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Visual functional outcomes after bilateral implantation of a trifocal diffractive intraocular lens

Session Title: Multifocal IOL results

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VISUAL FUNCTIONAL OUTCOMES AFTER BILATERAL IMPLANTATION OF A TRIFOCAL DIFFRACTIVE INTRAOCULAR LENS

SESSION DETAILS

Session Title: Multifocal IOL results

Session Date/Time: Sunday 06/10/2013 | 14:30-16:00

Paper Time: 15:09

Venue: Forum (Ground Floor)

First Author: : J.Marques *PORTUGAL*

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ABSTRACT DETAILS

Purpose:

To assess clinical outcomes, visual function and spectacle independence after bilateral implantation of a new aspheric diffractive trifocal intraocular lens (IOL).

Setting:

Ophthalmology Unit, Centro Hospitalar e Universitįrio de Coimbra (CHUC), Coimbra, Portugal. Visual Neuroscience Laboratory, IBILI, Faculty of Medicine, Coimbra, Portugal.

Methods:

Twenty eyes of ten patients with bilateral implantation of Finevision trifocal IOLs were evaluated one month postoperatively. All eyes had a one-week time frame between surgeries. Monocular and binocular, uncorrected and corrected visual acuities (distance, near and intermediate) were measured. Contrast sensitivity was evaluated with a computerized psychophysical software Metrovision that tests different spatial frequencies (0.6 - 1.1 - 2.2 - 3.4 - 7.1 14.2 cpd) under static (0 Hz) and dynamic (10 Hz) conditions, both in photopic (80-90 cd/m²) and mesopic (0.08 cd/m²) settings. The same software was used for pupillometry (100cd/m²; 10cd/m² and 1cd/m²) and glare (5cd/m² and 1cd/m²) evaluation. We tested motion discrimination and achromatic contrast discrimination using two innovative 2AFC (two-alternative forced choice) psychophysical tests that required comparison and discrimination of visual features between two separated moving dots. Defocus curves were calculated over a range of +4.00 and -4.00D. A validated questionnaire to evaluate overall satisfaction was included.

Results:

Distance uncorrected visual acuity (VA) was 0.0 ± 0.10 logMAR and distance corrected VA was 0.0 ± 0.05 logMAR. Distance corrected near VA was 0.17 ± 0.05 logMAR and distance corrected intermediate VA was 0.0 ± 0.05 logMAR. Patients could read 28.88 ± 22.49 % and 79.45 ± 11.23 % of optotypes under a glare source of 1cd/m² and 5cd/m², respectively. Mean photopic contrast sensitivity for high spatial frequencies (7.1 and 14.2 cpd) was 15.42 ± 3.70 dB and 12.83 ± 5.04 dB, under static and dynamic conditions, respectively. Static and dynamic mean mesopic contrast sensitivity for high spatial frequencies (7.1 and 14.2 cpd) was 10.00 ± 1.25 dB and 2.00 ± 0.40 dB,

respectively. The mean results over the horizontal meridian (0r) for motion discrimination and achromatic contrast discrimination tests were: 1.08 ± 1.37 deg/s and 2.12 ± 0.97 cd/m², respectively. Defocus curve testing showed an extended range of clear vision.

Conclusions:

The FineVision trifocal IOL provided a satisfactory full range of vision and quality of vision parameters. The use of quantitative computerized psychophysical approaches in which testing steps can be calibrated and dynamically changed in a random manner are less prone to artifacts than classical methods and allow an objective evaluation of new IOL designs.

Financial Interest:

NONE