

SHORTPULSE LASER PHOTOCOAGULATION PLUS SUBTHRESHOLD MICROPULSE LASER ASSOCIATED WITH INTRAVITREAL RANIBIZUMAB FOR THE TREATMENT OF DIABETIC MACULAR EDEMA: THE SANDWICH GRID TECHNIQUE

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Introduction

To verify the effects of two laser treatment procedures combined, short pulse grid laser (SP) and subthreshold micropulse laser (MP), the sandwich grid technique (SWG) plus intravitreal ranibizumab (IVR) on central subfield thickness (CSFT), Best-corrected visual acuity (BCVA) and macular sensitivity in patients with diabetic macular edema (DME).

Methods

Thirty-three patients (45 eyes) with DME were treated with the SWG laser technique plus IVR and followed for 12 months. Laser treatment was performed at baseline: SP laser spots were placed in macular area (500 μm from the fovea) and number of spots varying according to the extension of DME; subsequently MP laser was delivered up to the edge of the fovea. MP laser recurrent sessions could be performed every 3 months if necessary. IVR injection was

performed at baseline and repeated monthly if CSFT > 300 μm . Preoperatively and monthly, ophthalmological examination was performed including measurements of BCVA, CSFT and retinal sensitivity.

Results

Twenty-seven patients (37 eyes) completed 1 year of follow-up. Mean \pm SE CSMT (μm) was 509.36 ± 25.14 and 325.76 ± 15.34 at baseline and 12 months, respectively. A statistically significant reduction in mean CSFT was observed at all study visits compared to baseline ($p < 0.001$). Mean \pm SE BCVA (logMAR) was 0.62 ± 0.04 and 0.45 ± 0.04 at baseline and 12 months, respectively. A significant improvement in mean BCVA was observed compared to baseline ($p < 0.001$). Mean \pm SE retinal sensitivity was 17.85 ± 0.80 and 19.05 ± 0.59 at baseline and 12 months, respectively. The mean retinal sensitivity trended to improve after

one year of follow-up ($p = 0.058$). The mean number of IVR injections was 8.29 ± 0.63 . The mean number of MP laser procedures including initial SWG laser session was 3.67 ± 0.22 . No ocular or systemic adverse effects were observed.

Conclusion

Current data indicate that the SWG laser technique plus IVR seems to be effective to reduce CSFT and improve BCVA in patients with center-involving DME.

Compliance with ethical standards Conflict of interest The authors declare that they have no conflict of interest. Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the Ribeirão Preto Medical School at University of São Paulo and with the 1964 Declaration of Helsinki and its later amendments.

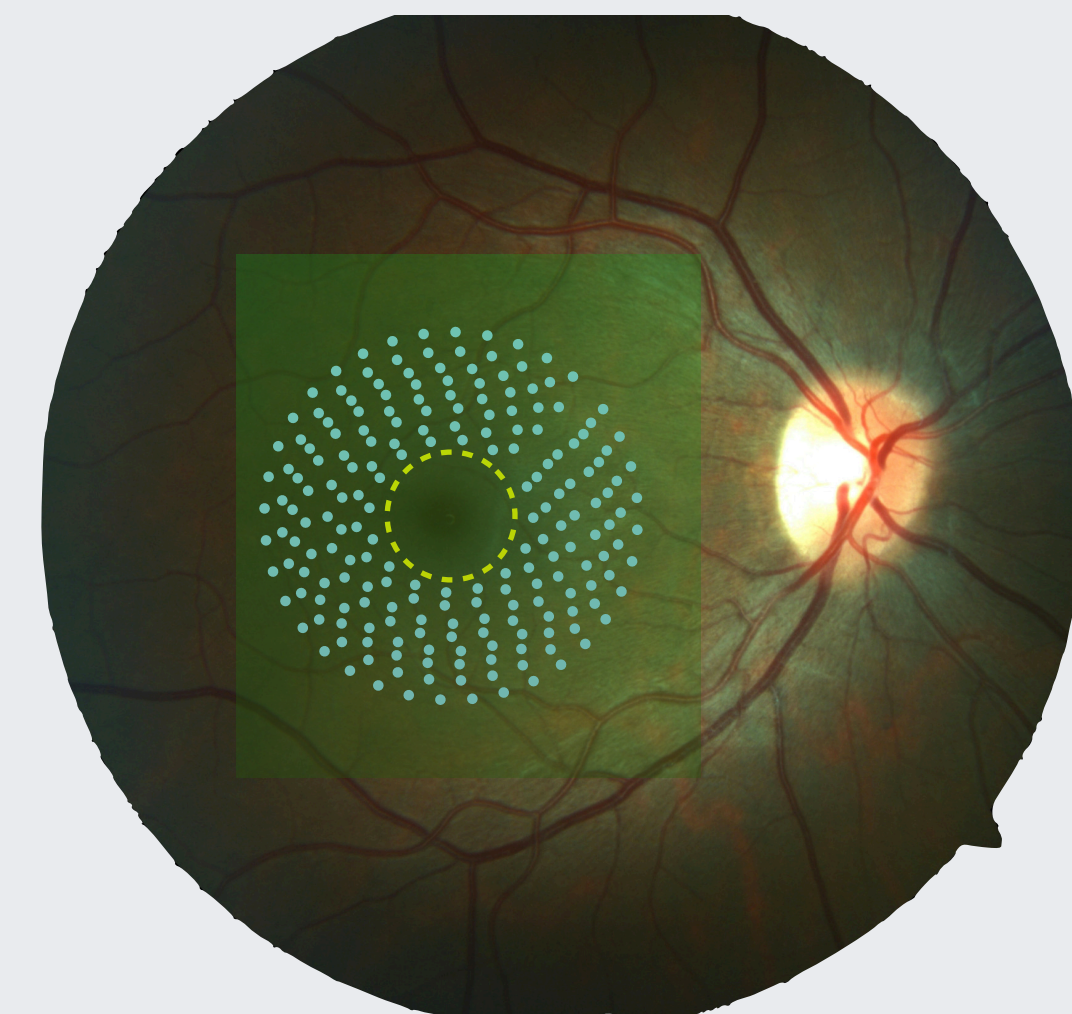


Figure 1: The Sandwich grid laser technique: short pulse (SP) laser spots were placed in the parafoveal and perifoveal area with exception of 500 μm range from the fovea and number of spots varying according to the extension of DME; subsequently subthreshold micropulse laser spots (high-density treatment) were delivered in the entire macula up to the edge of the foveal avascular zone.