

# Significant Improvements for IOP Reduction Seen in SubCyclo

The New SubCyclo Laser Therapy is a Safe and Effective Subthreshold Procedure for the Treatment of Glaucoma.

BY ROBERT J. NOECKER, MD, MBA



As a leading cause of irreversible blindness worldwide, glaucoma affects around 60.5 million people globally.<sup>1</sup> Significant changes in diagnostic criteria, new therapies, and new tools for glaucoma management techniques have benefited individual patients.

A significant improvement in managing glaucoma can be seen in SubCyclo laser therapy for IOP reduction. This is a procedure that utilizes laser technologies that are not new or proprietary, but new in its application to glaucoma cases, especially in cyclophotocoagulation (CPC) therapy.

## THE GAP IN THE CARE FOR GLAUCOMA PATIENTS

### Noncompliance With Drugs Versus Invasive Surgery

The glaucoma treatment landscape today includes drugs, Selective Laser Trabeculoplasty (SLT), microinvasive glaucoma surgery (MIGS), and other traditional procedures. From office-based therapies, like SLT and medications, to glaucoma surgery, there is no middle ground in terms of being able to manage the risk profile. Traditionally, we have to wait until it is truly necessary to perform glaucoma surgery. We let a patient's vision deteriorate simply because traditional glaucoma surgical methods have not been worth the risk.

## THE IDEAL SOLUTION FOR CHRONIC DISEASE MANAGEMENT

### Four Ways to Better Regulate Disease

What solutions do we desire to manage outcomes of chronic disease (Figure 1)? First, we desire control of therapy compliance. If we can obtain better control of the outcomes, then we can create best-case scenarios.

Second, we need an efficient procedure that doesn't take hours in the OR. This is important for surgical centers that need to factor in shorter procedures, such as cataracts.

Third, we desire a procedure that is repeatable. If the first procedure doesn't lower the pressure to a desired point, we want to be able to repeat the process to reach the intended outcome.

Fourth, we desire to leave future options open. For example, we do not perform any procedure that would negatively affect the conjunctiva or Schlemm canal if we will need to perform another procedure in the future.



Figure 1. SubCyclo offers better control of outcomes in chronic disease management.

## STRATEGIES OF CYCLOPHOTOCOAGULATION

### Focused Laser for Different Stages of Disease

Conventionally, we reserve traditional thermal-based CPC for patients with late-stage disease simply because there is a risk of a patient's eye pressure lowering too far or becoming chronically inflamed.

With that said, transscleral CPC (TSCPC) works well at lowering IOP and results in a significant reduction in IOP at years 1, 5, and 10. However, more than 50% of the TSCPC did not control IOP long term, and 50% failed by the end of 10 years with most failures occurring in year 1 (40%). The success of TSCPC in lowering IOP is tempered by this significant complication rate. A visual loss of two lines or more occurred in 75% of patients. Phthisis occurred in 3% of eyes, and 7% of those eyes with bad vision (visual acuity of counting fingers or less) lost all vision and lost light perception.<sup>2</sup>

We desire to target melanin, but we prefer to be able to penetrate deep into the eye. Near-infrared lasers target melanin in the ciliary body. We want to go transscleral with a deep penetration depth to the level of the ciliary processes where the pigmented epithelium is and takes the nonpigmented epithelium along with it at the level of the ciliary body.

Endoscopic CPC is a different strategy, but in this procedure you need to make an incision to operate from inside the eye and thus you take the risk of getting an infection after treatment.

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By contrast, SubCyclo laser therapy is a very safe and straightforward procedure. The procedure is also predictable; you can control how you treat; therefore you can predict the targeted IOP outcome you want. This treatment is also a nondamaging procedure, so you are able to repeat the treatment a few weeks later to lower IOP.

## HOW SUBCYCLO WORKS

### Understanding This New Laser Procedure

SubCyclo is a new laser procedure for the treatment of primary open-angle glaucoma and closed-angle glaucoma. Based on the TSCPC principle, SubCyclo features an 810 nm SubLiminal laser targeting of the ciliary body, producing the aqueous humor, and of the uveoscleral pathway, the secondary route of the aqueous outflow.

SubLiminal technology finely controls thermal elevation by delivering energy in a succeeding train of very short microsecond pulses, with alternative “on” and “off” features (Figure 2).

This subthreshold treatment mode allows a precise management of the thermal effect on the targeted tissues and preserves the structures of the ciliary body.<sup>3</sup> This allows the tissue time to cool off between pulses so that the thermal wave does not propagate and create a continuous zone of heating, which causes coagulative necrosis in the eye. The general rule: you do not want to heat the eye.

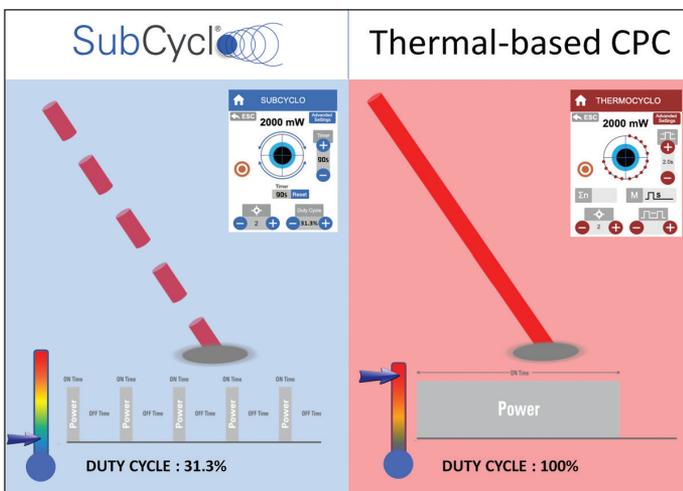


Figure 2. SubCyclo versus Thermal-based CPC.

## PATIENT SELECTION AND TREATMENT

### Is SubCyclo Right for Your Patient?

Which patients can benefit from this procedure the most? Prior transscleral thermal candidates are low hanging fruit. This is a “kinder, gentler” procedure to consider for these patients. Patients where prior outflow procedures have failed, poor candidates for incisional procedures who may have scarred conjunctiva or poor corneas, and MIGs alternative/adjunct candidates are strong candidates.

When treating, the patients are blocked. It is important to create adequate exposure and perpendicular probe orientation. Place tip of the probe at a 3 mm distance posterior to the visible limbus. Use 2 watts and proceed to 90-second treatments (31.3% Duty Cycle) in both hemispheres for a total of 180 seconds (Figure 3).

In SubCyclo, the key to a good treatment is good exposure and being able to hold that perpendicular profile to the eye. The SubCyclo probe has a perfect slender profile. The lower profile is extremely desirable and allows you to see exactly where you are in the treatment procedure. One single probe can be used for both thermal and SubCyclo. The probe utilizes a glass ball at the tip allowing a very smooth sweeping motion (Figure 4).



Figure 3. SubCyclo treatment.

Figure 4. SubCyclo probe.

## CONCLUSIONS

The glaucoma treatment landscape is changing rapidly, and we are filling in the middle area with safer procedures without sacrificing efficacy. Some of our earlier MIGS procedures were lacking in terms of IOP lowering efficacy—great on safety, not so great on efficacy. SubCyclo really fills that in. It gets closer to the efficacy of traditional surgery but is much safer for the patient. SubCyclo laser therapy is effective and minimally invasive therapy for IOP reduction. It is a less destructive treatment option for glaucoma than traditional continuous wave CPC. It is versatile and repeatable and is an important part of the glaucoma treatment armamentarium. ■

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- Financial disclosure: Consultant (Aerie; Allergan; Beaver-Visitec International, Inc.; Diopsys, Inc.; Endo Optiks, Inc.; Ethis Communications; Inotek; IRIDEX; Novartis; Ocular T; Polyactiva; Shire; Sun), Lecturer (Allergan; Beaver-Visitec International, Inc.; Diopsys, Inc.; Endo Optiks, Inc.; Glaukos; IRIDEX; Katena Products, Inc; Novartis; Quantel Medical), Grant Support (Aquesys; Ocular T; Glaukos; Innfocus), Equity Owner (Ocular T)