



Addendum to the Glaucoma Surgery Consensus Document Sept 2022

February 2024 Update on Endoscopic Cyclophotocoagulation's (ECP) indications and applications

This document is an update compiled in February 2024. This was considered necessary due to the introduction of further devices and techniques.

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Endoscopic Cyclophotocoagulation's (ECP)

Endoscopic cyclophotocoagulation was initially reported in the treatment of a variety of refractory glaucomas, now its use was expanded.

The primary clinical application world-wide for ECP is to lower intraocular pressure (IOP), and reduce dependence on medications, in glaucoma patients by selectively ablating the pigmented ciliary epithelium, to suppress the production of aqueous humour. Suppression of aqueous humour to lower IOP is also a primary mechanism of action of three of the four major categories of glaucoma medications.

ECP is an ab-interno procedure performed in an Operating Theatre, using a limited reuse endoscope with integrated laser fibre, (typically introduced through the limbal or clear corneal phaco incision). ECP involves a more refined, controlled, targeting of tissue. It uses a laser endoscope containing three fiber groupings: an image guide, a light source, and the semiconductor diode laser. Under direct endoscopic observation, and using significantly lower laser energy, (0.2 to 0.3 Watts) only the ciliary epithelium is modified, with no incidental tissue disruption.

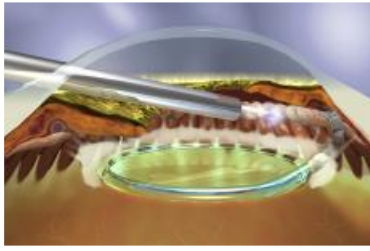
ECP is widely performed as a Minimally Invasive Glaucoma Surgery (MIGS), generally in combination with cataract surgery, or on Pseudophakic, POAG or PCAG patients with mild to moderate glaucoma, and is also a popular option for more advanced glaucoma patients (including most secondary forms of glaucoma), who have failed previous filtration surgery.

ECP is generally performed as a primary treatment in patients controlled mild to moderate glaucoma, either as a stand-alone procedure in pseudophakic patients or in combination with cataract surgery. Increasingly, it is being combined with a wide variety of “outflow” procedures in dual mechanism glaucoma surgery, (mimicking dual mechanism medical therapy, i.e. Beta Blocker plus Prostaglandin). The goal of ECP is to reduce IOP and dependence on medications. ECP is also commonly performed in late-stage patients who have failed other “outflow” procedures, such as trabeculectomy, GDD, trabeculotomy or other filtration techniques.

ECP is safe and predictable. In multiple studies comparing combined Phaco/ECP surgery to Phaco alone, the safety profiles are nearly identical. The most common complication associated with ECP is mild transient inflammation, which most practitioners mitigate by prophylactic administration of intracameral dexamethasone immediately post op. There are no reports of hypotony or phthisis in ECP patients treated performed via a limbal or clear corneal incision. When ECP is performed on refractory glaucoma patients, the endoscope is typically introduced via a pars plana incision, (in order to view and treat the majority of secretory ciliary epithelium that can be accessed below the lens equator). While there is a small risk of a significant complication like hypotony in these patients, it is much lower than in TSCPC, Trabeculectomy or GDD devices.

Endoscopic cyclophotocoagulation is a potentially titratable and repeatable procedure used to lower IOP in a wide variety of glaucoma types and severities. (effectiveness)

ECP appears to be a relatively safe and appealing surgical option in patients with mild to moderate glaucoma with good vision potential, especially in the setting of cataract surgery.



Endo-Cyclophotocoagulation

How it works

Selectively ablating the pigmented ciliary epithelium, to suppress the production of aqueous humour and treat glaucoma.

ECP is an ab-interno procedure performed in an Operating Theatre, using a limited reuse endoscope with integrated laser fibre, (typically introduced through the limbal or clear corneal phaco incision). ECP involves a more refined, controlled, targeting of tissue. Under direct endoscopic observation, and using significantly lower laser energy, (0.2 to 0.3 Watts) only the ciliary epithelium is modified, with no incidental tissue disruption. This decreases the production of fluid in the eye and lead to decreased eye pressure.

Indications

Minimally Invasive Glaucoma Surgery (MIGS)

Combined with cataract surgery.

Pseudophakic POAG glaucoma

Pigmentary glaucoma

Angle closure glaucoma.

Traumatic glaucoma

Paediatric glaucoma

Neovascular glaucoma

Refractory Glaucoma

Advantages/Disadvantages

Good safety profile and reduced complications

Minimally invasive

ECP can be combined with cataract surgery.

Easy to perform.

Titratable IOP decrease.

Repeatable

No long-term complications

Conjunctiva left undisturbed.

Rapid post-operative recovery.

Complications

Fibrin exudates

Hyphaema

Cystoids oedema

Vision loss of 2 lines or more.

Contra-indications

Infections

Uveitic Glaucoma

Administrative Information

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References

1. Uram M. Endoscopic cyclophotocoagulation in glaucoma management. *Curr Opin Ophthalmol.* 1995;6(2):19–29.
2. Lin S. Perspective: endoscopic cyclophotocoagulation. *Br J Ophthalmol.* 2002;86:1434–1438.
3. Berke SJ, Cohen AJ, Sturm RT, et al. Endoscopic cyclophotocoagulation (ECP) and phacoemulsification in the treatment of medically controlled primary open-angle glaucoma. *J Glaucoma.* 2000;9(1):2000.
4. Michael J Siegel MD, Whitney S Boling MD, et al. Combined endoscopic cyclophotocoagulation and phacoemulsification *versus* phacoemulsification alone in the treatment of mild to moderate glaucoma. *Clinical and Experimental Ophthalmology* 2015; 43: 531–539 doi: 10.1111/ceo.12510
5. Shuang-An Yang, MD, MPH et al. Effectiveness of Microinvasive Glaucoma Surgery in the United States. *Intelligent Research in Sight Registry Analysis 2013-2019.* *Ophthalmology* 2023;130:242-255 ; 2022 by the American Academy of Ophthalmology.
6. Kyle V. Marra. Et al. Case-matched comparison of vitrectomy, peripheral retinal endo-laser and endo-cyclophotocoagulation versus standard care in neovascular glaucoma. *RETINA* 0:1–12, 2014
7. Brian A Francis, Stanley J Berke, Laurie Dustin, Robert Noecker. Endoscopic cyclophotocoagulation combined with phacoemulsification versus phacoemulsification alone in medically controlled glaucoma. *J Cataract Refract Surg* 2014; 40:1313–1321 Q 2014 ASCRS and ESCRS.
8. Francisco Eduardo Lima. Et al. Endoscopic cyclophotocoagulation in refractory glaucomas: a long-term study. *Rev Bras Oftalmol.* 2009; 68 (3): 146-51
9. Anca Delia Pantalon et al. Outcomes of phacoemulsification combined with two iStent inject trabecular micro-bypass stents with or without endo-cyclophotocoagulation. *Br J Ophthalmol* 2020;0:1–6. doi:10.1136/bjophthalmol-2019-315434.

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