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A MODIFIED MICROPULSE TRANS-SCLERAL CYCLOPHOTOTHERAPY TECHNIQUE FOR THE TREATMENT OF REFRACTORY GLAUCOMA

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Purpose: To evaluate the efficacy and safety of MP3 Plus, a novel technique using modified micropulse trans-scleral cyclophototherapy (MPTCP) in eyes with refractory glaucoma or failed MPTCP treatment.

Methods: This is a retrospective interventional case series. Thirty-two consecutive eyes from 29 patients with uncontrolled intraocular pressures (IOP) who had previous MPTCP or refractory glaucoma underwent MP3 Plus, a modified MPTCP where additional discrete pulses are applied. Main outcome measurement was IOP at 1, 3, 6 and 12 months post-procedure, with success defined as more than or equal to 20% reduction in baseline IOP, an IOP of 25 mmHg or less and nor requiring further re-operation. We collected and analysed visual acuity, number of glaucoma medications and complications.

Results: The patients had an average of 1.4 ± 0.9 glaucoma procedures prior to treatment, where 87.5% underwent one or more previous MPTCP with suboptimal response. Of the eyes presenting for follow-up, 51.6% (n = 31), 37.0% (n = 27), 35.7% (n = 28) and 25.9% (n = 27) achieved the primary outcome at 1,3 and 6 months respectively. Baseline IOP was 33.7 ± 11.6mmHg (n = 32 eyes) and post-treatment IOP at 1, 3, 6 and 12 months were 21.0 ± 9.0 mmHg (n = 31; $p < 0.0001$), 26.2 ± 10.8 mmHg (n = 25; $p < 0.0001$), 23.2 ± 9.4 mmHg (n = 20; $p < 0.05$) and 24.6 ± 9.8mmHg (n = 16; $p<0.001$) respectively. There was a reduction in glaucoma medications from 3.4 ± 0.8 pre-operatively to 2.8 ± 1.2 (n = 16; $p < 0.05$) at 12 months. There were no cases of prolonged inflammation or hypotony.

Conclusions: MP3 Plus is effective and safe in lowering IOP in eyes with refractory glaucoma after previous failed MPTCP.