

Structural reversal of disc cupping after trabeculectomy alters Bruch's membrane opening-based parameters to assess neuroretinal rim

Gietzelt C (1) , Lemke J (1) , Schaub F (1) , Hermann MM (1) , Dietlein TS (1) , Cursiefen C (1) , Enders P (2) , Heindl LM (1)

1 Department of Ophthalmology, University Hospital of Cologne, Kerpener Strasse 62, 50924 Cologne, Germany.

2 Department of Ophthalmology, University Hospital of Cologne, Kerpener Strasse 62, 50924 Cologne, Germany. Electronic address: philip.enders@uk-koeln.de.

OBJECTIVE: To assess the impact of trabeculectomy for glaucoma on morphometric neuroretinal parameters of the optic nerve head (ONH) using spectral domain optical coherence tomography (SD-OCT) .

DESIGN: Retrospective, interventional case series.

PARTICIPANTS: 88 eyes of 88 patients who underwent trabeculectomy with mitomycin C in 2016.

INTERVENTION: All patients underwent trabeculectomy in one eye (study eye) and had evaluable SD-OCT examinations of the ONH to measure neuroretinal tissue before and at least at one of the 3-, 6-, 12-months follow-up time points after surgery.

MAIN OUTCOME MEASURES: Longitudinal change in Bruch's membrane opening minimum rim width (BMO-MRW) , Bruch's membrane opening minimum rim area (BMO-MRA) , peripapillary retinal nerve fiber layer (RNFL) thickness, intraocular pressure (IOP) and mean deviation in perimetry.

RESULTS: In study eyes, BMO-MRW significantly increased postsurgically comparing baseline and follow-up examinations at three months ($p=0.012$) , at six months ($p=0.007$) , and at one year ($p=0.010$) after trabeculectomy. The increase in BMO-MRW six months after surgery correlated with IOP reduction ($r=0.48;p=0.001$) . BMO-MRA showed an equal increase ($p=0.034$) . RNFL thickness remained stable between baseline and follow-up.

CONCLUSIONS: Structural reversal of disc cupping after trabeculectomy influences markedly Bruch's membrane opening-based parameters for up to more than one year. Improvement in morphometry seems to correlate with the reduction of IOP while visual field function appears not to be influenced. In longitudinal follow-up of glaucoma patients by SD-OCT, evaluation of BMO-based parameters necessitates to reflect bias caused by surgery.

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