

Biometric Factors Associated with the Visual Performance of a High Addition Multifocal Intraocular Lens.

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Abstract

Purpose/Aim: To evaluate the impact of ocular parameters on the visual performance achieved with the multifocal intraocular lens (IOL) Bi-Flex M 677MY.

MATERIALS AND METHODS:

About 26 subjects were included in the current study. Several physiological variables were retrieved from the 3-month follow-up visit, including pupil diameter and distance from pupil center to the vertex normal of the anterior cornea (μ). These variables were also obtained in the preoperative visit. Binocular and monocular visual acuity defocus curves were measured at 1 and 3 months after surgery, respectively. The monocular Area Under the Curve (AUC) was computed along the total range (Total Area Under the Curve (TAUC), +1.00 to -4.00 D) and for the ranges of Far (Far Area Under the Curve (FAUC), +0.50 to -0.50 D), (Intermediate Area Under the Curve (IAUC), -1.00 to -1.50 D) and Near vision (Near Area Under the Curve (NAUC), -2.00 to -4.00 D). Correlations between these areas and the postoperative physiological variables were assessed.

RESULTS:

The mean μ was reduced from 0.21 to 0.10 mm after surgery, as well as pupil diameters, either photopic (-7.4%) or mesopic (-8.1%) ($p < 0.05$). The mean AUCs were 2.08 ± 0.74 for TAUC, 0.57 ± 0.17 for FAUC, 0.16 ± 0.09 for IAUC, and 0.81 ± 0.29 for NAUC. Significant

correlations were found between NAUC and corneal power ($r = -0.39$, $p = 0.05$) as well as between IAUC and temporal decentration of the lens from vertex normal ($\rho = -0.41$, $p = 0.04$).

CONCLUSIONS:

The visual performance at near distance with the IOL evaluated improved in eyes with less corneal power. On the other hand, a slight temporal IOL decentration from vertex normal also improved intermediate visual acuity. The binocular defocus curve was similar to other trifocal IOLs.