Custom LASIK & Wavefront Analysis

Advanced LASIK Technology
For Nearsightedness, Farsightedness and Astigmatism

Custom LASIK
New Advances in state of the art LASIK
...that everyone’s been waiting for...

By combining three advanced technologies, ophthalmic surgeons have available a new refractive laser system.
1. Small spot or scanning beam lasers
2. High Speed Eye tracking
3. Wavefront analysis

Doctors are now able to perform highly accurate and smooth sculpting of the cornea for more accurate, precise and predictable custom vision correction.

In some patients, vision can be corrected to better than 20/20.

Our visual system has the potential of seeing 20/10 or better. Most people however, can not see better than 20/20 due to subtle vision imperfections. Custom LASIK has the potential to reduce the effects of some of these subtle imperfections and to correct vision to better than 20/20. It also has an even lower potential than standard LASIK for complications such as night vision glare.

New Technology

Early refractive lasers used a single, broad laser beam and vision improvement resulted from a general correction and reshaping of the cornea to treat myopia, hyperopia and astigmatism (lower order aberrations). These lasers were only concerned with correcting refractive problems caused by a generally misshaped corneal surface in a similar manner as eye glasses or contact lenses.

The New Custom Lasers

The new custom lasers can take into consideration higher order aberrations, (very subtle imperfections) to further improve vision.
A small spot or scanning beam excimer laser has the ability to correct one area of the cornea slightly different than another area of the cornea. In effect it can provide a vision correction pattern that is custom designed for the individual to reduce the effects of these higher order aberrations.

Wavefront Analysis

Wavefront analysis essentially involves projecting a grid pattern into the eye and analyzing the integrity of its returned image for areas of displacement. If there is an aberration affecting refraction anywhere in the eyes visual system, it will show up in the returned image. If areas are found where the pattern is out of position, distorted, incomplete or fuzzy, specific correction can be targeted to that corresponding location on the surface of the cornea.

Tracking Eye Movement

Tiny, involuntary eye movements called sacadic eye movement, are impossible to predict or prevent and they can limit the ability of standard LASIK to improve vision.
Systems like Laser Radar Tracking, developed during NASA’s Strategic Defense Initiative, have been adapted to track this eye movement. Using special systems movement is detected in “real time” (thousands of measurements each second) and transmitted instantly, directing the laser to move in sync with the eye. The result is very accurate placement, smooth ablation (removal) of tissue and improved visual outcomes.