WaveFront Guided Lasik Eye Surgery

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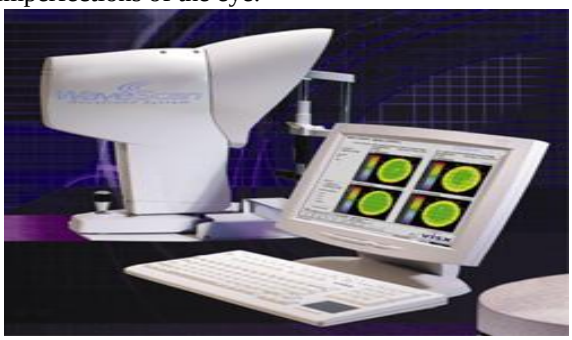
***Abstract*—Today, WaveFront Guided Lasik Eye surgery is one of the most advanced forms of eye surgery. This invasive and refractive surgery will reshape the cornea using a computer controlled WaveFront Guided excimer laser to guide and complete the surgery. With its high success rate, Lasik has proved to be a beneficial and a well-worth procedure.**

I. Introduction

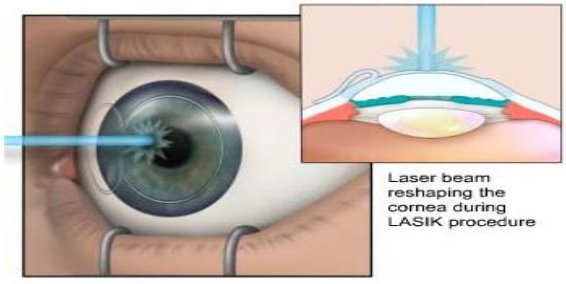
Today, approximately 73 percent of Americans require some form of corrective lens to fix their vision. Approved by the FDA, Wavefront Guided LASIK surgery is a revolutionary eye surgery that is designed to correct vision irregularities. Different from regular LASIK, which stands for Laser Assisted In-Situ Keratomileusis, Wavefront guided LASIK, is more individualized and customized for the patient because it utlizes WaveFront technology to map out the patients eye. This surgery can be used to correct myopia, astigmatism, and hyperopia. In all three cases, the eyeball does not have a perfect spherical shape causes light to be incorrectly refracted by the eye. With the advanced and ultra-precise technology of WaveFront Guided LASIK, doctors are able to correct these vision problems in patients.

II. Surgery

Before the surgery, doctors will create a 3D map of the patient's eye. Using a WaveScan Machine, as shown in the figure below, doctors will create a 3D, topographical map of the eye. This map measures all the optical characteristics and imperfections of the eye.



At the beginning of the surgery, the doctor will give the patient numbing drops allowing the patient to feel no pain at all. After, the doctor will place a holder to keep the eye open during the surgery. First, a thin, circular flap is made in front of the cornea. This can be done either using a femotsecond laser or using a microkeratome. The femotsecond laser is a bladeless method where ultra-pulses of laser light is shot into the eye and creates the flap. In contrast, the microkeratome device creates the flap physically using a small blade to do so. When the corneal flap is successfully made, doctors will use a WaveFront guided excimer laser to vaporize corneal tissue in order to reshape the cornea.



This part of the surgery is completely controlled by the computer, where the laser uses the information gathered from the Wavescan map to guide it. Also, because of advanced eye tracking technology, the excimer laser will stay aligned with the eye, even if the patient moves their eye. The laser will spend approximately 20-50 seconds per eye. Lastly the doctor will place the flap back into place and require the patient to wear protective glasses.

III. Results

After the surgery, its takes about two to three months for vision to reach its best. Ninety-five percent of people report having 20/20 vision after completing this revolutionary surgery. The surgery has twenty-five percent better results in comparison to regular LASIK.

IV. Discussion

Wavefront LASIK is a quick, painless and simple surgery that corrects vision. The surgery lasts about thirty minutes per each eye and patients can leave the hospital the same day. With this surgery, patients no longer will need their corrective eye wear for the rest of their lives in most cases. Although WaveFront LASIK has a very high success rate, there have been some complaints with this surgery. Some of the temporary disadvantages include dry eye, blurred vision, and irritation. More serious and less common include seeing "halos", thinning of the cornea, and possible vision regression later in life. Despite this fact, the number of LASIK surgeries continues to grow each year and newer technology will also continue to improve the surgery results.

References

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