

THE NEW ATTENDING'S PERSPECTIVE ON MIGS



BY ERIN SIECK, MD, AND GEORGES M. DURR, MD, FRCSC

Mastering Angle-Based MIGS

Residents should be comfortable with these procedures before leaving their training programs.

BY ERIN SIECK, MD

Comprehensive ophthalmologists and glaucoma specialists alike are adopting angle-based MIGS procedures to treat varying levels of glaucoma in an aging population. Applicants are seeking out residencies that teach these procedures as they gain popularity. As training programs add MIGS to their curricula, the new wave of graduates will be proficient in angle-based glaucoma surgery, increasing the range of treatment options they can offer to their patients with glaucoma. Both seasoned and young faculty at academic institutions are filling the role of teacher for angle-based MIGS procedures.

I recently transitioned into my role as a glaucoma attending surgeon, performing cataract surgery and MIGS procedures. From experience, I can say that the transition from fellow to clinical faculty can be intimidating. Learners are looking to me for guidance in surgery, and I am now the expert.

Although I feel that I have a lot yet to learn, I can still be an effective teacher in the OR. I remember experiencing the steep surgical learning curve, and I know which techniques worked for me. As a recent trainee, I learned MIGS parallel to

cataract surgery, unlike my fellowship mentors, who added angle-based procedures to their repertoire years after becoming proficient microsurgeons. I view this as an advantage because all maneuvers in the eye were foreign to me a few years ago. Now that I am proficient in both surgical techniques, I can pass those learning moments on to my trainees.

PICK THE RIGHT CASE

Whether you are new to MIGS, a resident new to all forms of microsurgery, or a surgeon well trained on angle-based procedures who is trying a new angle-based device, my advice is the same: Pick the right case.

Before entering the OR with a resident, I think a lot about case selection. Ideal first cases are patients with open and pigmented angles free of iris processes and peripheral anterior synechiae. Exclude patients with corneal pathology or arcus limiting good visualization of the angle. If the angle is lightly pigmented on preoperative evaluation, consider using trypan blue dye to stain the trabecular meshwork.

“WHETHER YOU ARE NEW TO MIGS, A RESIDENT NEW TO ALL FORMS OF MICROSURGERY, OR A SURGEON WELL TRAINED ON ANGLE-BASED PROCEDURES WHO IS TRYING A NEW ANGLE-BASED DEVICE, MY ADVICE IS THE SAME: PICK THE RIGHT CASE.” —Erin Sieck, MD

Regardless of whether residents are placing a trabecular bypass stent or excising trabecular meshwork, they must be confident about where they are aiming. Eyes with difficult angle anatomy or in which visualization is limited should be reserved for skilled angle surgeons.

I prefer my trainees to start by implanting an iStent inject (Glaukos). With this device, I find that it is easy for them to become familiar with working in the angle, indenting the trabecular meshwork, and deploying the stent. Given that there are four shots per device, the resident can make two attempts before I take over to ensure adequate implantation for the patient.

I also like residents to perform goniotomies using a Kahook Dual Blade (New World Medical) as early angle-based procedures. The sliding motion of the blade across the trabecular meshwork can be performed with ease after a few cases. Goniotomy also allows the resident to stop, reposition the device, and then restart the procedure in the same location if needed.

Once residents have displayed mastery with these devices, I have them graduate to using the larger trabecular bypass stents and cannulating Schlemm canal. These MIGS procedures require stability in the angle for an extended period of time, and they can be difficult to undertake as early cases.

POSITIONING

After the ideal patient and device have been selected, intraoperative positioning is the next most important step for success at any level of training. The patient must be able to tilt the head easily and remain cooperative. The next step is to make sure there is an adequate tilt on the microscope; trainees often underrotate it.

Once the patient and microscope are in position, trainees must take an extra moment to reposition the oculars, the chair, and their hands. All of these steps will speed up as residents become efficient surgeons. Taking extra time in their first few cases emphasizes the importance of obtaining the best visualization and positioning possible.

Once the resident is in position and has little pressure on the gonioscope, I say, “When you have the shot, take it!” I recommend limiting time hovering over the angle; any movement of the patient or prism can cause the loss of the carefully arranged view.

BACK TO THE BASICS

With the introduction of each new MIGS device, I go back to the basics I teach my residents. The small angle-based procedures allow many patients to discontinue their use of topical drops and frequently slow the progression of their disease. The field will continue to incorporate these quick, effective procedures into its offerings. As the population ages and the incidence of age-related diseases increases, teaching MIGS to the next generation of ophthalmologists is in the interest of public health.

ERIN SIECK, MD

- Assistant Professor, Washington University School of Medicine in St. Louis
 - erin.sieck@wustl.edu
 - Financial disclosure: None
-

Mastering Subconjunctival MIGS

The subtle art of the new bleb.

BY GEORGES M. DURR, MD, FRCSC

Subconjunctival filtering surgery (bleb surgery) is an art. Learning how to optimize a surgery to improve long-term IOP control takes time and hard-ship. Even in experienced hands, nearly identical surgical techniques can lead to variable clinical outcomes and varying success (although this variability is mitigated with novel subconjunctival MIGS procedures).

Teaching the subtleties and intricacies of subconjunctival MIGS requires one to dissect one's own technique in order to better understand areas that may be more challenging to perform. As I have dived deeper into analyzing my

technique, I feel that I've improved as a teacher. This article reviews teaching pearls I've acquired in my early career.

BE PREPARED

Before performing any surgery, preparation is key. Reviewing charts and understanding potential challenges are essential steps for excelling in surgery. I often ask learners to review surgical videos and then play them back in their minds.

Memorizing the steps and being able to recite them or write them down allows learners not to have to think about what comes next during the

surgery. They can feel more confident that they really know each step.

As is the case for professional athletes, visualization of the procedure on the day before surgery can greatly improve one's confidence and one's performance under pressure. Wet lab training, with and without industry representatives present, is also key in establishing first contact with a MIGS device.

When fellows or residents are starting to perform MIGS, they may complete some steps of the surgery before tackling a complete case. Seemingly simple steps, such as placing a traction suture, can sometimes take time to master

before a resident or fellow can perform them properly and consistently.

KEY STEPS

Certain steps apply to all subconjunctival MIGS procedures, and every learner can benefit from trying to improve in them.

First, mastering tissue handling is essential in improving one's technique. Conjunctiva is fragile, and in some eyes, it can be particularly friable (due to long-term drop use, conjunctival hyperemia, etc.), making closure difficult. Using nontoothed forceps and exerting little tension on the tissue can improve results during surgery. Holding a good amount of Tenon capsule is less traumatic to the tissue. Using two sets of nontoothed forceps can help the surgeon identify the underlying Tenon capsule in order to locate enough tissue to grasp.

Second, antifibrotic use requires careful application and placement. Whether the agent is injected or applied with a sponge, the surgeon must be sure to place the antifibrotic in the area where the future bleb will form. Controlled placement can help direct the flow of aqueous and avoid perilimbal avascularity.

Third, targeted cautery can improve visualization and help avoid charring the sclera. Excessive cautery leads to fibrosis and bleb failure. I like using a thin, 23-gauge reusable cautery instrument for precise control of bleeding vessels. Linear foot pedal control of the cautery allows the surgeon to control the amount of energy applied. Early and frequent cautery also allows one to properly visualize the different surgical planes throughout the surgery. A clean field keeps the assistant and the surgeon happy.

Finally, suturing should be practiced all the time. This is one of the easiest things to improve on one's own. Ophthalmologists are fortunate to be able to go to a wet lab and practice the craft. Suturing is particularly amenable to practice. I often suggest trying to

suture in weird positions (for example, placing an eye in a deep cup) or holding one's needle driver in different directions, with all sorts of needles and on tissue with different consistencies (sclera, conjunctiva, cornea, etc.). Learning to tie a common knot, such as a slipknot or a 3-1-1 suture, is a basic skill that can help a surgeon gain confidence and grow.

POSTOPERATIVE CARE

The postoperative management for subconjunctival MIGS procedures is truly different from that for traditional filters. The inherent design of these implants protects against hypotony, and the postoperative course is often uneventful. For instance, anterior chamber shallowing and choroidal detachments often resolve without additional intervention aside from some cycloplegia.

There are some situations in which action is necessary to avoid long-term sequelae (for example, when the lens is touching the endothelium). Learning when to act and when to observe the patient carefully takes time and experience with these new technologies.

One interesting difference from traditional filtering surgery is the possibility of acute or subacute lumen obstruction with subconjunctival MIGS. If IOP is elevated early in the postoperative course, the implant might have become obstructed with heme, fibrin, or pigment. Digital ocular compression and the frequent administration of topical steroids can help relieve the obstruction. Occasionally, one may need to flush the implant ab interno to help restore flow.

Later in the postoperative course, fibrosis may start to impede aqueous production, and needling may be required. Subconjunctival MIGS may be more difficult to needle than a traditional bleb. Multiple needle passes over and under the implant, sweeping in the fornix, can help free the distal tip and improve flow. Granted, this is more challenging than needling a trabeculectomy, and it requires time and practice to become better and more consistent at this maneuver.

LESS FORGIVING

Overall, subconjunctival MIGS procedures are less forgiving than traditional filtering surgeries. Each step counts. Thus, when trainees are learning subconjunctival MIGS, it is important for instructors to emphasize certain aspects that can significantly improve the learning curve and enhance outcomes. Some of these are outlined here.

As the surgical glaucoma landscape continues to evolve, future surgeons will gain more and more experience with MIGS technologies. Mastering these basic skills can help a novice grow into a more confident and effective surgeon. ■

GEORGES M. DURR, MD, FRCSC

- Assistant Professor and Director of the Glaucoma Fellowship, Université de Montréal, Montreal
- Centre Hospitalier de l'Université de Montréal, Montreal
- georges.durr@gmail.com
- Financial disclosure: Consultant/advisor (Alcon, Allergan, Avisi Technologies, Bausch + Lomb, Glaukos, Santen); Lecture fees (Alcon, Allergan, Glaukos, Labtician Ophthalmics, MicroSurgical Technology, Novartis Pharma, Santen, Sight Sciences)