

ECP in Refractory Glaucoma Patients

How this existing therapy is creating new treatment opportunities for a wider range of patients

By **Juan Carlos Izquierdo, MD**

We are well aware that the rapidly increasing population of glaucoma patients has generated a surge in the development of new treatments, both pharmaceutical and surgical. This market demand has also incited renewed interest in existing therapies, including endocyclophotocoagulation (ECP).

In ECP, we have an excellent treatment modality, and by slightly modifying the treatment technique, the safety profile improves, so it can be used in a wider variety of patients than previously thought.

Endoscopic Precision

The most unique feature of ECP is the Endo Optiks laser endoscope (Beaver Visitec International), which enables the surgeon to view the ciliary body from the anterior or posterior segment, and apply a precise, visualized laser application. The procedure is highly localized, with little effect outside of the ciliary processes and no damage to the ocular surface. It is gentle, titratable, and repeatable.

Refractory Patient Outcomes

In a soon-to-be-published study, I evaluated 50 eyes in 39 patients with uncontrolled pressure on maximum medical therapy. Most of the patients were using timolol, dorzolamide, brimonidine, and travoprost.

I performed ECP on all 50 eyes, and ECP plus phacoemulsification in eyes in which a cataract was also present. I placed intracameral

anesthesia in each eye, followed by viscoelastic in the sulcus, and then performed ECP for a full 360 degrees.

At the conclusion of the procedure, I used an intracameral injection of 0.1% triamcinolone to prevent inflammation. I also gave the patients atropine to relax the ciliary muscle and reduce pain.

One year following the ECP procedure, patients demonstrated a mean drop in IOP of roughly 35%. Two years following ECP, the mean pressure decrease was more than 40%. Most complications can be avoided with good technique and are transitory if they do occur. In this group, 82% of eyes had no complications, 12% had pupillary membrane, and one eye had a choroidal detachment.

These patients were all refractory glaucoma patients on maximum medical therapy and still unable to reach their target IOPs. Following ECP, most patients were able to maintain target IOP with one or two medications.

A review of major ECP studies shows that, in primary open angle glaucoma, ECP yields a mean IOP decrease of 7 mmHg, or 31%. In studies of advanced secondary glaucomatous eyes, ECP yields a mean IOP decrease of 18 mmHg, or 50%.¹

I am also conducting a study of 40 eyes with angle closure glaucoma (ACG) who have previously undergone iridotomy with a YAG laser. All 40 eyes received ECP in combination with phacoemulsification and are showing excellent IOP results.

We also examined these patients with



Dr. Izquierdo is the director of glaucoma services for Oftalmo Salud in Lima, Peru. He can be reached at juancarlosizq@gmail.com.

anterior segment OCT before and after surgery, and we have seen significant opening of the angles. I hypothesize that our final results will show that this combination of reduced aqueous inflow and increased aqueous outflow will provide very good outcomes in these patients.

What Is Proper Technique?

Traditional cyclophotocoagulation (CPC) was known to cause destruction of the epithelium, pigment clumping, coagulative necrosis, and destruction of the deeper ciliary stroma. By using a laser and endoscopic system, the ciliary body can be visualized. This eliminates any guesswork related to the location of the anatomy. Initially, it takes time to get used to the endoscopic view.

Rather than looking directly at the anatomy via a microscope, you are looking at a monitor. This may make it difficult to judge distances. I place my endoscope so that I can see a total of six ciliary processes on the monitor. This means that the probe is about 2 mm to 3 mm away from the ciliary processes, a good distance from which to treat.

Previously, CPC was performed by treating the ciliary processes until they popped or exploded. However, we have since discovered that this isn't necessary to effectively lower IOP and only complicates recovery by generating excessive inflammation. Maintaining the proper distance and applying 200 to 300 mW of laser energy, you can treat the ciliary processes until they shrink and blanch, stopping prior to the pop.

Combining Procedures

As shown in many previous studies, including my ongoing study of refractive ACG patients mentioned above, ECP combined with phacoemulsification works very well.^{2,3} Not only is it effective at lowering IOP without significantly impacting visual acuity or postoperative complications³, ECP doesn't noticeably change the refractive outcomes of cataract surgery, either with regard to effective lens position⁴ or induced astigmatism.⁵

In refractory patients, I find it safe and

effective to combine ECP with other minimally invasive glaucoma (MIGS) procedures, such as the Kahook Dual Blade (New World Medical). ECP lowers the production of aqueous, while the dual blade or other MIGS procedures increase aqueous outflow.

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These glaucoma procedures can be done with or without phacoemulsification, depending on the patient's needs. I find combining a series of less invasive procedures preferable to putting a drainage device in the eye or combining phacoemulsification with trabeculectomy. Patients are much more comfortable with far fewer complications.

An Excellent Option

With so many new and shiny options in the surgical treatment of glaucoma, it can be easy to skip past those procedures that have been around for a while.

ECP should not be pushed to the back of the shelf. It is an extremely flexible approach, and it is safe and effective, so it remains an excellent option to treat many of our glaucoma patients. GP

References

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