Clinical Advantages of a Corneal Analyzer

The MARCO/Nidek OPD-Scan III provides both rapid diagnostic discernment for clinicians and educational tools for patients.

By Cynthia Matossian, MD

Patients' expectations about their cataract surgery results are very high, whether they select a monofocal or a premium implant. The one-type-fits-all approach to IOL selection is fortunately becoming a thing of the past. To personalize the lens for each eye of every patient (at times, bilateral eyes require different implant types), I need the appropriate tools to gather the necessary information in a manner that is easy and efficient for my technicians and our patients.

The MARCO/Nidek OPD-Scan III Refractive Power/Corneal Analyzer (distributed in the United States by MARCO) fulfills this clinical need by obtaining a vast amount of patient data in a matter of seconds. This single device provides autorefraction, pupillometry, keratometry, corneal topography, and wavefront aberrometry within 10 seconds of measuring the eye. The speed and accuracy by which the data are captured, displayed in easy-to-interpret color maps, helps me to not only evaluate patients' ocular conditions, but also the confidence to decide on the best course of action so that they achieve an optimal visual outcome.

EVALUATING OCULAR PATHOLOGY

The root mean square (RMS) value is a measure of the eye's overall higher-order aberrations. It applies a value that helps the ophthalmologist evaluate how "clean" the image is entering and leaving the eye (Figure 1A and B). The RMS value increases with pre-existing ocular pathology such as corneal scarring or macular disease. An RMS value greater than 0.42 µm indicates that the patient's postoperative vision may not be 20/20, despite flawless surgery. This information is very helpful for practitioners to properly set the patient's expectations for his or her surgical outcome.

RAPID DIAGNOSTIC DISCERNMENT IS KEY IN BUSY PRACTICES

In busy ophthalmic practices, efficiency is highly valued. Ophthalmic technicians need to be able to confidently complete a patient's diagnostic test in a short

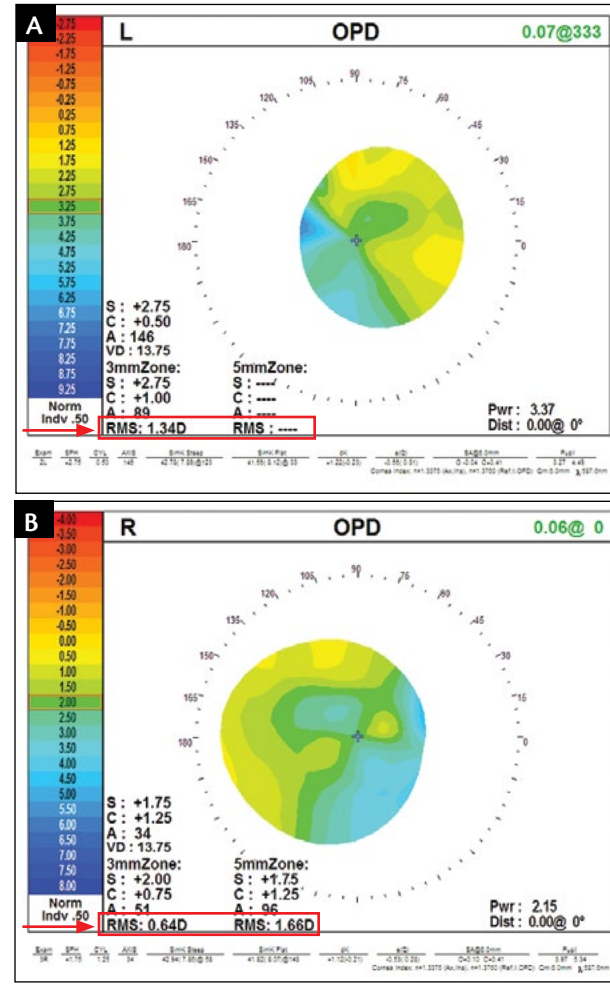

Figure 1. An OPD-Scan III map of a patient with an epiretinal membrane OS greater than that of OD preoperatively. The top (A) has an RMS value of 1.34 µm, which is very abnormal. On the bottom (B), the RMS is less at 0.64 µm, but still rather abnormal. An RMS value worse than 0.4 µm is considered abnormal, where a 20/20 outcome is not typically achievable. By looking at the RMS value, the surgeon can set realistic expectations of postoperative visual outcomes with the patient.

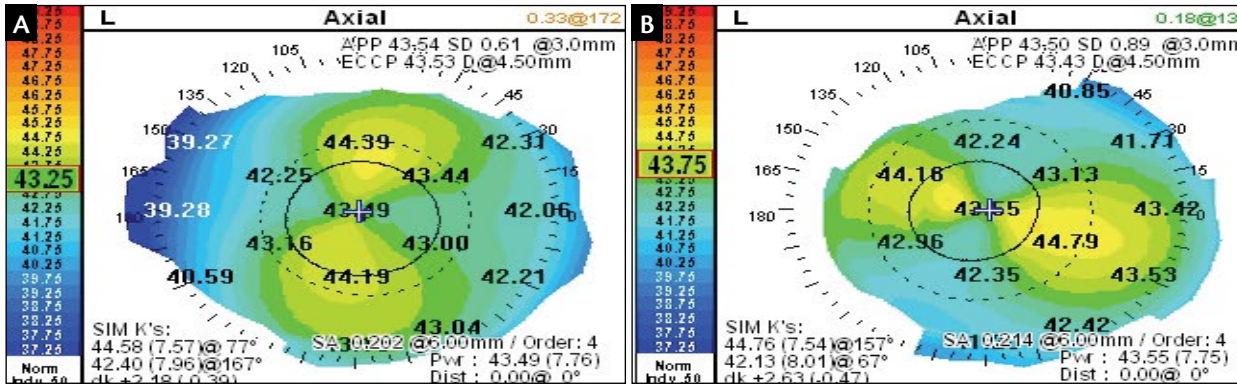

Figure 2. Axial maps on the OPD-Scan III show symmetrical bowtie patterns of astigmatism in two left eyes. Images like these can help patients understand the need for toric IOLs.

period of time; the patient wants the test taking to be as simple and quick as possible; and the surgeon does not want to get behind schedule by complicated steps. The speed and accuracy by which the OPD-Scan III information is captured is truly impressive. A non-senior ophthalmic assistant can complete the OPD-Scan III test within 10 to 15 seconds per eye. The patient is simply required to stare at the light without blinking. There is no pain or discomfort involved, and the results are instantaneous. In our practice, my staff and I incorporate this step into the routine preoperative work-up for every patient. The OPD-scans are networked into our EMR and saved as digital images.

MAPS AS EDUCATIONAL TOOLS FOR PATIENTS

The axial maps created by the OPD-Scan III can be used as educational tools for patients and their families. By showing the patient a symmetric bowtie pattern, the patient is able to "see" his or her astigmatism. This may help the patient to better understand the importance of astigmatism correction with either a corneal incisional approach or a lens-based toric IOL option (Figure 2A and B).

Likewise, an irregular placido disc image can immediately show patients their dysfunctional tear health. Depending on the severity of the ocular surface disease, it may preclude the patient from achieving success with a multifocal IOL (Figure 3). With this information, the clinician can inform the patient about strategies for improving the health of the tear film, from punctal plugs to artificial tears and even oral supplements of omega-3 fatty acids.

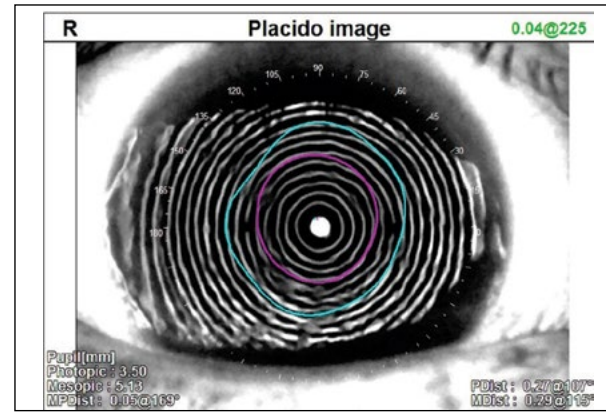

Figure 3. An irregular placido disc image from the OPD-Scan III shows warped mires.

CONCLUSIONS

The OPD-Scan III has multiple, colorful, easy-to-understand maps that can enhance the patient's overall experience during what can sometimes be an overwhelming preoperative office visit. I believe that the better informed the patient is, the more he or she becomes empowered to make decisions for implants or procedures that require less dependence on spectacles. ■

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