

Adding Value to Your Practice

with the



How Can the iTrace Help You When Selecting Aspheric IOLs?

This tutorial in our series on Adding Value to your Practice looks at the selection of Aspheric IOLs, which have become a hot topic of late. It is important to understand the asphericity of the pre-surgical eye to qualify the candidate and select the proper aspheric IOL.

The normal cornea possesses some degree of positive spherical aberration. Most intraocular lenses today also possess some degree of positive spherical aberration. Therefore, a person with healthy retinal function will notice some decrease in visual acuity as well as contrast sensitivity when a standard IOL is implanted. This is becoming increasingly significant as surgeons begin to see more patients who have undergone corneal altering refractive surgery. Most myopic refractive surgeries result in an oblate cornea with positive Q value. Such a patient with this high amount of asphericity in the cornea would likely be left with sub-optimal results post-cataract surgery from a standard IOL. Therefore, an aspheric IOL that offsets the corneal spherical aberration should be selected to improve post-op vision.

Studies are suggesting that surgeons arm themselves not only with the Q value, a measurement of corneal shape from corneal topography, but also by measuring the amount of pre-op **corneal spherical aberration at 6mm**. This value helps to determine the best lens choice. Corneal spherical aberration measurement is only available through topographic wavefront aberration analysis. Moreover, the aberrometer used must be able to separate corneal and lenticular aberrations. **The iTrace Combo system combines whole eye aberration analysis with corneal aberration analysis and gives surgeons the corneal spherical aberration measurement to use when selecting the proper aspheric IOL.**

More detailed information regarding how to use the corneal spherical aberration value to select the proper aspheric IOL can be found in studies such as the study published in the January, 2009 issue of *Journal of Refractive Surgery* by Drs. Packer, Fine and Hoffman, titled "Aspheric Intraocular Lens Selection Based on Corneal Wavefront." For each patient in the study, the authors measured corneal spherical aberration Z4,0 at the 6mm optical zone, and chose one of three aspheric IOLs so that the arithmetic sum of the corneal spherical aberration and pseudophakic spherical aberration came closest to zero.

The authors concluded that "Customized selection of aspheric IOLs based on corneal wavefront is feasible and produces favorable results compared with studies of unselected patient populations implanted with aspheric IOLs."

5-in-1 system: auto-refractor, ray tracing aberrometer, corneal topographer, auto-keratometer, and pupillometer.

Measures accommodative volume and pseudophakic eyes - a must for anyone utilizing today's premium IOL technology

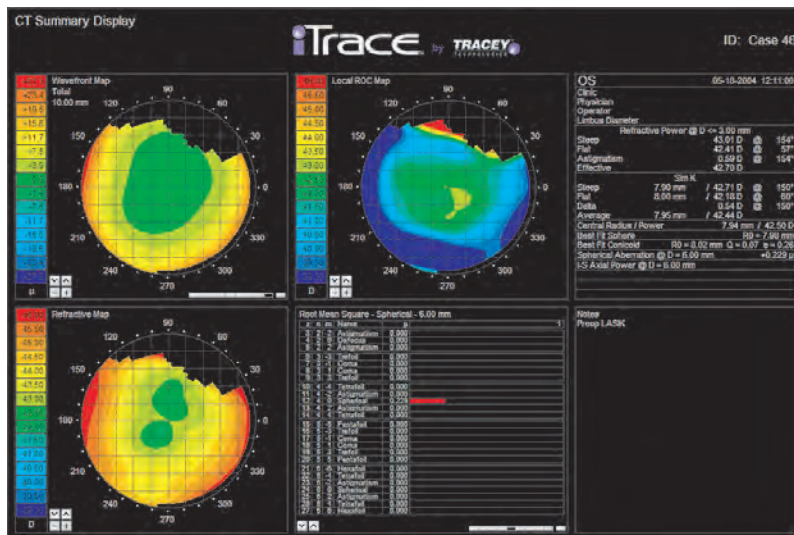
Improves treatment outcomes by isolating the origin of aberrations: cornea or lens and providing information for IOL selection

Helps in diagnosing night-vision problems and other complaints from the 20% of patients who consume 80% of your time

Perfect complement to other ophthalmic equipment like Scheimpflug cameras or OCT imaging systems

Improves office efficiency by streamlining exam processes and procedure selection

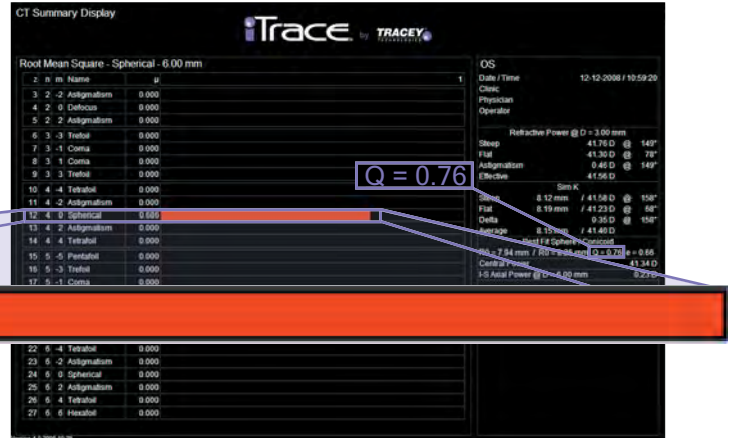
Differentiate the practice with the ability to understand and meet the most demanding visual needs



The iTrace Corneal Topography Summary Custom Display showing corneal wavefront, local radius of curvature, corneal refractive map and the RMS bar graph displaying the corneal spherical aberration value at 6mm.

CASE STUDY #1

The patient had a previous myopic LASIK and presented with interest in cataract surgery. The iTrace revealed



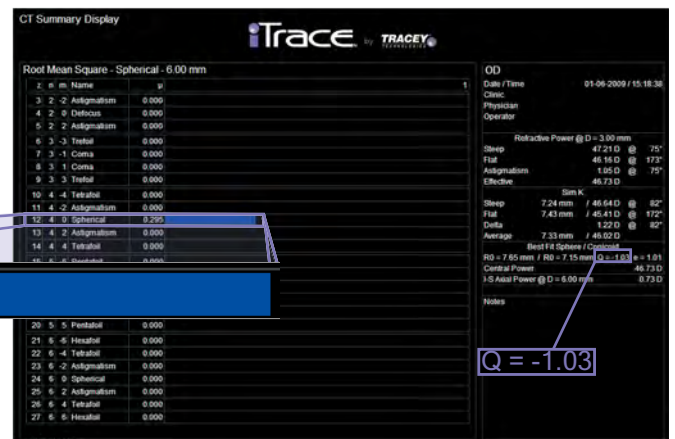
The iTrace RMS bar graph displays positive aberrations in red.

High (+) Spherical Aberrations. Because of the Q value, the IOL of choice for this surgeon is generally the ALCON ACRYSOFF® IQ offering -0.17 of negative lenticular aberration correction. The AMO TECNIS® offers -0.27 which is currently the maximum (-) lenticular aberration correction. Therefore, because of the patients high (+) corneal S.A. at 6mm, the surgeon determined that the Tecnis will be the planned IOL for this patient's upcoming cataract surgery to offset the (+) spherical aberration. as much as currently possible.

CASE STUDY #2

This patient had a previous hyperopic LASIK procedure some years back. He presented for possible cataract surgery and expressed interest in IOL options.

The iTrace revealed



The iTrace RMS bar graph displays negative aberrations in blue.

High (-) Spherical Aberrations as a result of the hyperopic LASIK and its resulting highly prolate cornea ($Q = -1.03$) which is a markedly negative aspheric corneal shape. If the surgeon selected to use his IOL of choice, the ACRYSOFF® IQ, it would actually induce more (-) spherical aberration. The surgeon instead opted to use a traditional spherical IOL which offers a (+) spherical aberration to offset the (-) spherical aberration of the cornea.