

Future Trends in Glaucoma Care

Less invasive surgical options are appealing, but more data are needed.

BY E. RANDY CRAVEN, MD

Traditional care for glaucoma patients is a sobering and, at times, a depressing story. Luckily, we finally have hope of something new for our patients, but is new necessarily better? Microinvasive glaucoma surgery (MIGS) has taken off since the iStent Trabecular Micro-Bypass (Glaukos) received FDA approval in 2012.

Our goal to stabilize patients' IOPs must be balanced with caution. Because traditional glaucoma surgeries do not often result in happy patients, many of us are starting to ask, "What would be the best first step?" rather than trying to identify a single, final, traditional surgical intervention to achieve the target IOP. In addition to the growing area of MIGS, pharmaceuticals have improved during the past 10 years. Great first-line agents, fixed combinations, and generics to save cost are available. Why, then, should we not consider combining a less invasive surgical procedure with modern medication to achieve the same IOP reduction as with traditional filtration surgery?

PATIENT SELECTION

MIGS is a good fit for patients

- in whom hypotony must be avoided
- undergoing cataract surgery who would benefit from an additional procedure to achieve a lower IOP
- who need to see quickly and who will not tolerate the events after filtration surgery
- whose outflow system is viable. Seeing aqueous collector channels working by the visibility of aqueous veins is a positive thing when considering an iStent.
- for whom a premium IOL is being considered as a part of cataract surgery and for whom astigmatism from scleral flap sutures must be avoided

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- taking anticoagulants
- who had a bad experience after traditional glaucoma surgery

MIGS may be problematic for patients who have accountable health care with cost-of-care issues. An iStent is more expensive than sutures, and the patient may still end up on medications (but that can happen with traditional surgery as well). Because the technique for MIGS is angle based and involves a very small area, it can be difficult to perfectly place the device. A poor result may have been due to a minor difference in the stent's placement. For instance, if the surgeon misses the target of the trabecular meshwork and hits the scleral spur, the expected reduction in IOP may not be achieved. I do not recommend MIGS for eyes with corneal opacities or in which the view is compromised.

MIGS DEVICES

Many companies and physicians are dedicated to increasing aqueous outflow to lower IOP via a small implant. Glaukos' iStent and iStent Inject (the latter in US clinical trials) circumvent the trabecular meshwork and inner wall of Schlemm canal to reestablish outflow. The advantages of the iStent are its smallness and its ease of insertion once the device is posi-

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tioned and the surgeon has a good view. It is unknown at this time if two stents will provide a lower IOP than one, but preliminary evidence suggests that two devices and one eye drop can achieve an IOP of less than 15 mm Hg.¹

The canal might benefit from dilation, however, and the Hydrus (Ivantis) exploits that option by dilating several clock hours of the canal after entering the eye through the trabecular meshwork. This technology is the subject of an FDA clinical trial, and several trials across the globe are evaluating the efficacy of the device. There are few published reports on the Hydrus' efficacy, but the preliminary data are promising.

The suprachoroidal and supraciliary space (the uveoscleral outflow system) is also being investigated for MIGS. IOP values of 12 or 14 mm Hg might be achievable because of the lack of outflow resistance from the collector channels and the episcleral venous pressure. European registry data for the CyPass Micro-Stent (Transcend Medical) showed that patients with uncontrolled IOP achieved over a 35% reduction in IOP after the device's implantation.² The uveoscleral outflow system might also work better than the canal system in patients with obstructions to the trabecular meshwork or those who have poor vascularity and a lack of aqueous veins.

The Xen (AqueSys) implant uses a porous gel to slow the flow of aqueous in the hole the device creates. As aqueous moves into the subconjunctival space, it creates a bleb. The gel allows for a more controlled outflow. Data are not yet available, but the concept is appealing.

For now, it appears that these implants, once approved, will fit nicely into daily practice. ■

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1. Solomon KD. Randomized trial of 1, 2, or 3 trabecular microbypass stents and travoprost in open-angle glaucoma controlled on two medications. Paper presented at: The ASCRS Annual Meeting; April 20-24, 2012; Chicago, IL.

2. Hoeh H, Ahmed II, Grisanti S, et al. Early postoperative safety and surgical outcomes after implantation of a suprachoroidal micro-stent for the treatment of open-angle glaucoma concomitant with cataract surgery. *J Cataract Refract Surg.* 2013;39(3):431-437.