

Structure-Function Relationship Between Bruch's Membrane Opening-Based Optic Nerve Head Parameters and Visual Field Defects in Glaucoma

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PURPOSE: This study was performed to evaluate the structure-function relationship between Bruch's membrane opening (BMO) parameters of the optic nerve head (ONH) and visual field (VF) sensitivity.

METHODS: Forty-six right eyes of 46 patients with open-angle glaucoma (OAG) in the patient group and 12 right eyes in the control group were included. Standard automated perimetry (SAP) and spectral-domain optical coherence tomography (SD-OCT) were assessed. Three BMO-based distances and two areas of the neuroretinal rim were used for correlation: the minimum rim width (MRW), the perpendicular rim width (PRW), the horizontal rim width (HRW), the minimum rim area (MRA) within the neuroretinal tissue defined by the MRW, and the perpendicular rim area (PRA) within the neuroretinal tissue defined by the PRW. These parameters were correlated with global and sectoral VF sensitivities. Spearman's correlation coefficients between BMO parameters and global and sectoral VF sensitivities were obtained.

RESULTS: Within the patient group, significant correlations could be observed between global and sectoral VF sensitivities and BMO parameters, with PRW and PRA showing the highest values. In the sectoral analysis the highest correlations were found for the temporal-inferior VF sector (MD-TI) : PRW-TI ($r = 0.72394$; $P < 0.001$). **CONCLUSIONS:** The BMO-based parameters PRW and PRA presented with a very good structure-function relationship in glaucoma patients, statistically at least equal to MRW and MRA. Using new BMO-based parameters might allow early objective assessments of functional glaucomatous impairments.

Invest Ophthalmol Vis Sci. 2015 May 1;56(5):3320-8. doi: 10.1167/iovs.14-15845

PMID: 26024115

<http://www.ncbi.nlm.nih.gov/pubmed/26024115>