

The Significance of ECP in Today's Glaucoma Management

A pressure-lowering workhorse emerges as potent pairing with MIGS

By **Erin Murphy,**
Contributing Editor

In the era of minimally invasive glaucoma surgeries (MIGS), it is important to remember that some would say endocyclophotocoagulation (ECP) was one of the first MIGS procedures. Predating the implants and other approaches used today, it has long been a powerful workhorse for patients with early mild to moderate glaucoma and concomitant cataracts. MIGS procedures have replaced ECP in many of these cases, but ECP still benefits many patients — most recently, when used in combination with MIGS.

ECP + MIGS

Steven R. Sarkisian, Jr., MD, is clinical professor and glaucoma fellowship director at Dean McGee Eye Institute at the University of Oklahoma in Oklahoma City. There, ECP is used for cataract patients who have a history of chronic angle closure, and, as such, newer MIGS offerings would not be the best choice. He also uses ECP for pseudophakic patients who require extra IOP lowering, as well as in some cases in which a tube shunt or trabeculectomy has failed.

However, Dr. Sarkisian explains, the “sweet spot” for ECP in his armamentarium has shifted.

“Today, I primarily use ECP in combination with MIGS devices and procedures. The combination allows us to improve outflow pathways and reduce aqueous production by delivering laser energy to the ciliary processes. The cumula-

tive effect is much like putting a patient on a beta blocker or a carbonic anhydrase inhibitor as well as a prostaglandin,” he says.

Dr. Sarkisian performs a variety of combination procedures, each chosen based on the severity of the patient's glaucoma, the type of cataract surgery, and the number of medications the patient is taking preoperatively. For example, if a patient whose pressure is well controlled on one medication has visually significant cataracts, Dr. Sarkisian typically performs cataract surgery with iStent (Glaukos); but, if a patient with cataracts has pressures that are uncontrolled on two or three medications, he considers a more aggressive approach that combines cataract, MIGS, and ECP with the Endo Optiks laser endoscope (Beaver Visitec International) — even adding Trab 360 (Sight Sciences) as a fourth procedure in some cases. Dr. Sarkisian always performs 360 degrees of ECP to achieve the maximum IOP reduction. He notes that he does not perform ECP in patients who are receiving a premium lens as part of their cataract surgery.

“My colleagues and I have a large case series on the combination of ECP with cataract surgery and iStent, and we have presented this data at national and international meetings,” he says. “The addition of ECP has improved outcomes in our patients by several millimeters of mercury. I also have been combining ECP with the CyPass Micro-Stent (Alcon) with good results, but I have not yet analyzed my data.”

Combining three or four procedures may seem aggressive, Dr. Sarkisian says, but this approach is still less destructive than trabeculectomy, and his results have been very good. “We can get patients with advanced glaucoma on three medications, with pressures in the twenties or thirties, down to the low or mid teens with fewer meds and no bleb,” he explains. He adds that “because the Xen Gel Stent (Allergan) has become available, I’m even more comfortable with this approach, because if we still need to decrease pressures, we have a safe way to perform subconjunctival filtration.”

Clinical Pearls

Each element of a combination glaucoma procedure chips away at the IOP. The surgeon must decide how many of those elements are required to reach target pressures. Doctors evaluate their own data and gauge how much they can reduce IOP with cataract surgery, with the addition of a MIGS procedure, and then with the addition of ECP and/or other measures.

“It is difficult to say, ‘This combination will lower IOP 6 mmHg,’ because the higher the pressure is at the start, the bigger drop we might get from any particular procedure,” explains Mark Welch, DO, vice chief of ophthalmology and chief of glaucoma at San Antonio Military Center. “A patient with pressures in the 20s who has cataract surgery with iStent will likely get to the mid to high teens, possibly lower. If my target pressure is in the mid to low teens, then I perform ECP as well as an outflow treatment. I make the same choice for patients who are intolerant of their medications, where adding a second or third procedure will allow them to reduce their medication burden.”

Dr. Welch points out another reason it is attractive to perform combination cataract-MIGS-ECP procedures: they aren’t significantly more traumatic than cataract surgery alone, nor is the duration of surgery too long.

In addition, the preoperative and postoperative management of MIGS and ECP are similar to cataract surgery alone, according to Dr. Welch. Patients have a topical antibiotic, topical steroid, and topical NSAID. For ECP, he recommends that surgeons consider adding oral acetazol-

amide for 1 to 2 days post-op to mitigate any pressure spikes. Additionally, because ECP can cause inflammation up to a week later, he notes that physicians must be fairly aggressive about controlling the inflammatory process.

“At a minimum, I inject subconjunctival dexamethasone at the end of the case, and, in most cases, I also give intraocular dexamethasone (4 mg/cc with a dose of 0.1 cc to 0.2 cc). For an extensive treatment, perioperative, systemic dexamethasone (2 mg to 8 mg IV) should also be given, along with a post-operative oral steroid burst for 5 to 7 days.”

According to Dr. Welch, one of the added reasons to control inflammation is that cataract patients expect to emerge from surgery with better vision and a quiet eye.

“I usually treat 270 degrees of the ciliary processes, painting the whole process anteriorly and posteriorly,” Dr. Welch explains. “I set the power to 0.1 watts to 0.2 watts and start with the probe about 2 mm from the ciliary processes, so I can see about six processes at once. You want to avoid ‘pops’ of the tissue by adjusting the power of the treatment or distance of the probe from the target tissue. Careful technique and judicious use of steroids typically lowers IOP without hypotony and also minimizes inflammation.”

A Winning Combination

Drs. Welch and Sarkisian agree that the overall goal behind combining MIGS and ECP is to reach target pressures while maintaining a very high safety profile. With an ever-growing list of alternatives that are much less invasive than trabeculectomy, the potential for combination surgeries is exciting. In this changing MIGS landscape, ECP has emerged as a beneficial way to combine inflow and outflow treatments for complementary outcomes and a cumulative impact on IOP. **GP**

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