

LASIK Eye Surgery

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What is LASIK? LASIK stands for **L**aser **A**ssisted **S**tromal **I**n-situ **K**eratomeileusis, and it is a form of refractive eye surgery for the correction of myopia, hyperopia, and astigmatism.

In 1950, Spanish ophthalmologist Jose Barraquer developed the first microkeratome, the surgical instrument used to make incisions on the cornea. He also developed the technique used to cut thin sections in the cornea and alter its shape. He called the procedure, Keratomileusis. Then, in 1968, University of California researcher, along with a team of scientists, developed a carbon dioxide laser. By 1973, this laser would be known as the Excimer Laser, or “the cornerstone of refractive eye surgery.”

In 1980, IBM researcher Rangaswamy Srinivasan discovered that the Excimer laser could etch living tissue both precisely and without damaging the surrounding area. He named this phenomenon, Ablative Photodecomposition. By 1989, the first US patent for LASIK was granted. It encompassed “the surgical procedure in which a flap is cut in the cornea and pulled back, exposing the corneal bed. The exposed surface is then ablated to the desired shape with an Excimer laser, after which the flap is replaced.” The FDA finally approved LASIK in 1992. It became very popular because of its immediate improvements to vision as well as involving much less pain and discomfort as with other corrective eye surgeries.

The LASIK procedure can be divided into three steps, Pre-Op, Operation, and Post-Op. For the Pre-Operative stage, patients who wear corrective contact lenses are asked to stop wearing them 1-3 weeks prior to the surgery. Before the surgery begins, the patient’s corneas are examined with a pachymeter to determine their thickness, and with a topographer to measure the surface contour. The topographer creates a topographic map using low-

powered lasers. This can detect astigmatisms and other corneal irregularities.

The LASIK procedure is actually quite quick and simple. It is broken down into three steps. First, the surgeon creates a flap of corneal tissue. Second, using the Excimer laser, the surgeon carefully remodels the cornea underneath the flap. Third, the surgeon repositions the flap of corneal tissue. In the post-operative stage of the procedure the patient is given a course of antibiotics and anti-inflammatory eye drops. They are also instructed to get as much sleep as possible to reduce the amount of stress put on their eyes. Finally, the patient is given protective goggles that prevent them from rubbing and damaging their eyes while they sleep.

The Excimer laser remodels the cornea by vaporizing tissue in a precisely controlled manner without damaging nearby corneal tissue. The layers that are vaporized are only tens of micrometers thick. This changes the focus of the lens, adjusting how light entering the patient’s eyes is refracted. Though there is a high rate of satisfaction with LASIK, there can be some complications with the procedure. Some examples of common side effects are; starbursts, ghosting, halos, double vision, etc.

The WaveLight Allegretto System is the most modern Excimer laser system in use today. It uses WaveFront technology that constantly adjusts to changes in the patient’s eyes, resulting in a much more precise surgery. The cost of the system itself ranges from \$90,000-\$250,000. The cost of the procedure can vary depending on how good/poor the patient’s vision is. Typical surgical costs range from \$1700-\$2500 per eye.

Works Cited:

- 1) www.aboutus.org/wavelight_allegretto_wave
- 2) www.wikipedia.org