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Abstract Title: **Pre- and Postoperative Functional and Anatomical Changes in Patients With Idiopathic Epiretinal Membrane**

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Purpose: To evaluate retinal macular function and morphology before and after removal of unilateral idiopathic epiretinal membrane (ERM).

Methods: In this prospective case-control study, nine patients (9 eyes, mean age of 69 years) with unilateral ERM underwent a standard two-port pars plana vitrectomy with posterior hyaloid and internal-limiting membrane (ILM) removal. Pre and postoperative (at 4 months) logMAR visual acuity (preVA, postVA), multifocal electroretinogram (mfERG responses from 61 stimulus elements), and foveal thickness (measured with OCT) data were recorded from operated eyes and compared with data from the other healthy eye of each patient.

Results: Surgery was performed successfully in all 9 patients without complications. In all patients, postVA was significantly better than preVA (pre-op=0.47 $\pm$ 0.15; post-op=0.18 $\pm$ 0.20; p=0.007) and reached statistically control VA (0.11 $\pm$ 0.12; p=0.2). The mean amplitudes of all components of the mfERG were significantly smaller than in the fellow eyes before surgery. After surgery, all these amplitudes improved but still remained below control ones. Only P1 implicit time decreased significantly after surgery in the <2 degrees (p=0.008), 2-5 degrees (p=0.02), and 5-10 degrees (p=0.01) concentric ring regions from the fovea. The mean foveal thickness was significantly reduced after surgery (pre-op=328 $\pm$ 47 μ m; post-op=247 $\pm$ 38 μ m; p=0.02) with no significant difference with the fellow eye (218 $\pm$ 58 μ m; p=0.17).

Conclusions: ERM surgery with ILM removal improved visual acuity and reduced macular thickness. However, the remaining reduced amplitude of mfERG may suggest a decreased number of functional neurons despite surgery. Preoperative delayed P1 implicit time suggests that pathogenesis of ERM may implicate an ischemic mechanism.

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