

# Myths About Endoscopic Cyclophotocoagulation

A MIGS procedure with an excellent safety profile.

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**E**ndoscopic cyclophotocoagulation (ECP) has been in existence for many years and really was the first MIGS procedure. Still, there are lingering myths about this procedure that must be addressed. Tens of thousands of people have benefitted from this surgery and surgeons need to know the truth about how, when used correctly, ECP can be a valuable tool to lower IOP in our glaucoma patients.

## Myth 1: ECP doesn't work.

ECP is a procedure that has been maligned by various subspecialists in ophthalmology. I believe this is because the procedure is not well understood. For one, I believe glaucoma surgeons, in particular, have a referral bias, because they see the worst patients. Yes, if you have the patient on 4 medicines with a pressure of 50 mmHg, ECP is not going to get the patient to target pressure. It is probably not an appropriate procedure for that patient. However, 90% of all glaucoma is managed by optometrists and general ophthalmologists; in fact, probably 95%. So, most patients are well controlled on 1 or 2 medications or with no medications and laser trabeculoplasty, or something like ECP alone or combined with cataract surgery. So, it does work. It just has to be put in the right context. Patient selection has everything to do with that. If you use ECP in the

correct patient, it's going to work and it's going to be a much safer option than the older, more conventional forms of cycloablation.

## Myth 2: ECP isn't MIGS.

I would say emphatically that ECP can be considered a minimally invasive glaucoma surgery because it fits all the requirements for MIGS, namely that it has good visual outcomes, it's safe and effective, and it doesn't significantly alter the tissue. Some would argue that any sort of ciliary-ablative procedure can't be MIGS. But I think that they fundamentally misunderstand what ECP is or they don't have experience with ECP. If they had, they would realize that it's very consistent with the other MIGS as far as safety and outcomes.

## Myth 3: ECP causes too much inflammation and therefore isn't used frequently.

The procedure is used worldwide by general ophthalmologists, cataract surgeons, glaucoma surgeons, and retina specialists. The Medicare part B data show that approximately 10,000 procedures are done yearly in just this patient population alone in the United States. The Medicare data demonstrate that the number of cases of ECP has been remarkably stable, to slightly increased as of the last reported data from 2016. Due to the ability to combine ECP with other MIGS, including not only stents, but

also the ab interno or canaoplasty procedures, we should continue to see a steady to upward trend. Moreover, retina surgeons are finding an expanded role for ECP in eyes undergoing vitrectomy.

Regarding inflammation, there are 2 points to consider. First, you must choose your patients carefully. Patients with very thick brown irises who are overtreated can experience inflammation. And "overtreatment" does not mean simply greater than 270 degrees of treatment. Regardless of pigmentation or how thick a patient's iris is, if you treat the iris instead of the ciliary body you're going to have inflammation. You're also probably going to have pupil abnormalities. So, you have to do the procedure correctly. Moreover, you should not allow the ciliary body to be overtreated so that you get a pop or an explosion. Surgeons who are trained to hear pops with transscleral cyclophotocoagulation sometimes think that one or two pops with ECP is okay. It's not. There should be zero pops. And if you have significant inflammation and you didn't treat the center of the ciliary body and you have pops, it's the surgeon's fault, not the procedure's fault.

Second, there is a referral bias by retina surgeons and inflammation specialists who propagate the myth of inflammation with ECP. They only see the patients who have macular edema and inflammation. They don't see all the patients who have no problems

at all, which is most patients. In my experience, there is no clinically significant increase in cystoid macular edema in patients receiving ECP versus cataract surgery alone.<sup>1</sup>

I use more aggressive steroid after patients have had cataract surgery with ECP or ECP alone than I do after a straight cataract surgery. And there tend not to be pressure spikes with ECP, particularly if you keep the treatment of steroids to about 4 weeks to 6 weeks and not longer.

#### **Myth 4: Nothing surgical can be done with angle closure during cataract extraction.**

Many of the stent-based MIGS can't be performed on-label if the patient has angle-closure glaucoma. So, ECP is the one procedure that is very good and well indicated in patients with chronic angle closure. I often do ECP in combination with goniosynechiolysis if necessary.

Endocycloplasty is another procedure for patients with, say, a more plateau-appearing iris where the ciliary body is anteriorly rotated. When that is part of what's causing the angle closure, removing the lens may not be adequate to get the angle closure resolved. Doing ECP in a very targeted way by laserizing the center of the ciliary body so that it rotates the ciliary process posteriorly can fix this anatomical problem of plateau iris and restore natural outflow.

#### **Myth 5: ECP only works for mild or moderate glaucoma.**

There is no official FDA indication linking ECP to cataract surgery, so that's one important distinction between ECP and other MIGS or stent-based MIGS (Hydrus by Ivantis, iStent and iStent inject by Glaukos, and CyPass by Alcon, which the company has voluntarily withdrawn from the market temporarily). Those

are all indicated by the FDA for combined phaco MIGS. However, ECP can be done with or without phaco and that's important, and mild or moderate glaucoma is a diagnosis based on visual field criteria. It's not based on pressure. A patient could have severe glaucoma that is moderately controlled. So say you have a patient with pressure between 18 mmHg and 20 mmHg on 2 medicines with severe glaucoma who has a cataract. You can easily do cataract surgery with ECP without any fear of not getting reimbursed, and without any issues with unique complications in severe glaucoma. In fact, it's going to be safer in the severe glaucoma case doing cataract surgery with ECP than it would be to do cataract surgery with a trabeculectomy. Because with a trabeculectomy, you can get a wipe-out syndrome if you get hypotony in a severe glaucoma patient, particularly if they have a visual field defect close to fixation. ECP in severe glaucoma can be a very smart move. The procedure also can be modulated so that instead of just treating 270 degrees you can treat 360 degrees.

Another technique referred to as ECP-plus involves hyperinflating the ciliary sulcus for an enhanced view of the ciliary body. It can be used in mild, moderate, or severe glaucoma without difficulty.

#### **Myth 6: ECP can't be done with other MIGS.**

Obviously, ECP should be avoided in a patient who has a preexisting inflammatory glaucoma. I also avoid ECP in premium lens surgery. But ECP can be done as a standalone procedure and/or it can be done combined with really any MIGS procedure. Adding ECP can enhance the success of MIGS procedures that are typically thought of as most successful in earlier stages of glaucoma.

In my experience, for example, an iStent (Glaukos) or ECP alone can get a patient off 1 or 2 medicines. The additive effect of the 2 techniques combined maximizes pressure lowering.<sup>2</sup> I prefer to treat the canal first, and sometimes when you treat the canal, you might not get a very good result because unbeknownst to you, the conventional outflow or the trabecular canalicular outflow cannot be made patent with trabecular bypass. By adding ECP, you still have an opportunity to lower the pressure.

If the iStent procedure provides great outflow, then ECP only helps you by lowering the pressure even more by decreasing aqueous production. Moreover, I think that in cases of canal-based MIGS, your risk for a steroid response is high, whereas if you add the ECP, it minimizes that risk. You have to use more aggressive steroids in those situations, but I tend to watch them carefully and taper them quickly. As I said before, being very careful not to overtreat and you may consider doing 270 degrees of ECP in patients who are getting trabecular outflow surgery. **GP**

#### **References**

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2. Ferguson TJ, Swan R, Sudhagoni R, Berdahl JP. Microbypass stent implantation with cataract extraction and endocyclophotocoagulation versus microbypass stent with cataract extraction for glaucoma. *J Cataract Refract Surg*. 2017;43(3):377-382.



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