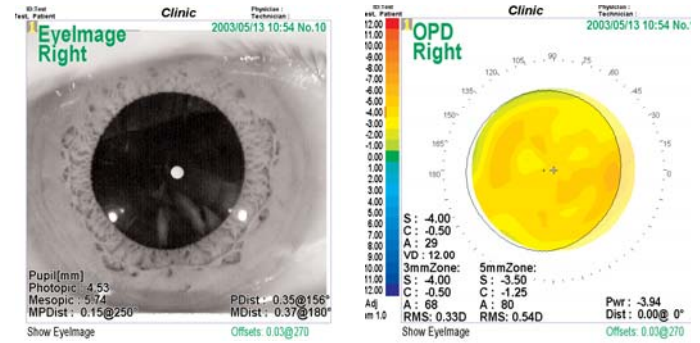


Using Wavefront Technology To Identify Effects of Cataracts

A study published in the August issue of the Journal of Cataract & Refractive Surgery reports that wavefront technology offers a widely accepted means for corroborating cataract patients' vision complaints, which may lead to earlier treatment with attendant enhanced patient safety and less loss of quality of life. The study, "Higher-order aberrations of lenticular opacities" found that different types of cataracts produced identifiable and repeatable results using wavefront diagnostic equipment. These results could explain the significant visual symptoms in patients with early cataracts that the most commonly used vision test does not demonstrate. The study was conducted by researchers at the Departments of Ophthalmology, the University of Auckland and the Auckland Public Hospital, New Zealand.



The effects of a cataract are shown here: The image at left shows the cataract and the OPD Map (shown in dioptres) at right shows the effect on the optical system of this opacity.

Case Report



OPD-Scan: A Keratoconus Patient

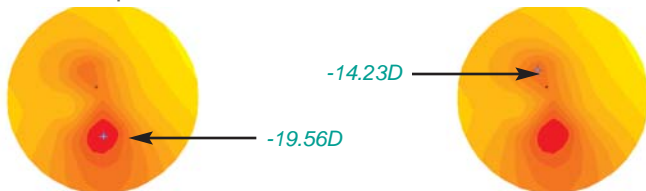
Below is an example of the OPD-Scan's Diagnostic Wavefront application. The printout shows six maps that are organized in the following manner: Corneal Information in the top row; Refractive information in the middle row; and Uncorrectable Aberrations (Higher Order Wavefront) in the bottom row.

Corneal Information

The two corneal topography maps show a steepening nasally and inferiorly. The Axial map indicates a very steep (53.91D) cornea with a large amount of astigmatism (6.44D). The Axial map also indicates that the effect of this steepening extends for near the apex of the cornea to an extreme inferior position.

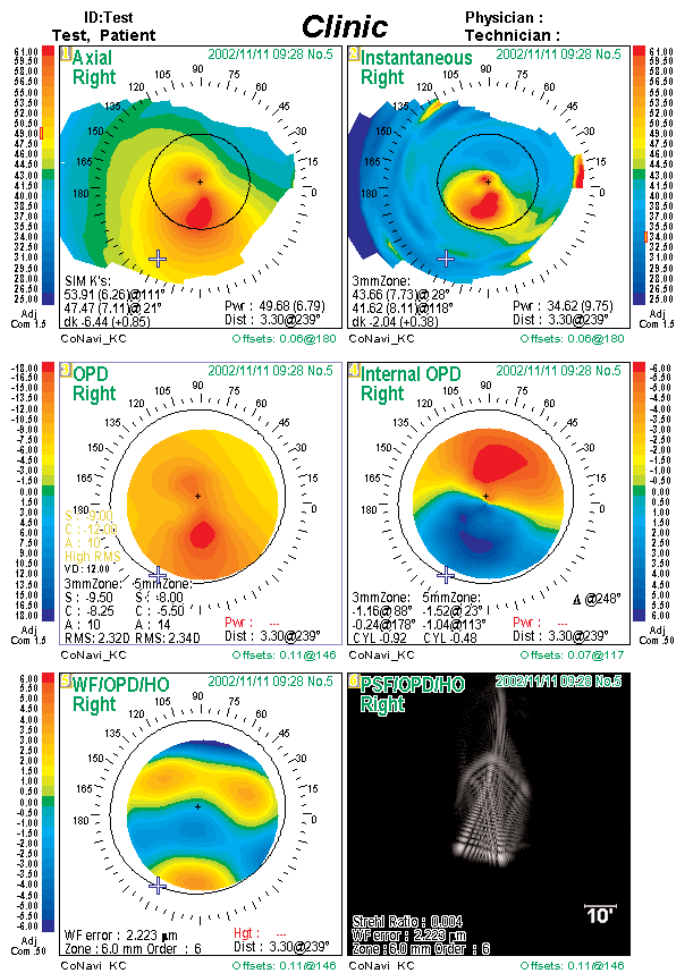
Refractive Information

The OPD Map shows what one would expect; that the overall refractive picture based on the topography showing a highly myopic eye with a large amount of astigmatism and a steep change (5D) in refractive power from the superior to inferior zones in the central 3 mm of the pupil. This is also reflected in the RMS values over 2. The Internal OPD Map shows the effect of the thinning of the cornea - as the back surface of the cornea contributes to this map.



Uncorrectable Aberrations

Substantial higher order aberrations can not be addressed with sphere and cylinder corrections (2.223µm). The aberration are composed of trefoil and coma. These contributions can be seen in the PSF map where there is considerable scatter of the light in what seems to be a combination of the comet and three-spoke patterns.



[Diagnostic]