



Treatment Outcomes of MicroPulse Trans-scleral Cyclophotocoagulation in Advanced Glaucoma

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Introduction

Traditionally, Trans-sclera Cyclophotocoagulation (TSCPC) is reserved for end-stage glaucoma due to the higher rate of serious complications. Micropulse delivery allows energy to build up to the coagulative threshold in targeted pigmented tissues during the “on” cycles. Adjacent non-pigmented tissue cools during the “off” cycle and does not reach the coagulative threshold. Collateral tissue is therefore minimized, ideally resulting in fewer complications without sacrificing efficacy.^{1,2}

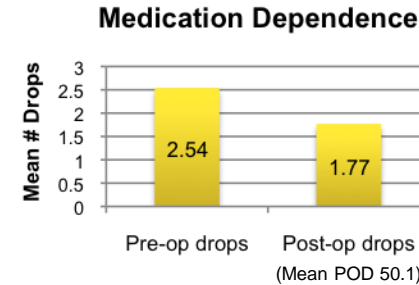
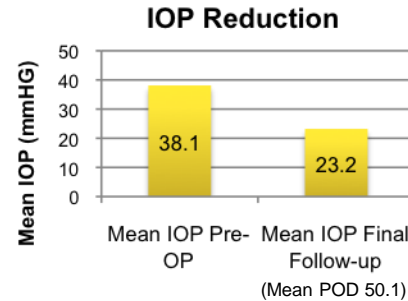
Purpose

The purpose of this study was to describe our experience with micropulse TSCPC (MP-TSCPC).

Methods

- Pilot case series of 19 consecutive patients, ages 50-95yrs, with advanced glaucoma who underwent MP-TSCPC at Wills Eye Hospital.
- Retrospective chart review.
- Laser Settings:
 - 2000mW of 810nm infrared diode micropulse laser (IRIDEX IQ810 Laser Systems, CA).
 - 360° delivery for 100-240s.
 - 31.3% duty cycle (0.5ms ‘on time’ / 1.1ms ‘off time’).
 - Total energy 62.6J -150.2J to each eye.
- 7 patients had an intra-operative paracentesis for short-term IOP control.
- Intraocular pressure (IOP), pain, medications, visual acuity (VA) and complications were recorded at each post-operative visit.

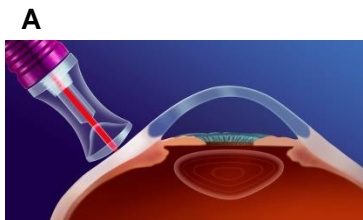
Results



- 19 pts (50-95yrs) with a mean follow up time of 50.1 days
- 68.4% success rate defined by a 20% IOP reduction +/- medications for initial treatment with MP-TSCPC
 - **84.2% success rate including the 3 patients who have undergone a second treatment** (mean follow up 13 days)
- 15.8% failure rate defined by failure to achieve 20% IOP reduction, need for subsequent surgery or persistent hypotony
- No patient lost light perception vision.
- No patient reported greater than “mild pain” beyond POD1.
- 5 patients gained 1 line of vision and 5 patients lost 1 line of vision.

Complications:

- 1 patient required subsequent filtering surgery.
- 1 patient had clinically significant hypotony at POM4.



Delivery of MP-TSCPC (A) using the MP3 probe (B). The MP3 probe is used to ‘paint’ the superior and inferior hemispheres over the course of 100-240s delivering diode laser energy in discreet micropulses. (Figures courtesy of IRIDEX)

Conclusions

- Our preliminary experience with MP-TSCPC demonstrated comparable efficacy to traditional TSCPC with a 39.1% reduction in IOP at last follow up (mean POD 50.1). 16% underwent a second treatment with a 35.3% IOP reduction thus far. This rate is comparable to other published reports on MP-TSCPC.¹
- There was 1 case (5%) of hypotony and 1 case (5%) that required filtering surgery. There were no cases of prolonged inflammation or phthisis bulbi. Overall this suggests an improved safety profile in comparison with the traditional TSCPC.
- This series is limited both its retrospective nature and its small sample size.
- Prospective evaluation of the MP-TSCPC is currently underway.

References

1. Tan AM, Chockalingam M, Aquino MC, et al. Micropulse transscleral diode laser cyclophotocoagulation in the treatment of refractory glaucoma. Clin Experiment Ophthalmol;2010;38:266-72
2. Aquino MC, Barton K, Tan AM, et al. Micropulse versus continuous wave transscleral diode cyclophotocoagulation in refractory glaucoma: a randomized exploratory study. Clin Experiment Ophthalmol;2014;10:1-7.

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