Case Study: IOLMaster 700

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A 71-year-old female patient came to Siriraj Hospital Eye Clinic complaining of blurred vision in her right eye for the past three to four months. She had had blurred vision in both eyes for about one year, but had increased progressively in the right eye over the course of the past three to four months. There was no history of eye disease in the patient’s medical record. The UCVA was 20/600 and 20/120 in the right and left eyes respectively. The intraocular pressure was normal in both eyes. Immediate eye examination using biomicroscopy revealed a normal anterior segment with cataract NS grade 3+ in the right eye and 2+ in the left eye. Posterior segment evaluation was slightly obscured due to the cataract. The retina looked normal in both eyes, with partial posterior vitreous detachment in the right eye. The patient was scheduled for cataract surgery and sent to the Biometric Measurement Department for IOL power calculation using IOLMaster 700 (Carl Zeiss Meditec AG). The biometry results were inconspicuous (Figure 1: IOLMaster 700 report, and keratometry image with the foveal pit of the IOLMaster 700 fixation check scan showed an unusual pattern (see Figure 2). Based on this finding the patient was scheduled for a retinal OCT examination (see Figure 3).

History:

Dr. Sabong Srivannaboon is professor in Ophthalmology and member of the Faculty of Medicine of Mahidol University in Bangkok. He also works as a refractive surgery specialist at the TRSC International LASIK Center, Bangkok. He obtained his M.D. with honors from the Faculty of Medicine, Siriraj Hospital, Mahidol University, Bangkok in 1993. After his graduation, he completed his residency training in ophthalmology at the Siriraj Hospital, Mahidol University. Dr. Sabong finished his fellowships in Corneal & Refractive Surgery at EENT Hospital (under Prof. Marguerite B. McDonald), Tulane Medical School in New Orleans, Louisiana, USA and at the University of British Columbia, Vancouver, in Canada.

Diagnostics:

After retinal OCT examination with CIRRUS 4000 (Carl Zeiss Meditec Inc.), the diagnosis of cataract with a full-thickness macular hole in the right eye was made. A retinal specialist was consulted and the visual prognosis was discussed, resulting in advice being given against any premium multifocal IOL.

Surgery:

Routine phacoemulsification with a monofocal IOL was performed, which was then followed by 25 G pars plana vitrectomy, internal limiting membrane peeling and C3F8 gas injection.

Outcome:

Two months after surgery the patient’s post-operative examination revealed that the IOL was centered in the capsular bag. A fundus examination showed that the macular hole was closed and the retina was attached to the underlying structures. The BCVA was 20/100 with a refraction of +0.25-1.50x86°.

Discussion:

Occult macular pathology in cataract patients is one of the issues of most concern for ophthalmologists when considering premium IOLs. The presence of macular abnormalities is not uncommon in older adults. Therefore, the screening for macular pathology in this premium cataract surgery group may be essential. However, performing routine macular OCT scan in every single cataract patient is not practical in general ophthalmology clinics, especially in view of the reimbursement issue. If the macular screening test could be performed with a daily routine device used in the clinic such as an optical biometer, it would be beneficial for both cataract patients and doctors.

Currently, the IOLMaster 700 provides a fixation check scan together with biometric measurements. In this particular case, the fixation check scan of IOLMaster 700 was very useful to provide an indication of abnormal macular morphologies. It revealed critical information, which in turn led to an additional retina OCT examination with CIRRUS 4000. The macular hole was detected before the cataract surgery was performed, the proper IOL was chosen and the appropriate visual prognosis was discussed before the surgery. Had this information not been available during biometric measurements, the additional retinal OCT scan may not have been done and the macular hole may have remained undiscovered until after cataract surgery. A second macular surgery would have been necessary which would have placed a significant burden on patient compliance, time and cost of the appropriate treatment. Furthermore, a multifocal IOL design could have become the lens of choice, which obviously would have led to unseasonable post-operative visual satisfaction for the patient.

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