AMERICAN ACADEMY OF OPHTHALMOLOGY
The Eye M.D. Association

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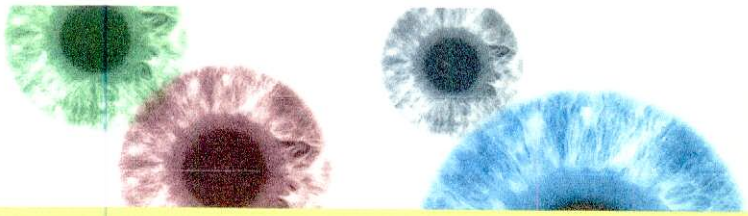


wavefront-guided LASIK

a closer look

LASIK FOR CORRECTING REFRACTIVE ERRORS

LASIK (laser in situ keratomileusis) is an outpatient surgical procedure that uses an excimer laser to reshape the eye's cornea — the clear window at the front of the eye — to correct refractive errors, or problems with the way the eye focuses light. Millions of people today have had refractive errors such as nearsightedness, farsightedness and astigmatism corrected with LASIK.

With LASIK, your ophthalmologist (Eye M.D.) creates a thin flap in the corneal tissue. After folding back the flap, your ophthalmologist uses a laser, preprogrammed with measurements specific to your eye, to sculpt the exposed corneal tissue. Once the cornea has been reshaped, the flap is put back into position, where it adheres naturally on its own.

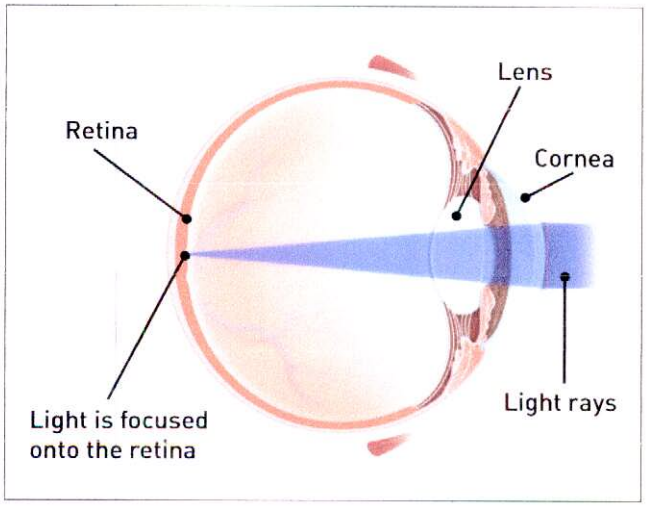
One of the keys to a successful LASIK procedure is the measurement your ophthalmologist takes to determine your refractive error. Now an enhanced version of LASIK called **wavefront-guided custom laser surgery**, or **wavefront-guided LASIK**, is available. Wavefront-guided LASIK uses a special device to precisely measure the eye's unique irregularities and variations. If wavefront-guided LASIK is an option for you, you may benefit from this customized approach to refractive surgery, which results in improved quality of vision compared to the traditional approach.

HOW WAVEFRONT-GUIDED LASIK WORKS

To understand how wavefront works, it's important to understand how your eye focuses light.

A perfect cornea allows light entering the eye to be focused evenly through the pupil and then fine-tuned by the eye's natural lens so that light rays fall precisely onto the retina.

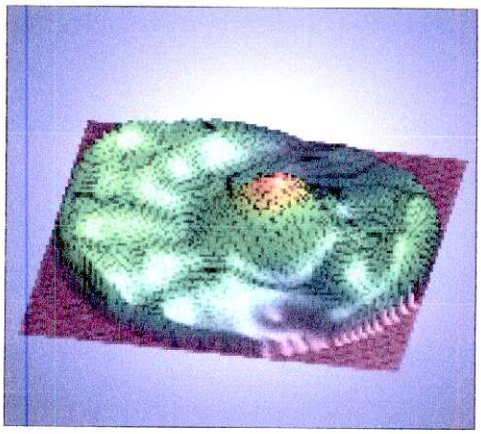
Small imperfections in the eye cause some light to travel through the eye at different angles. It is these imperfections that can cause the light to strike the retina in different places. As a result, you may experience symptoms like halos, glare, starbursts or "ghosting" of images.



A perfectly-shaped eye focuses light precisely on the retina.

Wavefront measuring devices create a "map" of your eye. The wavefront map is very detailed: instead of providing a general outline, like the map of a country, it is similar to a topographical map that records every subtle curve and dip. In fact, you might hear wavefront described as a "fingerprint of your eye," because it measures tiny, subtle variations in the eye that are as unique as your fingerprints.

Measuring your eye with wavefront technology before performing LASIK can help your ophthalmologist enhance the outcome of surgery, resulting in fewer visual side effects and improved quality of vision using the custom procedure, rather than a conventional approach.



A wavefront map of an eye with visual imperfections.

WHAT HAPPENS DURING THE WAVEFRONT MEASUREMENT?

Your ophthalmologist will map both of your eyes using a wavefront scanner, called an **analyzer** or **aberrometer**. This device produces a very precise, detailed map of light rays as they travel through your eye, highlighting imperfections in your vision.

With your chin on the chin rest of the aberrometer, you will be asked to stare past what is called a **target light**. To ensure correct measurement, be sure to stare past the target light, not directly at it. Your eye's focus should be as relaxed as possible.

A targeted beam of light will be sent through your eye and focused on the retina. As the wave of light rays is reflected back from the retina through the eye's vitreous, lens, pupil and cornea, a sensor will measure the irregularities in the wavefront pattern of light as it emerges from your eye.

A wavefront map of an eye with visual imperfections (aberrations) appears curved or distorted because some light rays reach the retina before others or strike different points on the retina. A wavefront diagram showing such distortions may look like anything from a potato chip to an egg crate. In contrast, the wavefront map of an eye with no visual errors would show a flat surface, because all of the light rays would travel evenly through the eye.

Using measurements, the wavefront computer will create an accurate, three-dimensional map of your eye's visual system, including specific imperfections in the cornea. This wavefront data will be used to program the excimer laser, allowing your ophthalmologist to customize the reshaping of your cornea.

WHAT ARE THE BENEFITS OF USING WAVEFRONT TECHNOLOGY?

Wavefront-guided LASIK not only corrects the eye's nearsightedness, farsightedness or astigmatism — much as glasses, contacts or conventional refractive surgery do — it also reduces the possibility that higher-order aberrations may cause glare, poor night vision, halos and blurry images after surgery. Higher-order aberrations are distortions in your vision that cannot be corrected with glasses and contacts and can only be measured with wavefront analysis.

One of the main differences between conventional LASIK and wavefront-guided LASIK is that with conventional LASIK, the laser tends to use the same power treatment over the center and sides (periphery) of the cornea, whereas wavefront technology modifies treatment over the peripheral cornea to further improve optical quality. For people with larger pupils, particularly under low-light conditions, such as at dusk or nighttime, quality of vision is generally improved.

It is important to understand that wavefront-guided LASIK may not be suitable for everyone. Even with wavefront-guided LASIK, vision after surgery may not be perfect due to individual differences in healing after laser surgery. The ideal LASIK patient is more than 21 years old, since refractive error is more likely to still be changing in people younger than this. Some people more than 21 years old are still experiencing change in refractive error, making them unsuitable for LASIK.

Your ophthalmologist can determine if wavefront-guided LASIK is an option for you. If you are a candidate for this advanced procedure, you'll join a growing number of people who are enjoying a better quality of corrected vision.

NOTES

COMPLIMENTS OF YOUR OPHTHALMOLOGIST:

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