

# A Unique Approach to Selecting Patients for Refractive Surgery

A diagnostic device that measures light scatter allows eye care specialists to identify the origin of patients' visual problems.

BY RICHARD N. BAKER, OD

**A**t our practice, we look for new ideas, techniques, and devices to improve our refractive surgery patients' results and satisfaction, because visual acuity does not always correlate with visual quality. Satisfying patients entails assessing the quality of the image that they see. In my experience, the HD Analyzer (Visiometrics SL; Figure 1) helps with that evaluation.

## AN OBJECTIVE MEASUREMENT

Formerly called the Optical Quality Analysis System, the HD Analyzer is based on the double-pass technique and provides an objective measurement of the optical quality of the eye, including all higher-order aberrations and scattered light.<sup>1,2</sup> A point light source is imaged on the retina, and the device analyzes the size and shape of the light spot, providing data that quantify quality and optical scatter, measured via the objective scatter index (OSI). When scatter is present, the quality of the retinal image is degraded.<sup>3</sup> The higher the OSI, the worse the patient's quality of vision.

Obtaining images with the HD Analyzer is relatively easy, and the data can be displayed in many forms. Most traditional measurements of visual quality are subjective. The HD Analyzer, in comparison, objectively measures the quality of the retinal image and provides eye care specialists with an understanding of what the patient sees. This analysis quickly identifies whether the visual problem is



Figure 1. The HD Analyzer.

optical or pathological in origin and allows practitioners to know the limits of the patient's current vision.<sup>4</sup>

## DIAGNOSTIC VALUE

New patients who come to Slade & Baker Vision Center for an evaluation for refractive surgery undergo diagnostic testing with the HD Analyzer. Patients who habitually wear contact lenses or glasses are tested while wearing them. Those who meet the traditional requirements for refractive surgery and who have an OSI of less than 2 are considered good candidates "objectively." An

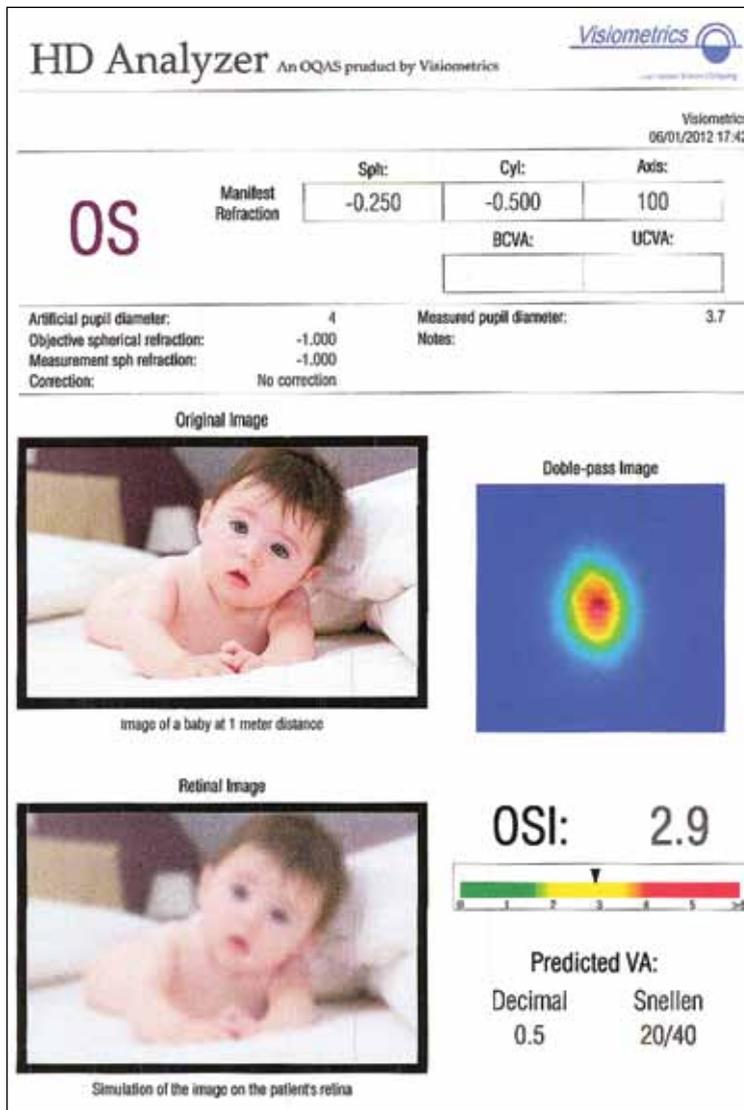


Figure 2. A printout from the HD Analyzer for a patient who underwent LASIK 6 years ago and is being considered for a possible retreatment. The patient refracts to 20/20 in the examination lane but has significant light scatter from the crystalline lens.

OSI higher than 2 indicates significant optical scatter.

To identify the origin of the optical scatter, I compare the patient's refraction to his or her habitual correction to ensure that the data generated by the HD Analyzer are obtained through the best correction available. I do not recommend laser vision correction if the origin of the scatter is from the crystalline lens. If poor tear quality or volume is the origin, I treat the problem accordingly and reassess the OSI.

Patients who are good candidates objectively still go through the consultation process. Knowing what level of vision patients are starting from helps me to set appro-

appropriate expectations. If their expectations are reasonable, we proceed with treatment.

To date, the most valuable use of the HD Analyzer at Slade & Baker Vision Center has been for patients who achieved good results with refractive surgery but who have since experienced a decline in their vision and seek further treatment. They may have sharp BCVA in our examination lane, where the lighting is controlled and there are contrast acuity charts, but show a significant OSI. If the tear film and volume are satisfactory, and the optical scatter is from the crystalline lens, I recommend against further laser treatment and suggest considering cataract extraction if appropriate (Figure 2).

### IMPROVED PATIENT SELECTION

My patients' acceptance of the HD Analyzer has been excellent; they enjoy seeing their HD score as well as the simulation of their retinal image. In my experience, the HD Analyzer has improved the selection of patients for refractive surgery and the consultation process. Knowing the optical limits of patients' vision is important in making the appropriate choice for their needs. Performing refractive surgery on individuals with significant light scatter (OSI) in hopes of correcting their visual problems will often lead to disappointment. My early experience with the HD Analyzer has been positive and has given me more confidence in selecting patients who would benefit from an initial or repeat laser treatment. Going forward, I will continue to collect data on all types of patients with this device. As I gain more experience, I expect to have more practical uses for the device. ■

*Richard N. Baker, OD, is in private practice at Slade & Baker Vision Center in Houston. He acknowledged no financial interest in the product or company mentioned herein. Dr. Baker may be reached at (713) 626-5544; rnb@visiontexas.com.*



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