

The Evolving Role of Lens Extraction in Glaucoma Care

Cataract surgery lowers the IOP in eyes with many types of glaucoma.

BY MARCOS REYES, MD

Cataract surgery is one of the simpler treatments ophthalmologists can offer to glaucoma patients, and it is an option surgeons may need to use often.

INTRAOCULAR PRESSURE

In a 2002 article, Friedman et al reviewed 39 articles published between 1964 and 2000 “pertaining to the surgical management of coexisting cataract and glaucoma in adults.” The evidence showed, although weakly in the researchers’ opinion, that cataract surgery alone lowered the IOP 2 to 4 mm Hg for 1 to 2 years after the surgery.¹ This finding was supported by other published studies.²⁻⁴

Poley et al published a large retrospective review in 2008 showing that cataract surgery strongly affects IOP. The investigators followed up with a prospective trial in 2009. It found that the decrease in IOP after cataract surgery was strongly inversely associated with the preoperative IOP level. The investigators grouped patients into five categories by preoperative IOP level: 29 to 23, 22 to 20, 19 to 18, 17 to 15, and 14 to 5 mm Hg. The final mean IOP reduction at 1 year was 8.5 mm Hg (34%) in the first group, 4.6 mm Hg (22%) in the second group, 3.4 mm Hg (18%) in the third group, and 1.1 mm Hg (10%) in the fourth group. In the fifth group, which had the lowest baseline IOP, the pressure rose 1.7 mm Hg (15%).^{5,6}

Researchers recently published a follow-up study of patients who underwent cataract surgery during the Ocular Hypertension Treatment Study (OHTS). The investigators found that the average decrease in IOP 36 months after the cataract procedure was 16.5% and that 39.7% of eyes had a postoperative IOP that was at least 20% below the preoperative level.⁷

EYES WITH NARROW ANGLES

Glaucoma specialists are routinely asked to evaluate patients whose eyes have narrow angles. The diagnosis is made on a case-by-case basis but generally involves

gonioscopy and ultrasound biomicroscopy or anterior segment optical coherence tomography. Eyes with sufficiently narrow angles, according to the specialist’s criteria, are usually treated with a laser peripheral iridotomy (LPI), and then repeat gonioscopy is performed to confirm sufficient widening of the angle. When laser treatment is not adequate, how to proceed is a gray area. Should the surgeon increase the size of the LPI? Use ultrasound biomicroscopy to look for a plateau iris or other causes? Try a laser peripheral iridoplasty? Perform cataract surgery?

If the angle is persistently narrow after a well-performed LPI and there are no signs of plateau iris or other secondary causes of narrowing, I give the patient two options: iridoplasty or cataract surgery. I myself think cataract surgery is the better way to avoid the chronic narrowing of the angle and the peripheral anterior synechiae that can occur after a long-standing iridoplasty. Cataract extraction lays the problem to rest and generally improves patients’ visual acuity in the process.

ANGLE-CLOSURE GLAUCOMA

It is not uncommon for a patient to be referred to me for worsening primary open-angle glaucoma yet to demonstrate, on evaluation, chronic angle-closure glaucoma (CACG). In my opinion, cataract surgery—plus or minus goniosynechialysis—is the best initial incisional glaucoma surgery for chronic or acute angle-closure glaucoma (ACG) after LPI when the crystalline lens is present.⁸⁻¹¹ Phacoemulsification alone will significantly lower IOP,¹²⁻¹⁵ which will minimize the long-term sequelae of peripheral anterior synechiae and elevated IOP.

Although trabeculectomy alone can successfully address ACG,¹⁶ the procedure carries some risk. Moreover, trabeculectomy can always be performed secondarily to cataract surgery if needed. In two separate studies, Tham et al demonstrated that cataract surgery alone can lower the IOP in CACG cases.^{13,14} The studies covered controlled and uncontrolled CACG and compared cataract surgery alone

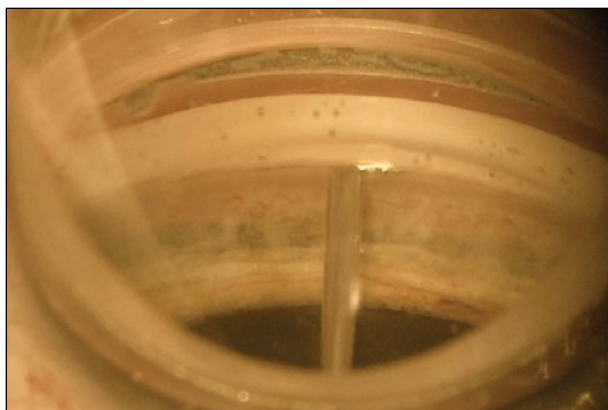


Figure. Gonioprism view of the iStent's placement.

versus combined with trabeculectomy. In both studies, the combined procedure reduced the IOP and the number of glaucoma medications that patients required to a greater extent, but it did so at the expense of higher complication rates. Given these results, phacoemulsification alone is a reasonable approach to the initial surgical treatment of ACG. The decision, however, should be individualized to the patient and according to the surgeon's comfort level.

Cataract surgery can be difficult if the eye has a shallow chamber. Ophthalmologists have used different modalities to shrink the vitreous, including the preoperative instillation of mannitol, a Honan balloon, scleral depression, and dry vitrectomy. All of these methods create more space in the anterior chamber. It is important to explain to patients that ACG presents a challenge and that each case may be different.

MICROINVASIVE GLAUCOMA SURGERY

Because many microinvasive glaucoma surgery (MIGS) procedures build on modern cataract surgery's effect on IOP, they are becoming an increasingly important way to increase glaucoma patients' probability of IOP success.

Performed with cataract surgery, the Trabectome (NeoMedix), iStent Trabecular Micro-Bypass Stent (Glaukos; Figure), and Hydrus (Ivantis; not available in the United States) have all shown an ability to lower the IOP beyond what the cataract procedure alone can achieve.^{17,18} Although perhaps not classic MIGS, endocyclophotocoagulation has also proven to be useful at increasing IOP reduction at the time of cataract surgery.^{19,20}

Additional MIGS devices on the horizon are the Cy-Pass Micro Stent (Transcend Medical), the iStent inject and iStent Supra (Glaukos), and the Xen Gel Stent (AqueSys). I do not know how these technologies will fit into the treatment of open- or narrow-angle glaucoma, but the literature and surgeons' experiences will guide the way.

CONCLUSION

When examining a glaucoma patient, I now see narrow angles or developing cataracts as an opportunity, not only to improve the patient's visual acuity, but also to lower the IOP, reduce the burden of medication, or avoid advancing glaucoma drop therapy. No surgical procedure guarantees a certain final IOP level, and I am quite frank about that point during my discussions with patients. All surgeons can offer is an increasing probability of successful IOP reduction based on the available evidence and their personal experience. ■

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