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**Pupillary mydriasis and recovery after transscleral micropulse
cyclophotocoagulation**

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Purpose/Relevance:

To evaluate pupil size after micropulse transscleral cyclophotocoagulation MP-TCP.

Methods:

In this prospective, observational study, patients were treated with MP-TCP (MP3, Iridex Corporation, Mountain View, CA) and assessed for pupillary change. Treatment time was 80 seconds for each 180° hemisphere, for a total of 160 seconds and 360° with a power of 2000mW. Most eyes received a 'double' treatment for a total duration of 320 seconds. A minimum follow up of 6 months was required. Pupil diameter was measured by anterior segment optical coherence tomography (AS-OCT (CASIA 2, Tomey Corporation, Nagoya, Japan) before and after the procedure at different time-points both in light and dark conditions.

Results:

Twenty-four eyes of 15 patients were prospectively followed after MP-TCP treatment. High resolution anterior segment imaging was obtained at 15 days, 1 month, 2 months,

3 months, and 6 months after laser. Pupillary diameter was measured in light and dark conditions. Univariate analysis showed a significant change in the pupillary diameter in dark conditions: when compared to the baseline (4.18 ± 0.8 mm in dark), there was also a significant decrease of the pupillary response to photopic conditions of 0.2 ± 0.03 mm at the 2 month follow up (β 1.07, CI 0.48-1.66, p 0.003). Change in the pupillary diameter from baseline wasn't significant at any of the later follow up times, and mean diameters of 3.46 ± 0.3 mm in dark and 3.18 ± 0.3 mm in light were obtained at the last follow up. No change from baseline was greater than 2mm in any of the follow up periods in any of the participants. Mean baseline intraocular pressure (IOP) was 26.08 ± 9 mmHg, and IOP at the 6 months follow up was 15.92 ± 9 mmHg ($p=0.001$), representing a 39% IOP reduction. The mean baseline number of medications was 4 ± 0.9 and 3 ± 1 post procedure ($p=0.001$). No significant change in the visual acuity was found ($p=0.57$).

Discussion:

Various forms of laser treatment for glaucoma have emerged as useful alternatives to conventional filtration surgery. In previous studies it has been shown that MP-TCP may be an effective therapy for glaucoma patients^{1–3}. Postoperative mydriasis has been a common side effect but no evidence has been published so far. The mechanisms by which MP-TCP decreases IOP remain to be fully elucidated², and thus, the secondary effects on adjacent tissues should be continuously monitored given the short time this new technology has been available. Our study reveals a significant mydriasis and a decrease of the pupillary response to light at 2 months after treatment. This finding may be manifested as clinical findings such as glare, halos and discomfort for the patient. After 6 months of follow up the pupillary size and response returned to baseline levels. Patients should be warned about this potential side effect and the surgeon should consider monitoring the pupil and possible symptoms of mydriasis in the postoperative period. Further studies with longer follow up and larger cohorts are needed to confirm our findings.

Conclusion:

Transient mydriasis is a common side effect after MP-TCP. The pupil size and response return to baseline by 6 months.

References:

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3. Kuchar S, Moster MR, Reamer CB, Waisbourd M. Treatment outcomes of micropulse transscleral cyclophotocoagulation in advanced glaucoma. Lasers Med Sci 2016;31:393–396.

Category:

Surgery