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Service (sector) Cataract N° CEP

Wavefront Analysis and Contrast Sensitivity of Aspheric and Spherical IOLs: A randomized prospective study.

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Purpose: To compare visual performance, total and high order wavefront aberrations (coma, spherical aberration and other terms of HOA) and contrast sensitivity under different light conditions in 120 eyes implanted with one monofocal aspheric blue light filter IOL and two spherical IOLs. **Methods:** A randomized prospective study comparing three IOLs types (Alcon Acrysof SN60WF (40 eyes), SN60AT (40 eyes) and AMO Sensor (40 eyes) was carried out. The cataract surgeries were performed by two experienced surgeons. Complete ophthalmological exam including UCVA, BSCVA, corneal topography, contrast sensitivity (Pelli-Robson chart and Optec® 6500) and wavefront analysis were performed preoperatively, 30 and 90 days postoperatively. The Optec contrast sensitivity test was performed under photopic and scotopic conditions, with and without glare. Patients with PAM worse than 20/32, any ocular pathology or surgical complications were excluded. Statistical analysis was performed and $p \leq 0.05$ was considered statistically significant. **Results:** All eyes in all groups had postop BSCVA $\geq 20/25$. Mean total aberration RMS values were: $0.75 \pm 0.35 \mu\text{m}$ (AcrysofWF); $1.35 \pm 0.40 \mu\text{m}$ (SN60) and $1.25 \pm 0.43 \mu\text{m}$ (Sensor). Mean HOA values were: $0.26 \pm 0.05 \mu\text{m}$ (AcrysofWF); 0.38 ± 0.06 (SN60) and 0.31 ± 0.06 (Sensor). Mean spherical aberration values were: $0.02 \pm 0.04 \mu\text{m}$ (AcrysofWF); 0.25 ± 0.04 (SN60) and 0.17 ± 0.07 (Sensor). The AcrysofWF IOL showed statistically significant less induction of spherical aberration and lower values of total and HOA when compared with the other IOLs ($p < 0.05$). No statistically significant difference was found between SN60AT and Sensor. Mean Pelli-Robson contrast sensitivity values were: 1.62 ± 0.08 (SN60WF); 1.59 ± 0.10 (SN60) and 1.58 ± 0.10 (Sensor). Using the Optec 6500 under scotopic conditions with glare the aspheric IOL group showed better graphic results. **Conclusion:** The aspheric IOL (Acrysof Natural WF) induced significantly less spherical aberration and HOA when compared to the spherical IOLs analyzed in this study. Pelli-Robson contrast sensitivity under photopic conditions revealed greater values with SN60WF but it was not statistically significant. Night contrast sensitivity with and without glare did not change with aspheric IOL. Spherical IOLs showed worse night contrast sensitivity after glare.