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Laser Surgery of the Eye

The word "laser" is an acronym for Light Amplification by Stimulated Emission of Radiation. A laser is a concentrated beam of light, created when an electrical current passes through a special material. Used in eye surgery since the 1970's, the laser is popular for its unparalleled degree of precision and predictability. Lasers are being used for an increasing variety of eye diseases.

A laser's specific wavelength allows energy to be absorbed in selected tissues and not damage surrounding tissues. The laser beam is so precise it can cut notches in a strand of human hair without breaking it.

Thermal lasers convert light to heat. This type of laser seals blood vessels and destroys abnormal tissues. Photoablative lasers cut or sculpt tissue and are used to remove tissue, changing the shape and surface of the eye.

Lasers can preserve vision, sometimes for many years, for diabetics with diabetic retinopathy. In treating diabetic retinopathy, the laser light seals leaking blood vessels in the retina, the light-sensitive layer of cells lining the back of the eye. Lasers also treat more unusual retinal disorders, including blood vessel problems and tumors.

Also used to treat glaucoma, lasers can create a new passage through the iris to relieve eye pressure or open the eye's blocked drainage canals.

Although lasers do not remove cataracts, they may one day. Right now, they open the posterior capsule, which often becomes cloudy after cataract surgery, restoring vision in a matter of hours.

More recently, the excimer laser has received a great deal of attention as a tool for permanently correcting refractive errors such as nearsightedness, farsightedness and astigmatism. Refractive laser surgery can decrease or eliminate the need for glasses and contact lenses by reshaping the cornea.