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Inferior decentration of multifocal intraocular lenses in myopic eyes

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ABSTRACT

Purpose: To investigate the tilt and decentration of multifocal intraocular lenses (MfIOLs) implanted in myopic eyes.

Design: A prospective cohort study.

Methods: Twenty-eight myopic eyes and 56 emmetropic eyes were evaluated. Phacoemulsification with Tecnis ZMB00 MfIOL (Abbott Medical Optics) implantation was performed. At 1 year post-surgery, routine postoperative examinations were performed, and tilt and decentration of the MfIOLs, high-order aberrations, and modulation transfer function (MTF) were evaluated using the OPD-Scan III aberrometer. Subjective symptoms were assessed with Quality of Vision questionnaire.

Results: Postoperative uncorrected distance visual acuity (VA), best-corrected distance VA, and uncorrected near VA did not differ between the two groups. The mean IOL tilt and horizontal decentration were not different between the control and myopic groups. However, the myopic group presented significantly inferior decentration in the capsular bag compared with the control group (−0.03±0.22 mm vs. −0.21±0.29 mm, P = 0.002). The overall decentration values were 0.32 ± 0.14 mm in the controls and 0.40±0.18 mm in the myopic group (P = 0.023). Axial length was negatively correlated with vertical decentration (r = −0.268, P = 0.014) and positively correlated with overall decentration (r = 0.334, P = 0.002). Worse aberration data, poorer MTF and more subjective symptoms were also found in the myopic group than in the controls.

Conclusion: Greater inferior decentration of MfIOLs and a consequent decrease in visual quality were found in myopic eyes, indicating that the increasing incompatibility between IOL and capsular bag size with axial length elongation should not be underestimated.