**Correlation between retinal sensitivity assessed by microperimetry and the full-thickness and ganglion cell complex thickness measurements after internal limiting membrane peeling in eyes with idiopathic epiretinal membrane**

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**Introduction**

The purpose of this study was to verify the correlation between the retinal sensitivity assessed by microperimetry and the full-thickness and the ganglion cell complex (GCC) macular thickness measurements by swept-source optical coherence tomography (SS-OCT) in eyes submitted to posterior vitrectomy with concomitant internal limiting membrane (ILM) peeling for epiretinal membrane (ERM) treatment.

**Methods**

Fifteen-eyes of 15 patients were included. For the control group, the contralateral eye, with no signs of ERM or other ocular disease, were included (10 eyes). The best-corrected visual acuity (BCVA) and full-thickness and GCC measurements, divided in 9 sectors according to the ETDRS map, were assessed in the pre and postoperative period (Figure 1). Retinal sensitivity of corresponding macular (9 sectors) were assessed by microperimetry (MP3, Nidek) 6 months after the surgery (Figure 2 and 3). Pars plana posterior vitrectomy with removal of the epiretinal membrane and concomitant peeling of the ILM was performed in all cases. To remove the ILM, the brilliant blue G dye was used. Inter-ocular parameters comparisons were performed using paired T-test. Correlations between BCVA, MP3 retinal sensitivity and OCT parameters were analyzed using Spearman rank correlation (P<0.05).

**Results**

15 patients, 8 women, with a mean age of 72.07 years (range 56-84) were included. The mean time after surgery was 11.87 months (range 6-30). The preoperative visual acuity (in logMAR) was 0.43 (0.19) and 0.07 (0.12) postoperative (P<0.01). All OCT parameters in 9 sectors, for both full-macular and GCC thickness, were significantly reduced after surgery (P<0.01). When compared to control eyes, OCT full-macular thickness measurements after surgery were significantly higher in the fovea and in the 4 inner sectors for full-macular thickness and only in the fovea for GCC thickness. Retinal sensitivity values obtained by MP3 were significantly lower in affected eyes 6 months after surgery in 5 out of 9 sectors, as well as for the mean sensitivity, when compared to control eyes (Table 1). Postoperative BCVA did not correlate with any OCT thickness parameter before and after surgery. The MP3 retinal sensitivity correlated negatively with OCT thickness measurements before the surgery and positively after the surgery. The average GCC thickness measurements showed the higher correlations with the MP3 retinal sensitivity parameters, both before and after surgery.

**Discussion**

The BCVA improved in all eyes after surgery. All OCT thickness measurements reduced after surgery. When compared to the control eyes, the full-macular thickness measurements were thicker in the most sectors of the macula area, however the GCC were significantly thicker only in the fovea. Another important finding is that the postoperative BCVA did not correlate with any OCT parameters. On the other hand, the GCC thickness measurements showed the best correlation with MP3 retinal sensitivity after surgery, suggesting that the ganglion cell/inner plexiform layer integrity plays important role to the retinal sensitivity.

**Conclusion**

1) The BCVA improved in all eyes after ERM surgery.

2) All OCT macular thickness measurements reduced after surgery.

3) The full-macular thickness remains thicker after surgery than the control eyes, however these finding did not correlate with the final BCVA.

4) The MP3 retinal sensitivity parameters correlates better with OCT parameters when compared to the BVCA, specially for the GCC layer thickness measurements.

5) The inner retinal integrity plays an important role to the visual function after ERM surgery.

**References**

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