Evaluation of the improvement in sensitivity with the new IOL-Master®☆,☆☆

Evaluación de la mejoría de sensibilidad del nuevo IOL-Master®

Dear Sir,

In recent years, the tendency to discard ultrasound biometric calculation contact systems1 has led to a new quality standard for calculating the intraocular lens (IOL) dioptre power to be implanted after lens surgery, based on the IOL-Master® (Carl-Zeiss Meditec; Dublin, California, USA) non-contact interferometric system.

In order to assess the sensitivity improvement of the new 5.4.3 software of the IOL-Master® we developed a prospective study which consecutively included 214 eyes from 115 patients referred to our service for cataract surgery. All were submitted to a biometric session with the IOL-Master® software version 4.08 and an additional session with the updated 5.4.3 version, regulating the type and density of the cataract following the scheme proposed by LOCS-III2; in addition, an ocular fundus assessment was performed to assess the presence of vitreous opacities.

In 85.5% of cases (189 out of 221 eyes) both versions were able to effectively measure axial length (AL), facilitating the calculation of the IOL diopter power. However, 13.1% of cases (29 out of 221 eyes) could not be assessed with version 4.08 due to the inability of said system to determine AL, whereas version 5.4.3 did measure this parameter and consequently allowed the diopter calculation for the IOL. These cases were posterior capsular cataracts P3–P5 (16 eyes), nuclear cataracts NO3NC3–NO5NC5 (11 eyes), one case of posterior synechia and one eye with asteroid hyalosis (Fig. 1). Finally, for 0.01% of cases (3 out of 221 eyes), none of the aforementioned IOL-Master versions was able to analyze AL. These cases were 2 brunescent cataracts (LOCS NO6NC6) and one moderate vitreous hemorrhage in a patient with proliferative diabetic retinopathy (Fig. 2).

By way of conclusion, the updated 5.4.3 software version of the IOL-Master® interferometer improves sensitivity from 85.5% to 98.6% when compared to the previous 4.08 software.

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Fig. 1 – Cases in which IOL-Master® software version 4.08 was not able to measure axial length and new version 5.4.3 did measure it: (A) asteroid hyalosis and (B) P3 posterior capsular cataract.
Fig. 2 – Brunescent cataracts NO6NC6 in which none of the IOL-Master® versions was able to determine axial length and therefore could not calculate the diopter power of the intraocular lens to be implanted.

version 4 assessing axial length and therefore the ability to calculate the IOL diopter power.

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