

Do the Benefits of Surgery Outweigh the Risks?

BY UDAY DEVGAN, MD; MARSHALL BOWES HAMILL, MD; JOHNNY L. GAYTON, MD;
AND MELISSA B. DALUVOY, MD

CASE PRESENTATION

A 58-year-old woman with monocular vision was referred to the Duke Eye Center for a surgical consultation. She was born with bilateral Peters anomaly, and her left eye was removed in 1976 following surgical complications and poorly controlled glaucoma. Her right eye is presently being treated for open-angle glaucoma. The patient reported a significant decline in vision over the past 2 to 3 years, especially in bright light. She has a history of diabetes and is checked yearly for diabetic retinal disease. Ophthalmic medications at the time of the initial consultation included cyclosporine ophthalmic emulsion 0.05% (Restasis; Allergan) twice daily, latanoprost 0.005% (Xalatan; Pfizer) at night, timolol-dorzolamide (Cosopt; Merck & Co.) daily, and cyclopentolate 1% (Cyclogyl; Alcon) twice daily, all in the right eye, and Tobradex (Alcon) ointment was used as needed at night in the socket of the left eye.

On examination, the patient's BCVA in a dark room was 20/200 (-4.75 D sphere). Confrontation visual field testing revealed constriction in her right eye. Slit-lamp biomicroscopy demonstrated that the ocular surface was dry. Corneal contour was irregular, but the epithelium was intact. Full-thickness corneal scarring and neovascularization occluded the nasal portion of the pupil and most of the nasal cornea (Figures 1 and 2), a finding consistent with the results of the patient's confrontation visual field examination as well as her desire to turn her head to the left to improve her vision. The scar relative to the pupil's size and location was the likely cause of her decreased vision in well-lit (small pupil) conditions. The anterior chamber was very shallow with iris-corneal touch temporally. The pupil was distorted and less than 2 mm in diameter, despite the daily use of cyclopentolate.



Figure 1. Slit-lamp photograph of the patient's right eye showing a corneal scar with lipid deposition, neovascularization, and a miotic pupil.



Figure 2. The corneal scar with mild haze temporally.

Moderate nuclear sclerosis was present, suggesting that the cataract was contributing to the patient's noticeable decline in vision. The IOP measured 21 mm Hg by tonometry using a Tonopen. The posterior segment

CASE PRESENTATION (CONTINUED)

appeared to be flat, but fine details of the optic nerve and posterior segment were obscured.

Initially, the patient was reluctant to consider surgery, given the outcome of her first eye. She returns 2 months later, more willing to consider surgery, but she emphasizes her anxiety and desire for safety.

In summary, a highly risk-averse monocular patient presents with corneal irregularity, neovascularization, full-thickness scarring, a shallow anterior chamber with iris touch, and a visually significant nuclear sclerotic cataract. Outline your strategy for any further evaluation and surgical approach to improve her visual acuity and ability to function.

—Case prepared by Alan N. Carlson, MD,
and Melissa B. Daluvoy, MD.

UDAY DEVGAN, MD

As ophthalmologists, we try our best to restore patients' vision, which often requires a surgical procedure. This is a very complex case involving a risk-averse monocular patient. Due to her myriad concurrent problems, restoring normal vision is not possible.

From the surgeon's perspective, the principal question is whether the potential benefits of surgery outweigh the risks. From the patient's point of view, her situation is more complicated, because she previously lost her other eye due to surgical complications—a scenario that could happen again with her remaining eye. Just 2 months ago, she was reluctant even to consider surgery, but now she is entertaining the possibility.

From the case description, this patient has moderate nuclear sclerosis, and her remaining anterior segment findings seem chronic and stable. This tells me that there is no urgent need to perform surgery. Other pharmacologic agents can be tried to enhance mydriasis and improve her vision with little downside. As the cataract progresses, the patient's desire for surgery will slowly build, and she will realize that the benefits outweigh the risks. For now, however, my advice to the patient is to wait and reevaluate her situation in the near future.

JOHNNY L. GAYTON, MD

Obviously, this is a very difficult case that is going to become more complex over time. The patient's cataract is contributing to the progressive narrowing of the angle and decreasing her vision. The glaucoma is probably uncontrolled due to the progressive narrowing of the angle and an abnormal trabecular meshwork. The

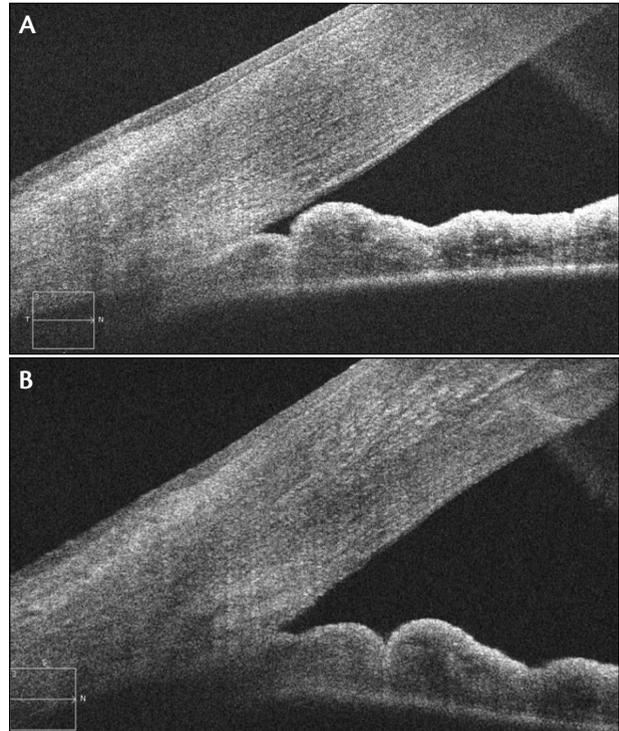


Figure 3. Pre- (A) and postoperative (B) optical coherence tomography scan shows how lens removal opens up the angle.

corneal scar induced by Peters anomaly is reducing the patient's vision and will interfere with the surgeon's visualization of the lens during cataract surgery. Dr. Devgan's advice to proceed slowly is excellent, but it is important not to respond so slowly that the angle closes.

I would perform a cataract extraction with capsular dye. I would have a Malyugin Ring (MicroSurgical Technology) and iris retractors available in the event they are needed. I would hydrodissect, even more so than normal, to minimize cortical removal, because cortical aspiration would pose a risk to the posterior capsule. I would also perform a 360° endoscopic laser cycloablation to decrease the IOP and further open the angle (Figure 3). I would make the nasal entry in the least vascularized area of the cornea and take advantage of the nasal wound to perform multiple small sphincterotomies to enlarge the temporal pupil. A larger temporal pupil will improve the patient's vision in bright light.

Preoperatively, I would have the patient start serum eye drops and loteprednol etabonate ophthalmic gel 0.5% (Lotemax 0.5% Gel Drop; Bausch + Lomb) and continue them postoperatively to improve the health of the ocular surface. Loteprednol would also control postoperative inflammation while minimizing the risk of a

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—Marshall Bowes Hamill, MD

steroid-induced increase in IOP. I would also prescribe an antibiotic, the frequent instillation of artificial tears, and a nonsteroidal antiinflammatory drug once daily. The frequency of the antibiotic would depend on which one I prescribe. I would place a bandage contact lens postoperatively to decrease the likelihood and/or duration of postoperative keratitis.

The patient would be monitored closely for increased IOP on the day of surgery and on the first postoperative day. With careful preoperative preparation, cautious surgery, and close follow-up immediately after surgery, the patient should do well.

MARSHALL BOWES HAMILL, MD

The goal for this monocular, diabetic, glaucoma patient with a long-standing congenital corneal opacity is to maximize her visual benefit while minimizing her risk. One alternative would be a full-thickness corneal transplantation, lensectomy, and IOL implantation. I do not think, however, that this approach would be in this particular patient’s best interest. A significant part of her symptoms appears to be due to her small pupil. As can be seen in Figure 2, cyclopentolate is not producing mydriasis, thus I would begin a trial of atropine eye drops. If dilation improves with atropine, nothing more may be needed. If atropine does not significantly dilate her pupil, I would recommend an optical iridectomy. This can be performed using 23-gauge curved intraocular scissors via a superior paracentesis. For this technique, I would radially incise the iris from the pupil to the mid-iris along the 6-o’clock and 8-o’clock semi meridians to create an enlarged pupillary opening outside of the area of corneal opacification. This increased pupillary aperture would, hopefully, improve the patient’s vision without the need for further surgery. The enlarged pupil will also provide for more accurate assessment of the cataract. An additional advantage of the optical iridectomy is that it will improve the surgeon’s ability to visualize the retina and optic nerve so that he or she can manage the glaucoma and recognize diabetic retinal complications, which may, in the long run, be more important than the cataract.

MELISSA B. DALUVOY, MD

My plan after seeing this patient is similar to the comments stated above. I felt that the pupil and cataract were contributing to the decline in the patient’s visual acuity because the corneal scarring had been stable for a long time. It is difficult to know the patient’s BCVA, as I am sure there is amblyopia at play, and I had no previous records. I did a trial of atropine, which did not seem to help and was the reason the patient returned later, considering surgery.

Surgery will need to safely address the cataract as well as enlarge the patient’s pupil. My concern with too much pupillary manipulation was the risk of cystoid macular edema in this diabetic patient. I appreciate the comments of addressing the IOP at the same time to minimize any risk from advancing glaucoma in this monocular patient. ■

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