

Longitudinal Changes of Bruch's Membrane Opening, Anterior Scleral Canal Opening, and Border Tissue in Experimental Juvenile High Myopia

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PURPOSE: To investigate the relative positional changes between the Bruch's membrane opening (BMO) and the anterior scleral canal opening (ASCO) , and border tissue configuration changes during experimental high myopia development in juvenile tree shrews.

METHODS: Juvenile tree shrews were assigned randomly to two groups: binocular normal vision (n = 9) and monocular -10 D lens treatment starting at 24 days of visual experience to induce high myopia in one eye while the other eye served as control (n = 12) . Refractive and biometric measurements were obtained daily, and 48 radial optical coherence tomography B-scans through the center of the optic nerve head were obtained weekly for 6 weeks. ASCO and BMO were segmented manually after nonlinear distortion correction.

RESULTS: Lens-treated eyes developed high degree of axial myopia (-9.76 ± 1.19 D) , significantly different (P < 0.05) from control eyes. **CONCLUSIONS:** During experimental high myopia development, progressive relative deformations of ASCO and BMO occur simultaneously with changes in border tissue configuration from internally to externally oblique in sectors that are close to the posterior pole (nasal in tree shrews) . These asymmetric changes may contribute to pathologic optic nerve head remodeling and an increased risk of glaucoma later in life.

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