Mr. Smith, you are going to need glaucoma surgery, and your vision will be blurry for several weeks. I am hopeful that your vision will return to what it was as quickly as possible.

As the preceding statements indicate, one of the greatest disappointments of glaucoma filtering surgery is suboptimal postoperative vision. For years, we surgeons have accepted this scenario, because we have thought we were doing what was in the best interest of our patients. Many ophthalmologists have stopped performing filtering surgery, however, partly due to this very problem. Trabeculectomy lacks the “wow” factor of cataract surgery, and we pine for less-invasive, ab interno procedures that we can combine with phacoemulsification.

The primary reasons for poor postoperative vision after glaucoma filtering surgery are astigmatism, hypotony, inflammation, and hyphema. Because there will continue to be a role in the near term for bleb-based surgery to treat patients with advanced glaucoma, we must develop thoughtful strategies to optimize their vision. Success in this area will allow patients to return to full productivity quickly and thus increase their level of satisfaction as well as ours.

ASTIGMATISM

Postoperative astigmatism is one of the most significant but preventable sources of poor vision after glaucoma surgery. The primary cause is tight sutures, either in the scleral flap or the conjunctiva. Other factors include excessive cauterization, especially at the limbus, and a high bleb.

Several sources of astigmatism can be reduced with a smaller fistula, either through a “one punch only” technique with a trabeculectomy or, for greater precision, the implantation of the Ex-Press Glaucoma Filtration Device (Alcon Laboratories, Inc., Fort Worth, TX). By restricting outflow, a small fistula allows us not to tie the flap sutures as tightly. With the Ex-Press, I reapproximate the flap to permit a sufficient flow of aqueous, and I try to limit the sutures to two as often as possible.

Astigmatism from overcauterization is easily avoided by using less energy or by using a pointy-tipped cautery. We can then focus only on active sites of bleeding rather than the entire scleral bed. I also avoid the limbal area, if possible.

Creating fornix-based conjunctival flaps and using a broader, more posterior application of mitomycin C will likely produce a lower bleb than a limbus-based conjunctival flap with the more anterior placement of the anti-fibrotic agent.

HYPOTONY AND INFLAMMATION

A small fistula should also decrease hypotony. Maris and colleagues demonstrated a significantly lower rate of hypotony with the Ex-Press device when compared with
trabeculectomy.1 Certainly, most cases of early postoperative hypotony are transient and resolve spontaneously, but we must not be cavalier with our patients’ vision. If they are gainfully employed and in the prime of their lives, but they have to wait weeks to regain useful vision, we have done them a great disservice. We must not take lightly refractive changes from a shorter axial length, choroidal effusion and hemorrhage, and corneal folds or the risk of hypotony maculopathy.

Good and Kahook showed that the Ex-Press promotes faster visual recovery when compared with trabeculectomy.2 The benefit may be due to a lower, more diffuse

Case Study: Managing a Large, Overhanging Bleb Affecting Vision

BY PAUL F. PALMBERG, MD, PhD

A patient presented with reduced visual acuity and a large bleb that was overhanging the cornea (Figure 1). His visual acuity had previously measured 20/60, apparently due to advanced glaucoma, and it had gradually worsened to a BCVA of 20/100, despite an IOP of 10 mm Hg. Retinoscopy revealed irregular astigmatism, suggesting that the bleb—pressed upon by the upper lid—was steepening the superior cornea. Thus, the bleb was decreasing the patient’s BCVA by producing irregular astigmatism, much as a pterygium can.

At the slit lamp, the eye was prepared with proparacaine, apraclonidine, and 5% povidone-iodine for 2 minutes. It was then rinsed with proparacaine. Next, 2% lidocaine gel was applied for 2 minutes and then rinsed with sterile saline solution. After placing a lid speculum, I undermined the bleb with a Kimura spatula (Figure 2).

Using a forceps, I lifted the freed inferior border of the bleb and amputated it with a Vannas scissors (Figure 3A). The cut edge was Seidel negative (Figure 3B), and no suture closure was needed, as is usually the case in this situation. The patient’s BCVA improved within a week to 20/60, due to resolution of the irregular astigmatism, and the IOP was unchanged. The final appearance of the eye is shown in Figure 4.

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bleb and less inflammation, because an iridectomy is not required.

We can also reduce inflammation through aggressive pre- and postoperative treatment with anti-inflammatory eye drops.

**HYPHEMA**

Patients on anticoagulants or who have neovascular glaucoma (NVG) are at increased risk of hyphema. In the former situation, it is helpful to work with the patient’s medical doctor to attempt to stop anticoagulants preoperatively. In cases of NVG, we must ensure that an anti-vascular endothelial growth factor has been injected before and/or is administered during surgery. If possible, the patient should also undergo preoperative retinal laser ablation. I usually will not perform filtering surgery on a patient with NVG unless the neovascularization has mostly regressed.

The most likely source of hyphema is the iris or ciliary body, which is incised during the iridectomy. Using cautery at the iridectomy site at the time of surgery helps to decrease the incidence of this complication. Obviously, not performing an iridectomy is the best way to prevent hyphema. In a pseudophakic patient undergoing trabeculectomy, many of us would agree that an iridectomy might not be necessary. As mentioned earlier, with the placement of an Ex-Press device, an iridectomy is never performed, making hyphema a rare complication.

**CONCLUSION**

As the work to develop new procedures that avoid the many problems associated with glaucoma filtering surgery continues, we must strive to improve our execution of bleb-based surgery. We must never be satisfied with our surgical technique. Instead, let us be flexible to change and always learn from one another in order to achieve the best results for our patients.

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