1 de Dezembro **08h30 | 10h00 – Sala 2**

Cirurgia Refrativa | Refractive Surgery

Moderadores | Chairs: Maria Céu Brochado (CHUP), João Póvoa (CHUC), Joaquim Mira (CJM)

CO 23

WAVEFRONT-SHAPING (ACRYSOF IQ VIVITY) AND CONTINUOUS TRANSITIONAL FOCUS (PRECIZON PRESBYOPIC) TECHNOLOGIES FOR EXTENDED DEPTH-OF-FOCUS INTRAOCULAR LEN

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Purpose: To report the visual outcomes after bilateral refractive lens extraction (RLE) with implantation of two newly non-diffractive extended depth-of-focus (EDOF) intraocular lenses (IOLs): Acrysoft IQ VivityÒ(Alcon) and Precizon PresbyopicÒ NVA570 (Ophtec). To analyze, in vivo, the objective optical quality and the subjective visual acuity, at different defocus levels, of patients implanted with these two IOLs.

Methods: Prospective study that included 28 eyes submitted to RLE with VivityÒ (group 1, n=14) or PrecizonÒ (group 2, n=14) implantation. A complete ophthalmological examination was carried out 3 months after surgery. To report visual outcomes data were collected regarding: high-contrast uncorrected (UDVA), distance-corrected (DCVA) and binocular distance-corrected near visual acuities (DCNVA); contrast sensitivity under static conditions, in photopic and low-mesopic settings, considering different spatial frequencies (0.5, 3, 7.5 and 15 cycles per degree-cpd); glare evaluation under low (1 and 5 cd/m2) and high (100 cd/m2) luminance; ocular scatter index (OSI); modular transfer function (MTF) and Strehl-ratio. Metrovision-MonPack3® was used to test contrast sensitivity and glare. Ocular scatter index (OSI), Modular Transfer function (MTF) and Strehl-ratio were measured using the HDAnalyzer. To analyze the objective optical quality (OQ) and the subjective visual acuity, monocular distance-corrected (DC) visual acuity (VA, in logMAR scale) and with -1 diopters (D), -2D and -3D defocus were evaluated, together with optical quality (OQ), measured with HD Analyzer at the same defocus points. The OQAS Accommodative Range (OAR) was calculated as the dioptric range between the best focus and the point at which the OQ decreased by 50%.

Results: LogMAR UDVA and logMAR DCVA were similar between groups (UDVA: 0.05 [0.13] vs 0.00 [0.10], p=0.377), (DCVA: -0.08 [0.08] vs 0.00 [0.12], p=0.150). Contrast sensivity was lower in group 1 regarding low spatial frequency (0.5 cpd) in photopic conditions (14 [3] dB vs 16 [3] dB, p=0.017) and high spatial frequency (15 cpd) in mesopic conditions (2.00 [3] vs 7.5 [11], p=0.019). For medium spatial frequency (3 cpd) contrast sensivity was identic, in photopic (19 [2] dB and 17 [3] dB, p=0.353) and mesopic conditions (16 [2] dB and 15 [10] dB, p=0.593). There were no differences in glare, evidencing values in low luminance (1 cd/m2) of 91.7 [20.9] % and 73.3 [15] %, (p=0.054). Group 1 showed lower OSI, higher MTF and Strehl-ratio ($p<0.05$). Spectacle independence was possible in 71 vs 71%, (p=1.000). In group 1 and 2 respectively, monocular DCVA presents no statistical significant differences with -1D defocus (p=0.210) and -2D (p=0.769), but at -3.00D VA was 0.52 [0.08] vs 0.45[0.15] (p=0.002). OQ was not different at best focus nor at -1D ($p>0.841$) but it was higher in group 2 at -2D (p=0.004) and at -3D (p=0.016). OAR was 1.00 [0.56] D vs 1.63 [1.19] D (p=0.042). DCNVA was not different between groups ($p>0.210$).

Conclusion: Both IOLs showed an excellent UDVA, contrast sensivity for medium spatial frequencies similar to normal age-matched values, acceptable glare values in the lowest luminance conditions and similar independence from spectacles. Analyzing the defocus curves, the Precizon IOL is capable of higher focus amplitude and better VA at 33cm. Still, binocular DCNVA was not different between groups.