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Improvement of visual field following successful trabeculectomy is related to preoperative mean deviation

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Background: Despite surgery, glaucomatous optic nerve dysfunction is believed to be permanent. Recent studies showed mixed results of visual field (VF) threshold sensitivity changes post-trabeculectomy.

Aims & Objectives: The aim and objective of this study was to investigates VF improvement following successful trabeculectomy and relationships with disease factors.

Methods: The Trabeculectomy group included consecutive cases of successful trabeculectomy surgeries from December 2011 to February 2016, giving 67 eyes. All had a Humphrey Field Analyser (HFA) 24-2 SITA Standard VF on the wait-listing day and postoperative 24-2 SITA Standard VFs. The control group consisted of 72 randomly-selected patients attending clinic without changes in IOP management.

Results: Overall Mean Deviation (MD) for Trabeculectomy group was insignificantly changed by surgery (-8.2±5.0dB pre-operative vs. -8.7±5.8dB post-operative, p=0.14), however change in MD for Trabeculectomy group (Δ=+0.5±2.5dB) is better than Control group (Δ=-0.4±1.4dB, p=0.03). For Trabeculectomy group, changes in MD values were not associated with preoperative IOP, magnitude of IOP reduction, or change in visual acuity. Interestingly, there was a near-linear relationship between change in MD and preoperative MD (R=0.49). There was a tendency for eyes with mild preoperative MD (> -6.0dB) to have worsened MD postoperatively (Δ=-0.83±1.67dB) compared to an improvement in MD for eyes with moderate MD (-12.0dB <MD ≤-6.0dB, Δ=+0.62±2.11dB), severe MD (-20.0dB <MD ≤-12.0dB, Δ=+2.26±3.31dB) and advanced MD (<-20.0dB, Δ=+1.39±1.46dB) (ANOVA p=0.001).

Conclusion: As a single group, VF changes from trabeculectomy were insignificant. However, stratification suggests visual field improvement can occur following trabeculectomy, especially patients with MD between -12.0dB and -20.0dB.