptomatic from long-term therapy with oral aqueous suppressants or if the treatment proves to be insufficiently effective, how would you lower the IOP?

—Steven R. Sarkisian Jr, MD

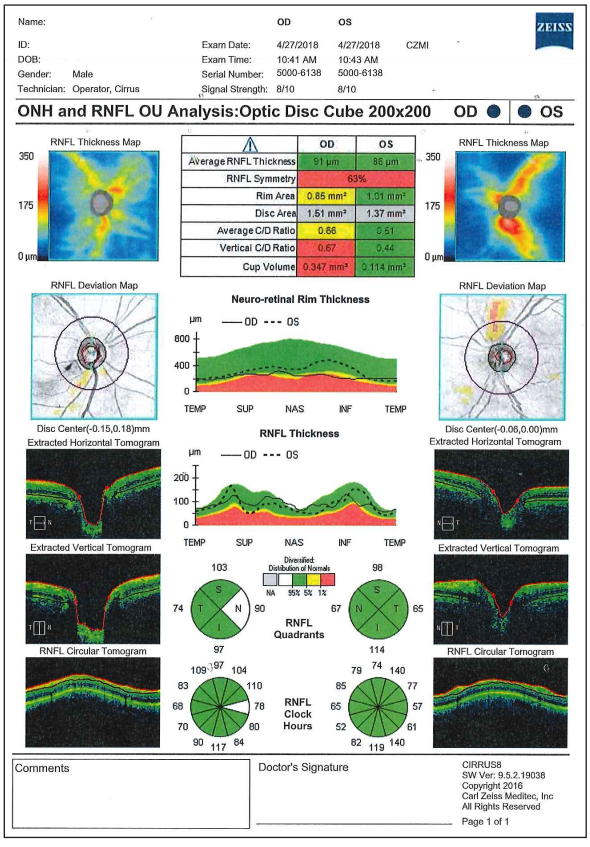

Figure 3. With the cornea clear and the cataract removed, postoperative OCT imaging results improved.

DR. BACHARACH: Initial cataract surgery alone was also on my short list of options, with the caveat of warning the patient that another procedure to control the IOP might be necessary. What swayed me in favor of a combined cataract and glaucoma surgical approach was the patient's history of multiple glaucoma procedures prior to dense cataract formation, his limited options in terms of topical medication, and probable downstream damage to the conventional outflow pathway.

I am not surprised by the postoperative IOP spike. After all, this eye has undergone multiple angle-based procedures and has been exposed to postoperative steroid drops. At this point, I would observe the patient closely because there has been only one reasonable IOP measurement (approximately 11 days after surgery) to see if his situation is truly stabilizing. It is possible that he will tolerate oral acetazolamide long-term, or the surgeon could attempt to taper the oral agent.

I would discuss with the patient the possible need for a filtration procedure (the Xen would be my first choice here) to establish long-term IOP control, with a secondary goal of discontinuing oral acetazolamide. I would wait a few months to determine if surgery is warranted so as to reduce the risk of bleb failure from residual inflammation induced by the cataract procedure.

DR. REYES: This is a perplexing situation. Given the patient's rejection of the CyPass for insurance reasons, phacoemulsification alone was a reasonable approach. Combining the procedure with ECP was also an option, but, given his high postoperative IOP, I doubt that the combined procedure would have been sufficient.

Now I would change tactics. If on gonioscopy there does not appear to be a sufficient trabecular shelf with an open view of the posterior wall of Schlemm canal, I would consider a repeat goniotomy-type procedure such as gonioscopy-assisted transluminal trabeculotomy, the Omni Glaucoma Treatment System (Sight Sciences), or Trab360 (Sight Sciences). I have repeated a goniotomy only twice in my adult patient population, but the patients achieved a low IOP in both cases, which I have monitored for almost a year.

If I were uncertain or if there were clear exposure of the canal, then a poor collector system is the culprit. Options would include implantation of a glaucoma drainage device, a trabeculectomy, or the Ex-Press Glaucoma Filtration Device. My preference would be to place a Baerveldt glaucoma implant (Johnson & Johnson Vision). I would avoid a trabeculectomy and the Ex-Press if possible because the previous ab externo canaloplasty disrupted the conjunctiva. ■

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