

Cataract Surgery in the Glaucoma Patient

Recent and continuing developments are increasing surgeons' and patients' options.

BY STEVEN D. VOLD, MD

The role of cataract surgery in the management of glaucoma has expanded dramatically in recent years. Research has demonstrated cataract surgery to be effective in lowering IOP in glaucoma patients.¹⁻³ Furthermore, with the improvement of small-incision cataract surgery and the introduction of more minimally invasive glaucoma procedures, combined cataract and glaucoma surgery is becoming increasingly accepted as not only a satisfactory but also often a preferable method of managing patients with visually significant cataracts and glaucoma compared with staged surgeries. This article reviews some of the nuances of cataract surgery in the glaucoma population and the potential role of a combined procedure in these patients.

CATARACT SURGERY: TECHNICAL PEARLS

Ensure Accurate Preoperative Biometry Measurements

In patients with hypotony due to previous filtering surgery, achieving accurate IOL measurements can prove quite challenging. Selecting proper IOL calculation formulas is important. Furthermore, after cataract surgery, hypotony may resolve as the bleb shrinks from postoperative inflammation, leading to significant myopic shifts. Consider revising less-than-ideal blebs prior to cataract surgery to achieve more precise postoperative refractive results.

Consider a Toric IOL for Astigmatic Patients

In general, toric IOLs are an excellent option for patients with glaucoma and 1.00 D or more of corneal

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astigmatism. Limbal relaxing or astigmatic corneal incisions offer an alternative for many of these individuals, but they may not be as predictable in patients with a history of filtering surgery, possibly due to variability in corneal thickness and elasticity. To optimize your results with toric lenses, carefully create a round, symmetrical capsulorhexis with slight capsular overlap of the IOL's anterior surface. In addition, ensure the complete removal of ophthalmic viscosurgical devices (OVDs) from the capsular bag and verify that the IOL is accurately centered.

Remove Cortex Completely

Retained cortex incites postoperative inflammation after cataract surgery. In glaucoma patients, minimizing postsurgical inflammation is especially important, because topical glaucoma medications can place these individuals at higher risk for complications such as cystoid macular edema. Furthermore, postoperative inflammation may predispose eyes to bleb failure.



Figure 1. Canaloplasty with a Prolene suture (Ethicon, Inc.) in Schlemm canal.

Maintain the Anterior Chamber's Depth Throughout Surgery

The liberal use of an OVD and/or elevation of the irrigating bottle may be necessary to minimize cataract surgery's complications, especially in patients with hyperopic eyes or filtering blebs. Dispersive OVDs protect the corneal endothelium. Healon5 (Abbott Medical Optics Inc.) is recommended as an excellent adjunct to help maintain the depth of the anterior chamber, and this OVD preserves space in the ciliary sulcus if the patient is also undergoing endoscopic cyclophotocoagulation (E2 Microprobe Laser and Endoscopy System; Endo Optiks).

Avoid Intraoperative Iris Trauma

In glaucoma patients with cataracts, small pupils and synechiae are common. Minimizing iris trauma results in less postoperative inflammation and better visual results due to a better-functioning pupil. Intracameral lidocaine may assist you in this regard and effectively maximizes pupillary dilation. Again, the liberal use of OVDs can be very helpful. In eyes with floppy or traumatized irides, low-flow phaco techniques and Healon5 can help to stabilize the iris' movement. Gentle stretching of the iris with blunt instruments may be necessary, but expansion devices such as the Malyugin Ring (MicroSurgical Technology) may be especially beneficial.

When goniosynechiolysis is required in the setting of angle-closure glaucoma (ACG), the use of silicone- or polymer-tipped I/A instrumentation to manipulate the midperipheral iris may be advantageous for minimizing intraoperative bleeding and iris trauma. Microsurgical

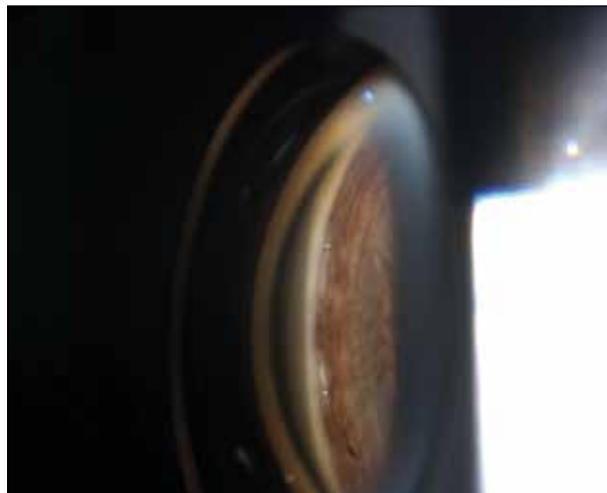


Figure 2. iStent Inject devices.

grasping instruments may be required to break peripheral anterior synechiae.

SURGICAL DECISION MAKING

Perform Cataract Surgery Alone in Select Glaucoma Patients

Cataract surgery alone is increasingly being recommended for the management of glaucoma. Studies clearly demonstrate the significant efficacy of cataract extraction for the treatment of ACG.¹ In eyes with minimal peripheral anterior synechial closure, cataract surgery alone may be all that is required to adequately treat the patient's glaucoma. Ongoing, prospective studies are comparing the efficacy and safety of cataract surgery versus peripheral laser iridotomy in patients with ACG. When the angle closure is exten-

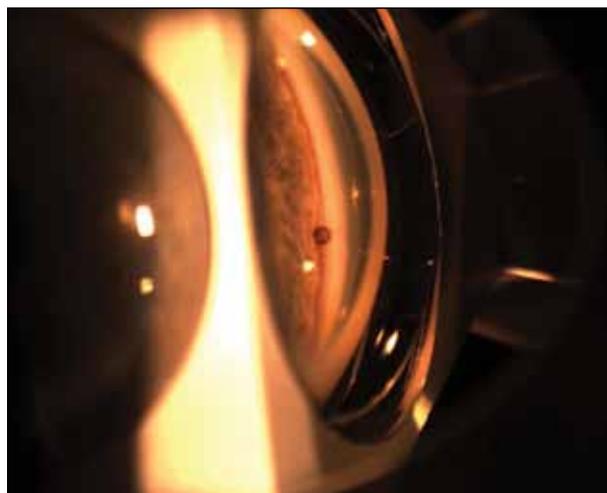


Figure 3. CyPass Micro-Stent.

sive, you may find it necessary to combine cataract surgery with goniosynechiolysis or filtering surgery.

The role of cataract surgery in eyes with open-angle glaucoma (OAG) is more controversial. Research has suggested that the procedure lowers the IOP only slightly in these patients and that any benefits dissipate in time.^{3,4} More recent studies, however, seem to indicate that patients with OAG and high IOP respond remarkably well to cataract surgery alone, with pressure's sometimes dropping dramatically. Furthermore, the decrease in IOP has been sustained in certain groups of patients.^{2,3} Consequently, many surgeons perform cataract surgery alone in patients with mild to moderate OAG.

Consider Combining Cataract Surgery With Blebless Glaucoma Procedures for Mild to Moderate Glaucoma

Although certainly a viable option, combining cataract surgery with filtering surgery makes optimizing both refractive and glaucoma-related outcomes challenging. In contrast, cataract surgery may actually improve the results of several recently available procedures and produce better refractive outcomes.⁵ Examples of these glaucoma surgeries include canaloplasty (iTrack Microcatheter; iScience Interventional; Figure 1), ab interno trabeculotomy (Trabectome; NeoMedix Corporation), and endoscopic cyclophotocoagulation.

The concept of combining cataract and glaucoma surgery will become increasingly attractive upon the introduction of numerous trabecular microstent technologies that are currently under investigation such as the iStent (Glaukos Corporation; Figure 2) and Hydrus (Ivantis Inc.). Promising ab interno suprachoroidal devices include the CyPass Micro-Stent (Transcend Medical; Figure 3) and iStent Supra. The Solx Gold Shunt (Solx, Inc.; Figure 4) offers an ab externo approach to the placement of a suprachoroidal device. Efforts to perform ab interno filtering surgery using a novel microstent (AqueSys) are underway as well.

Combine Cataract Surgery With Filtering Surgery in Advanced Glaucoma

Consider combining a cataract procedure with trabeculectomy when the patient has moderate to advanced glaucoma and a visually significant cataract. Concerns regarding the negative impact of inflammation induced by cataract surgery on the bleb's survival, however, have motivated some ophthalmologists to separate these procedures. Patients whose glaucoma is relatively well controlled on topical medications may first undergo cataract surgery alone followed by filtering surgery. When the glaucoma is uncontrolled,

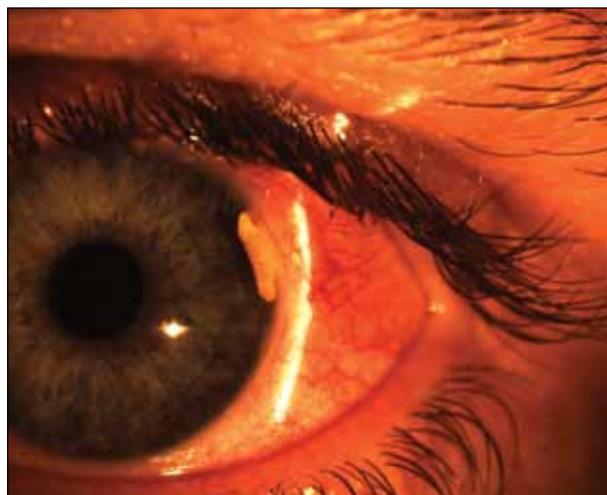


Figure 4. Solx Gold Shunt.

trabeculectomy with an antifibrotic agent is often performed prior to cataract surgery. In this situation, you must take great care to avoid hypotony, which can adversely affect your ability to achieve accurate biometry prior to subsequent cataract surgery.

Several advances have increased the efficacy of combining cataract surgery with trabeculectomy. First, the adjunctive use of mitomycin C has been demonstrated to enhance postoperative IOP outcomes in patients with glaucoma. Interestingly, 5-fluorouracil did not produce this same benefit.⁴ The Ex-Press Glaucoma Filtration Device (Alcon Laboratories, Inc.) may also enhance outcomes in patients requiring combined cataract and filtering surgery. In prospective, randomized clinical trials, this device was associated with fewer postoperative complications compared with traditional trabeculectomy.⁶ Some surgeons believe that the Ex-Press reduces postoperative inflammation, because an iridectomy is not required. The recent availability of difluprednate ophthalmic emulsion 0.05% (Durezol; Alcon Laboratories, Inc.), a powerful topical steroid, may also improve outcomes in combined cataract and glaucoma filtering surgery.⁷

CONCLUSION

Cataract surgery in the presence of glaucoma poses unique challenges. Fortunately, technical improvements in the cataract procedure and your meticulous attention to detail can enhance patients' outcomes. For select individuals, cataract extraction alone may promote long-term IOP control. The FDA's approval of more minimally invasive glaucoma procedures and devices should provide surgeons and patients with more—and perhaps better—options. ■

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