

CASE STUDY: IOLMaster 700 Indicating Abnormal Macular Morphology



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Prof. Findl is an anterior segment specialist. From 1994 to 2006, he had a tenure as associate at the Vienna University Hospital (AKH), Department of Ophthalmology. Thereafter, he was appointed Consultant Ophthalmic Surgeon at the renowned Moorfields Eye Hospital in London. In August 2009, Prof. Findl was appointed Director of the Department of Ophthalmology at the Vienna Hanusch Hospital. He founded the Vienna Institute of Research in Ocular Surgery (VIROS). Apart from his full time job at the Vienna Hanusch Hospital, he continued to work as a part time Consultant Ophthalmic Surgeon at Moorfields Eye Hospital from 2009 until 2014.

CASE HISTORY

A patient presented at our clinic with reading difficulties and complained about blurred vision since some weeks, even when wearing glasses. His decimal corrected distance visual acuity (CDVA) was 1.0 in the right eye (OD) and 0.2 in the left eye (OS). The slit lamp examination revealed a posterior subcapsular cataract in both eyes, incipient in the right eye (LOCS II grading: N0C0P1) and moderate in the left eye (LOCS II grading: N0C0P2). The fundus in the right eye was normal. The fundus view of the left eye was slightly impaired due to the subcapsular cataract but showed an attached retina and a hemorrhage of the superior arcade.

DIAGNOSIS

We performed an IOLMaster 700 measurement (Figure 1) to calculate the intraocular lens power for this patient. The axial length scan was successful but the macula scan clearly showed intraretinal fluid. This made us perform an additional SD-OCT examination.

Finally, the OCT (Figure 2) measurement revealed cystoid changes from a branch retinal vein occlusion in the superior temporal branch of the left eye.

TREATMENT & OUTCOME

Based on these new findings we did not immediately perform the cataract surgery as initially planned, but

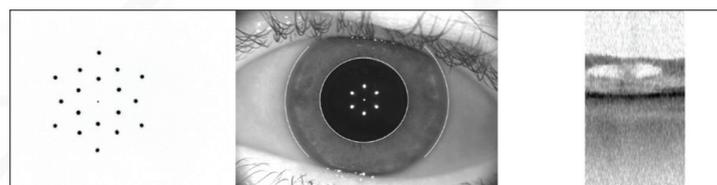


Figure 1. SWEPT Source Biometry of our patient with the IOLMaster 700 showing intraretinal fluid (Fixation Check image on the right)



Figure 2. SD-OCT image of the left eye of our patient

started an intravitreal treatment of the left eye with bevacizumab. After three injections, no more intraretinal fluid could be detected and the patient was scheduled for cataract surgery. The anti-VEGF therapy was continued in the left eye.

After uneventful cataract surgery, the patient's decimal CDVA improved to 1.0 in the right eye and 0.8 in the left eye.

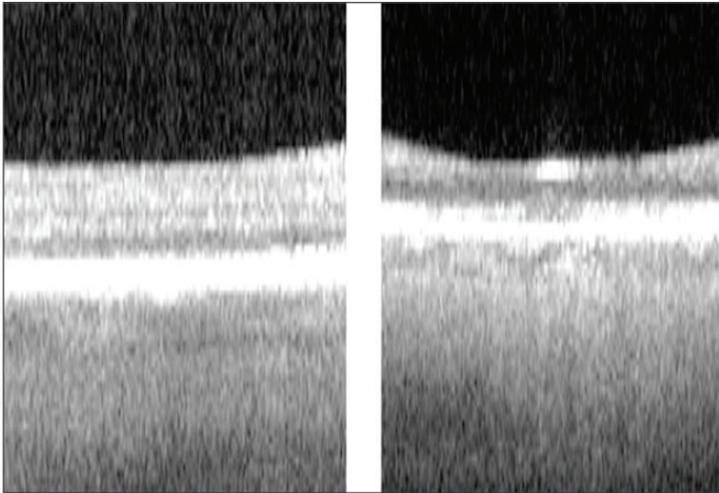


Figure 3. Fixation Check scan of the IOLMaster 700: poor fixation (on the left); correct fixation (on the right)

DISCUSSION

The prevalence of macular pathologies has been studied in detail.¹ Specifically, branch retinal vein occlusion, which was diagnosed in our patient, has a prevalence of 0.44%.² This number is too low to justify a regular macular screening of cataract patients before surgery but too high to be neglected. Furthermore, the reimbursement situation in ophthalmology clinics makes a routine SD-OCT scan of all cataract patients challenging.

However, if a device like a biometer, which is routinely used for diagnostics and measurements of cataract patients, would indicate a macular problem, this would be a considerable benefit for the workflow, patient safety and outcome of the surgery.

In our case, the measurement with the IOLMaster 700 alerted us to examine the patient further with regard to his macula.

Specifically, the Fixation Check scan function was helpful in our situation. The Fixation Check is a unique feature

of the IOLMaster 700 which delivers the OCT-image of the fovea (Figure 3). The surgeon can see the foveal pit to ensure that the patient has properly fixated. However, besides this improvement of confidence in our measurements, this feature helps to identify macular morphologies and structures and to notice abnormalities such as macular holes, epiretinal membranes, age-related macular degeneration and – as in our case – retinal vein occlusion.

Although this Fixation Check is a very helpful feature to indicate macular problems, the IOLMaster 700 clearly does not supersede the SD-OCT examination in cases with suspected macular pathology. Nonetheless, we consider this early detection feature in our high-volume clinic as invaluable.

CONCLUSION

The SWEPT Source OCT biometer IOLMaster 700 from ZEISS provides major advantages compared to earlier versions of this platform. This includes a higher accuracy of measurements and the possibility of detecting unusual eye geometries and poor fixation patterns. Besides allowing more accurate IOL power calculations, this device can indicate macular abnormalities via the Fixation Check function, which can be verified by subsequent SD-OCT examinations. Surgeons and patients will profit from this additional feature, which improves workflow and the probability to detect macular abnormalities in cataract patients.

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