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PIBIC Last Name - Urbano First Name - Andréia Middle - Peltier

Service (sector) Refractive Surgery N° CEP

Outcomes of LASIK Retreatment with wavefront-guided ablation versus standard ablation

Andréia Peltier Urbano, Maria Regina Chalita, Walton Nosé

Purpose: To evaluate refractive outcomes of wavefront-guided LASIK (Zyoptix, Bausch & Lomb, Germany) versus standard LASIK (PlanoScan, Bausch & Lomb, Germany) in retreatment of primary LASIK for myopia and myopic astigmatism. **Methods:** It was performed a prospective, randomized trial with paired eye control of 74 from 37 patients who underwent LASIK retreatment. Each patient underwent retreatment using Zyoptix LASIK in 1 eye and Planoscan LASIK in the contralateral eye. A complete ophthalmologic examination was performed, including evaluation of high and low contrast visual acuity, manifest refraction, glare test, contrast sensitivity test and ocular aberrations measurement with a Shack-Hartmann sensor, with a follow up of 6 months. **Results:** Both Zyoptix and Planoscan groups had similar values of high contrast visual acuity, gain and loss of best spectacle-corrected visual acuity (high and low contrast visual acuity), safety and efficacy indexes, percentage of eyes with spherical equivalent within $\pm 0,50$ D e $\pm 1,00$ D in the postoperative periods of 1, 3 and 6 months. In the Zyoptix group, the values of spherical component and spherical equivalent of manifest refraction were more hipermetropic than in Planoscan group in the postoperative periods of 1 week, 1, 3 and 6 months. The predictability of spherical equivalent and cylindrical correction was better for Zyoptix group than for Planoscan group at 1, 3 and 6 months. Zyoptix group showed better results of glare test and contrast sensitivity test than Planoscan group during follow up. After LASIK retreatment, there was reduction of subjective symptoms of visual disturbance in Zyoptix and Planoscan groups. Low and higher order ocular aberrations were better corrected in Zyoptix group than in Planoscan group. The values of ocular aberrations after retreatment varied according the spherical equivalent before primary LASIK surgery, depending on the Zernike term. There was statistical difference in the percentage of correction of ocular aberrations according the magnitude of ocular aberrations before retreatment, with a trend of better correction of aberrations with higher magnitude before the retreatment. **Conclusions:** Wavefront-guided LASIK with Zyoptix produces superior refractive outcomes, better quality of vision and better correction of ocular aberrations than standard LASIK with Planoscan in retreatment of refractive errors after primary LASIK.