



**Zapping the Flaws in Laser Eye Surgery:  
New Techniques Claims To Reduce Side Effects; On the Horizon: "Super-Vision"**

*BY ANTONIO REGALDO*

Eye doctors are getting set to market a new technology to the millions of near-and farsighted people who have thought about laser surgery but been scared off by stories of damaged eyes and procedures gone wrong.

The technique, known as wavefront guided laser eye surgery, not only reduces the most common side effects of standard laser procedures, including blurry night vision; it also offers patients higher chances of achieving 20/20 vision-or better. The Food and Drug Administration approved the first wavefront system in October, and with other companies close behind, the procedure is expected to become widely available by the middle of next year.

More than three million Americans have undergone laser vision correction, which uses a laser to reshape the cornea, since the procedure first became available in the U.S. in 1995. LASIK, shortcut for laser-assisted in situ keratomileosis, is the most popular version of the surgery because it takes 10 minutes for each eye, and basic recovery time is about 24 hours. It costs about \$1,600 per eye.

But LASIK also can create side effects, including vision problems like "halos" and "glare". The FDA doesn't track rates of complications, but Dave Harmon, president of industry trend tracker Marketscope LLC, estimates about 3% of LASIK patients are dissatisfied with their vision. Amid bad press and a worsening economy, laser centers have seen business drop off steeply in the past two years.

Since paying \$2,500 for traditional laser surgery in 1999 to correct his nearsightedness, Michael Bargiel has had trouble seeing clearly, especially at night. "When I look at a light source, it has streaks bursting out of it like a star," says the 30-year-old industrial designer, who also complains of double vision and headaches while at work. A second procedure to correct the problems only made his vision worse, he says.

The new wavefront technique, which is similar to a process used to fix problems with the Hubble Space Telescope, takes detailed measurements of how the eye processes light and then customizes the laser treatment to each eye, reducing the likelihood of side effects.

Consumers should expect a new blitz in the marketing campaign for LASIK. Laser companies are betting that the new wavefront systems will help tap a market of some 70 million nearsighted or farsighted people who wear glasses or contact lenses and could benefit from the surgery.

"Once we get patients past that hurdle of thinking that LASIK has major complications, we think that volume will grow," says Robert Grant, president of the medical division of laser maker Lumenis Ltd. in Santa Clara, Calif.

Bausch & Lomb Inc. expects to win approval early next year for a wavefront system it developed with the Center for Visual Sciences at the University of Rochester, N.Y. The main component of such systems is a device called an "aberrometer" that beams light through the eye and takes thousands of measurements as it bounces back out, detecting imperfections in the visual system. That information is then used to guide the laser when it reshapes the eye.

Doctors working with the company say the results are impressive, Stephen Slade, director of VisionTexas, a clinic in Houston, says about 92% of the eyes treated in a clinical trial ended up with 20/20 vision or better without glasses. That compares with about 86% with traditional LASIK. Only half of the patients saw an increase in so-called higher-order aberrations that can cause effects like halos. In traditional LASIK, by contrast, such aberrations almost always increase.

The technology is finding other uses. Dr. Slade says his clinic operates an outpost in Mexico that is now "fixing" patients who had LASIK but who are suffering from side effects. Another possibility is that athletes or pilots with normal eye-sight one day try to use wavefront to achieve better than normal "supervision". In the Bausch & Lomb study, about a third of the eyes treated actually ended up seeing 20/12.

Wavefront-guided LASIK, often called "custom LASIK", will likely cost more. Alcon inc., the first laser company to win FDA approval, says it will increase the per-eye price it charges doctors from \$100 to \$250, and clinics are likely to tack on additional fees, though intense competition between doctors has generally kept prices low. LASIK surgery isn't normally covered by insurance, though there can be exceptions, such as cases where the procedure is medically necessary, including correcting problems from an earlier LASIK surgery.

Some consumer advocates are wary of the hype accompanying the new wavefront systems, saying there is no independent source of information on possible complications or long-term effects. Patients interested in the procedure should seek treatment from a well-established clinic. Before choosing a doctor, people may want to call their local Better Business Bureau or state board of medical examiners to find out if any complaints have been logged against a particular doctor or clinic.

The ophthalmologists who have the most experience using wavefront-guided LASIK are in Canada and Europe, where the technique has been in use for a little more than a year. At the LASIK MD clinic in Niagara Falls, Ontario, nine out of 10 clients are U.S. citizens who cross the border for lower rates and the latest techniques. Clinic medical director Mark Cohen says he recommends wavefront for about one-third of his patients, primarily those who are extremely nearsighted and are most likely to have complications with standard LASIK.

Still, it may take a while to lure back people scared off by complications with traditional surgery. After two laser surgeries, Mr. Bargiel says he plans to wait until doctors sort out the pluses and minuses of the new technology before trying again to fix his eyes. Says Mr. Bargiel: "When they have tried it on enough people, and they are consistently getting good results, then I might do it"