

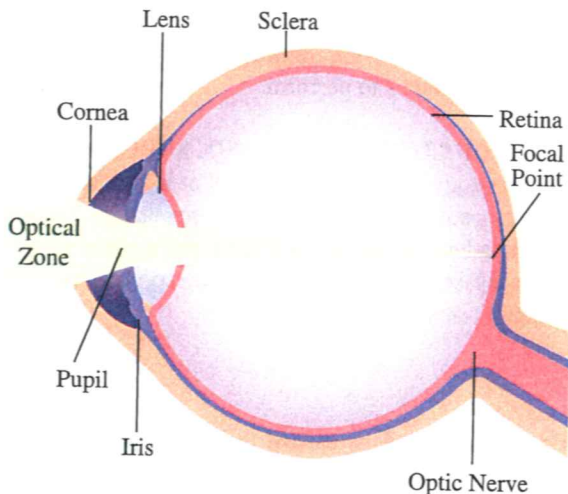
LASIK

Vision Correction... Just Got Better

Elizabeth Miller, M.D.

Perhaps you were 4 years old when you put on your first pair of glasses and discovered, to your delight, that trees actually have distinct branches! Now you're 40 years old and you realize, to your dismay, that the newspaper print is not really getting smaller, but rather, you simply need reading glasses to see it!

You turned to eyeglasses and contact lenses when life became blurry. When you visited your eye doctor, you probably heard about vision problems like nearsightedness, farsightedness, astigmatism and presbyopia, but all that really mattered was that you could see better when you left. So how do your eyes work, and what happens to your eyes when your vision becomes blurry?



HOW YOUR EYES WORK

Your eye works much like a camera. The light and images you see pass through the cornea and the lens at the front of your eye. They focus directly onto the retina, the nerve layer at the back of the eye, which then sends the image to the brain through the optic nerve.



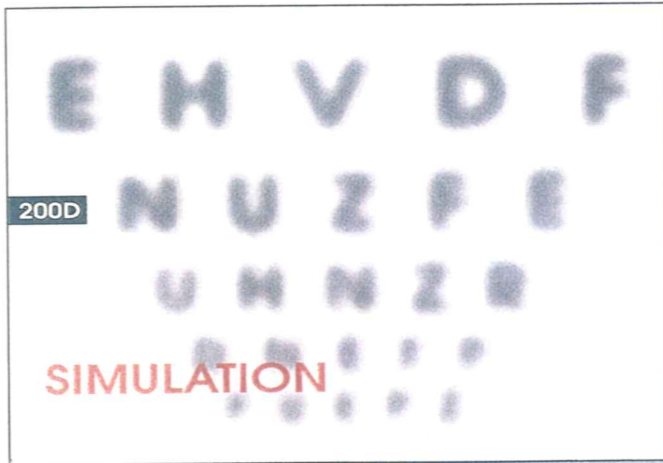
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Light rays must be bent, or refracted, by the cornea and the lens so they can focus on the retina. If you have a refractive error, the shape of your eye doesn't bend the light properly, giving you vision problems.

COMMON VISION PROBLEMS

Your doctor can identify many of the common vision problems, including:

- Nearsightedness – images focus in front of the retina because the eye is too long or the cornea too curved, so objects far away are blurry.
- Farsightedness – images focus behind the retina because the eye is too short or the cornea is too flat, so objects close to you are blurry.
- Astigmatism – images are distorted and are not uniform in all directions, so objects both near and far appear blurry.
- Presbyopia – disorder caused by the normal aging process that typically affects reading vision.



20/20 With Higher Order Aberrations

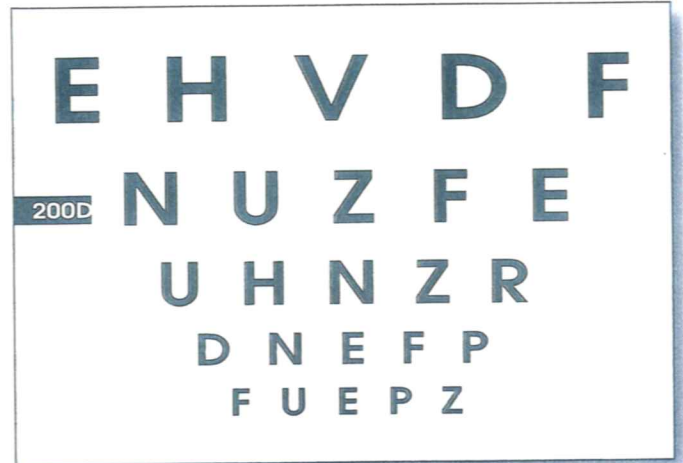
These problems have traditionally been corrected with eyeglasses and contact lens. Now, however, over six million people have had their vision successfully corrected with conventional laser vision correction procedures, such as PRK and LASIK. But, in spite of its overwhelming success in eliminating one's dependence on glasses and contact lenses, the risk for glare, halos and night vision problems has kept many people from having this life-changing procedure.

Today, the potential for these unwanted side effects has been significantly reduced with the advent of wavefront technology. Wavefront-guided treatments, customized to each patient's unique visual needs, make visual outcomes considerably better than conventional laser vision procedures.

QUALITY OF VISION

Since the mid-1800s, doctors have been measuring vision by recording how well a patient could read letters on a standard Snellen Eye chart. Doctors consider your vision "normal" if you can identify the letters on the 20/20 line from a distance of 20 feet. But, scoring 20/20 on your vision exam doesn't necessarily mean you have good Quality of vision, if the letters are not crisp and clear.

Until now, conventional laser vision correction, like glasses and contacts, could only correct the visual distortions caused by nearsightedness, farsightedness and astigmatism. However, there are other imperfections in your eye's optical system that may affect the quality or clarity of your vision at night or in low light. Doctors call these visual distortions "higher order aberrations," and they can cause glare, shadows, halos and other annoying visual effects. Unless these distortions are addressed along with nearsightedness, farsightedness and astigmatism, the quality of your vision after laser vision correction may not be ideal, even if you have measurable 20/20 vision. Now, thanks to advanced wavefront technology, it is possible to measure and address these higher order aberrations by customizing your laser procedure.



20/20 Without Higher Order Aberrations

HOW CUSTOMIZED LASIK SURGERY WORKS

First, flat waves of light are passed through your eye. As the light waves travel through your eye's optical system, all the distortions in your vision are measured. These irregularities are then displayed as a three-dimensional wavefront map. This information is then electronically transferred to the laser, enabling the surgeon to customize the procedure to address each patient's unique visual requirements.

Interestingly, space-age technology has found its way to earth to help improve your quality of vision. The technology, used to perform laser vision correction by surgeons around the world, was developed based on technology originally developed by NASA and inducted into the Space Technology Hall of Fame in 2004.

THE CUSTOMIZED LASIK PROCEDURE

LASIK surgery is typically performed in a specially equipped operating suite. On the day of your procedure your wavefront map is registered and aligned to the position of your eye. The eye tracker will track your eye movement at 6,000 times per second so your ability to hold your eye still is not important for a successful outcome. The entire procedure is painless and takes about 20 minutes to perform.

THE GOAL OF CUSTOMIZED LASIK SURGERY

In summary, all eyes have some level of higher order aberration so every patient has the potential to see better. The goal of customizing a laser procedure is to give you a better result than conventional laser vision correction by preserving and improving the quality of your vision.

For more information on LASIK surgery, Dr. Miller can be reached at the Georgia Eye Institute, 4720 Waters Avenue; Savannah, Georgia or call her at (912)350-4800.