

Reversal of retinal ganglion cell dysfunction after surgical reduction of intraocular pressure

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PURPOSE: The pattern electroretinogram optimized for glaucoma screening (PERGLA) is a noninvasive method of objectively measuring retinal ganglion cell (RGC) function. This study was undertaken to quantify the RGC response to intraocular pressure (IOP) reduction after glaucoma surgery.

DESIGN: Prospective cohort study.

PARTICIPANTS: Forty-seven eyes of 47 patients with uncontrolled IOP or progressive glaucomatous optic neuropathy receiving maximal medical therapy requiring trabeculectomy or aqueous drainage device implantation who met eligibility criteria.

METHODS: Eyes with visual acuity less than 20/30, corneal or retinal pathologic features, or unreliable standard automated perimetry (SAP) results were excluded. All patients underwent complete ocular examination, arterial blood pressure, SAP, and PERGLA at 2 sessions before surgery and at 3 months after surgery. Mean ocular perfusion pressure (MOPP) was calculated. Each measure of PERGLA amplitude and phase was an average of 600 artifact-free signal registrations.

MAIN OUTCOME MEASURES: Intraocular pressure and PERGLA amplitude and phase.

RESULTS: Forty-seven eyes of 47 patients (mean age \pm standard deviation http://SD , 69.9 ± 11.3 years) were enrolled. Thirty-four eyes (72%) underwent trabeculectomy with antifibrosis therapy; 13 eyes (28%) underwent glaucoma drainage implant surgery. Mean \pm SD postoperative IOP (10.4 ± 4.6 mmHg) was significantly ($P 0.05$) was identified between change in PERGLA amplitude and change in IOP or MOPP.

CONCLUSIONS: Reversal of RGC dysfunction occurs after surgical reduction of IOP and may be quantified using PERGLA.

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<http://www.ncbi.nlm.nih.gov/pubmed/20920827>