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A NEW PARADIGM TO TREAT GLAUCOMA

ABiC targets multiple sources of outflow resistance and works hand in hand with tissue-sparing SLT.

BY MAHMOUD A. KHAIMI, MD



Glaucoma surgeons recognize the importance of ab interno canaloplasty (ABiC; Ellex) and selective laser trabeculoplasty (SLT) as standalone procedures.

They may not necessarily be aware of the synergies of performing these procedures in combination. ABiC is a comprehensive microinvasive glaucoma surgery (MIGS) procedure that addresses all aspects of outflow resistance. SLT is a tissue-sparing initiative that preserves the ability to perform angle-based surgery in the future, if necessary. ABiC and SLT work hand in hand to reduce or eliminate the use of topical medications, and SLT can be used as a diagnostic tool.

COMPREHENSIVE ABiC

ABiC is a truly comprehensive MIGS procedure. It accesses, catheterizes, and

viscodilates the trabecular meshwork (TM), Schlemm canal, and the distal outflow system, beginning with the collector channels, thereby addressing all aspects of potential outflow resistance. Other MIGS procedures treat only one aspect of aqueous outflow. ABiC is performed in three steps. First, I perform a paracentesis a couple of clock hours away from the future goniotomy site. I then inject an ophthalmic viscosurgical device (OVD) into the anterior chamber in order to maintain stability. Next, I place the iTrack microcatheter (Ellex) into the anterior chamber in preparation for insertion into Schlemm canal. I then use a 27-gauge needle and perform a small goniotomy, before placing the iTrack into Schlemm canal and advancing it 360°. I then pull the iTrack out and viscodilate. I typically get 30 to 40 clicks (when using Healon; Johnson & Johnson

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Vision). Notably, this is more viscodilation than with traditional canaloplasty, made possible by the fact that we first use an OVD to maintain stability.

TISSUE-SPARING SLT

SLT is important to long-term effective IOP reduction given that it is a nondestructive laser treatment that preserves the tissue that is necessary to perform angle-based surgery, which

CASE STUDY

A woman in her mid-70s had IOP in the mid-20s and was taking one prostaglandin. I treated her with SLT; she achieved a 20% to 25% IOP reduction, and we discontinued the prostaglandin. About 18 to 24 months out, her IOP started rising. When discussing her treatment options, we talked about SLT and ABiC. I noted that she had a good response to SLT, and that we could repeat it. She had heard lots of positive information about MIGS and said she wanted the latest and greatest. I performed ABiC with iTrack, and again she responded very well. One year after ABiC, her pressure started to rise. I explained that she had a good response to ABiC, so we could repeat it or given that she also responded well to SLT, we could revert to the laser procedure. She agreed to the SLT and, once again, she had good results. The patient currently has a pressure in the mid-teens and is eye drop free.

Performing SLT first will either reduce the patient's IOP or indicate that ABiC will. In this way, these two procedures go hand in hand.

is now our primary form of glaucoma intervention. Conversely, those who use argon laser trabeculoplasty (ALT)—because they view it as just as effective as SLT—may sacrifice their ability to move on to angle-based surgery, because the necessary tissue will have been destroyed. I strongly caution anyone from continuing to perform ALT, and I recommend switching to SLT to avoid coagulating or destroying tissue. ABiC is the surgical equivalent to SLT in that it is not destructive; it is even restorative. Additionally, SLT has been shown to be as clinically effective as

medications, but without the side effects and complications.

COMBINATION BENEFITS

For my patients who undergo SLT, whether they do well with SLT or not, I still later perform ABiC, because it is such a comprehensive procedure. One of the challenges associated with the use of stent-based MIGS is that the location of increased aqueous outflow resistance is often unclear. When targeting a small area of the outflow system, there is a risk that the area of blockage will be missed or suboptimally treated. ABiC is not dependent on a stent or shunt; it utilizes a process of viscodilation of Schlemm canal to flush out the natural outflow channels, without damaging tissue and without leaving behind a stent or shunt.

SLT can also function as a preoperative diagnostic aid. For example, it has been suggested that if you perform SLT, and achieve a substantial reduction in IOP, then perhaps most of the outflow resistance was at the TM. It therefore stands to reason that an ensuing MIGS procedure, in order to be successful, should also target the TM. Conversely, if a patient does not respond to SLT, this might indicate that the outflow resistance is further downstream in the collector channel. In this case, a suitable MIGS procedure would be that which targets beyond the TM. In short, performing SLT first will either reduce the patient's IOP or indicate that ABiC will. In this way, these two procedures go hand in hand. Therefore, I perform SLT on many of my patients as

ABiC SNAPSHOT

1. ABiC comprehensively treats the trabecular meshwork, Schlemm canal, and the collector channels.
2. ABiC opens the outflow system behind the TM, thus ensuring better aqueous outflow.
3. ABiC is effective as both a standalone procedure and as a combined procedure.
4. ABiC preserves tissue and does not require permanent placement of an implant or stent.
5. On average, ABiC achieves a 30% reduction in mean IOP, combined with a 50% reduction in medication burden.¹

1. Ellex iScience, Inc. Data on File.

first-line treatment and then, whether or not they respond to SLT, I perform ABiC with the iTrack microcatheter.

TAKE-HOME MESSAGE

The long-time paradigm—topical medications, followed by laser, and then conventional surgery—is gone. The model has completely changed. SLT is primary, followed by ABiC or another MIGS procedure, and then either additional ABiC or SLT, if needed. Then, if the disease progresses, more conventional surgery may be necessary. Topical medications have been taken out of the main treatment paradigm and placed in a position to be used occasionally, in between these procedures as a bridge from step one to step two. This represents a major shift in the way we think about treating glaucoma. ■

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SLT SNAPSHOT

1. SLT is a therapy and not a surgical treatment—it is gentle, does not destroy tissue, and can be repeated.
2. SLT can lower IOP as effectively as medication.
3. SLT is a highly effective first-line therapy, and is particularly well suited to patients who are known to be noncompliant with medication.
4. SLT can be used as a replacement treatment if medication is not well tolerated.
5. SLT is a highly effective adjunct treatment in combination with medications.
6. SLT is not argon laser trabeculoplasty (ALT), which causes permanent damage to the structure of the TM.