Simultaneous, Combined Cataract and Glaucoma Surgery

Five surgeons discuss which procedure they perform first and share their tips for success.

BY GARRY P. CONDON, MD; THOMAS W. SAMUELSON, MD; BRADFORD J. SHINGLETON, MD; KULDEV SINGH, MD, MPH; AND NORMAN ZABRISKIE, MD

GARRY P. CONDON, MD

I perform the cataract procedure first. The evolution of small-incision, clear corneal phacoemulsification has had no greater impact than on the management of patients with glaucoma. That said, for maximal safety and efficacy with today’s advanced-technology phacoemulsification equipment, a closed system and controlled environment during the cataract procedure are essential to achieving the best visual outcome. We ophthalmologists get one good shot at the perfect cataract step, so it has to be the best shot.

Although there is no strong evidence to suggest better IOP results for one- versus two-site approaches, I consider self-sealing phacoemulsification incisions and aqueous-filtering incisions to be mutually exclusive in their purpose and design. We should therefore create these types of incision separately and not rely on one to do the job of the other. I make a temporal clear corneal incision for cataract surgery and complete that procedure before creating any conjunctival or scleral incision. I then immediately proceed to the superiorly located glaucoma filtration procedure as if the eye were previously pseudophakic (Figure 1). In my experience, age-old fears of exposing a well-constructed phacoemulsification incision to mitomycin C (MMC) are unfounded.

If I am combining cataract surgery with an ab interno canal procedure like ab interno trabeculectomy (Trabectome; NeoMedix Corporation), I nearly always perform the canal procedure first through the smallest incision and then enlarge it for the phacoemulsification. This strategy allows maximal closed-system control for both procedures. When the anterior chamber is excessively shallow, I may reverse that order.

Figure 1. After removing the cataract through a temporal clear corneal incision, the surgeon performs the trabeculectomy superiorly and separately.

THOMAS W. SAMUELSON, MD

When combining cataract extraction and trabeculectomy, I almost always start and complete phacoemulsification and the IOL’s implantation prior to performing the glaucoma procedure. The same holds true for combined procedures involving tube shunts. I find that extracting the cataract first affords the best fluidics during phacoemulsification. Furthermore, although unexpected complications during the cataract’s removal are rare, a broken capsule, zonular dialysis, vitreous loss, or a suprachoroidal event could significantly alter the surgical plan in terms of glaucoma management. It is
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Tube inside the eye and cover the tube. After completing the cataract procedure, I place the temporal phacoemulsification and implant the IOL. Without placing the tube into the eye. I then perform a tube shunt, I prefer to insert a tube shunt superiorly. In a series of cases, I combined phacoemulsification with a temporal approach with filtering surgery superiorly. My fellow investigators and I compared my results using that approach to those when I combined a single incision with a trabeculectomy superiorly. Both groups experienced a similar improvement in visual acuity and reduction in IOP and had similar bleb development and postoperative requirements for glaucoma medication.

Bradford J. Shingleton, MD

I prefer to begin with the phacoemulsification procedure from the temporal aspect and then to perform the trabeculectomy or to place the Ex-Press Glaucoma Filtration Device (Alcon Laboratories, Inc.) superiorly. My strategy differs for minimally invasive gonioscopic procedures such as Trabectome or the iStent (Glaukos Corporation; not available in the United States). The protocol for the iStent in the FDA premarket approval trials required phacoemulsification first and the device's placement only after the cataract had been successfully removed. Once the iStent becomes commercially available, however, some surgeons may prefer to implant it before removing the cataract if the anterior chamber depth is adequate to allow them a clear view of the trabecular meshwork. Although removing the cataract first would deepen the anterior chamber, which might facilitate gonioscopic surgery, the disadvantage would be a slightly less clear cornea should there be any edema after the lens' removal. For this reason, most surgeons prefer to perform gonioscopic surgery before removing the cataract, when the cornea is clearest and the view of the angle is most pristine. The exception is when phacomorphic shallowing of the anterior chamber precludes a good view of the angle. In such cases, performing phacoemulsification first is prudent. It is helpful to place the corneal incision as peripherally as possible so that the gonio prism does not interfere with the instrumentation needed for the angle procedure.

Kuldev Singh, MD, MPH

In my practice, the combined surgical procedure for glaucoma and cataract is performed most often is phacoemulsification with the implantation of an intraocular lens and trabeculectomy with mitomycin C (MMC). I perform the cataract surgery first through a clear corneal temporal incision. Although I generally do not use a suture to close the corneal incision when performing cataract surgery alone, I do sometimes place a single 10-0 nylon suture to close the corneal incision. I prefer a temporal approach with filtering surgery superiorly. My fellow investigators and I compared my results using that approach to those when I combined a single incision with a trabeculectomy superiorly. Both groups experienced a similar improvement in visual acuity and reduction in IOP and had similar bleb development and postoperative requirements for glaucoma medication.

Norman Zabriskie, MD

I perform the cataract procedure before the trabeculectomy via a two-site approach. My goal is to make the combined procedure identical to the techniques I use for cataract and trabeculectomy surgery performed independently. This allows for a greater standardization.
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I start temporally and perform the cataract surgery through a clear corneal incision. The only modification from my standard technique is the placement of two 10–0 nylon sutures in the temporal wound. I find that this step promotes stability for the trabeculectomy portion of the procedure and also for any postoperative manipulations, such as digital massage.

Next, I move to the superior position for the trabeculectomy. I use a 7–0 Vicryl traction suture (Ethicon, Inc.) through the superior cornea for exposure. I construct a fornix-based conjunctival flap with broad dissection that allows a wide application of MMC. After applying and irrigating the MMC, I construct a trapezoidal scleral flap at about 75% depth. I do not cut the flap’s sides all the way forward, but my internal flap dissection goes well forward, just beyond the conjunctival vascular arcades. I preplace two 10–0 nylon sutures at the corners of the flap. Then, I enter the anterior chamber under the flap in this very anterior position and use an angled punch to form the internal ostomy. If this step is performed as far forward as I intend, I almost never have to cut a peripheral iridectomy (Figure 2). I close the flap with the two sutures and use adjustable knots to set the flow. I aim for a bare trickle of aqueous with the anterior chamber reformed, outflow that then increases substantially with a gentle push at the posterior lip of the flap. Finally, I close the conjunctiva with a running horizontal mattress suture of 10–0 Vicryl on a VAS 100 needle (Ethicon, Inc.), which allows for an exquisitely watertight closure at the limbus.

Figure 2. A typically constructed flap by Dr. Zabriskie and, importantly, an internal punch positioned anterior to all angle structures. The iris stays well back, and no peripheral iridectomy is needed in this case.

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