

Trabeculectomy Can Improve Long-Term Visual Function in Glaucoma

Caprioli J (1) , de Leon JM (2) , Azarbod P (2) , Chen A (2) , Morales E (2) , Nouri-Mahdavi K (2) , Coleman A (2) , Yu F (3) , Afifi A (4)

1 Jules Stein Eye Institute, University of California, Los Angeles, Los Angeles, California. Electronic address: caprioli@jsei.ucla.edu.

2 Jules Stein Eye Institute, University of California, Los Angeles, Los Angeles, California.

3 Jules Stein Eye Institute, University of California, Los Angeles, Los Angeles, California; Department of Biostatistics and Epidemiology, Jonathan and Karin Fielding School of Public Health, University of California, Los Angeles, Los Angeles, California.

4 Department of Biostatistics and Epidemiology, Jonathan and Karin Fielding School of Public Health, University of California, Los Angeles, Los Angeles, California.

PURPOSE: To measure the magnitude and direction of visual field (VF) rates of change in glaucoma patients after intraocular pressure (IOP) reduction with trabeculectomy.

DESIGN: Retrospective, comparative, longitudinal cohort study.

PARTICIPANTS: Patients with open-angle glaucoma.

METHODS: Patients who underwent trabeculectomy (Trab) with mitomycin-C (74 eyes of 64 patients) with 4 reliable VF measurements before and after trabeculectomy and at least 4 years of follow-up before and after surgery were included. Decay or improvement exponential models were used to calculate pointwise rates of perimetric change before and after surgery. A separate comparison (Comp) group with unoperated glaucoma (71 eyes of 65 patients) with similar baseline damage, number of VF tests, and follow-up was used to address possible regression to the mean. Proportions of VF locations decaying or improving before and after surgery in the Trab group, and during the first and second halves of follow-up in the Comp group, were calculated. A multivariate analysis was used to explore variables associated with VF improvement.

MAIN OUTCOME MEASURES: The rate of pointwise VF change before and after surgery in the Trab group and Comp group.

RESULTS: Patients in the Trab group were followed for 5.1 ± 2.1 years (mean \pm standard deviation) before and 5.4 ± 2.3 years after surgery, with 8.9 ± 4.7 VF tests before and 9.0 ± 4.4 VF tests after surgery. The mean rate of change for all VF locations slowed from $-2.5 \pm 9.3\%$ /year before surgery to $-0.10 \pm 13.1\%$ /year after surgery (P CONCLUSIONS: The results show that trabeculectomy slows the rate of perimetric decay and provides evidence of sustained, long-term improvement of visual function in glaucoma. These findings suggest the possibility of reversal of glaucomatous dysfunction of retinal ganglion cells and their central projections.

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