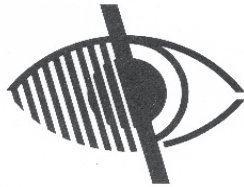


The Partially Sighted Society



Information Sheet

Laser Surgery and Treatments

One of the more commonly asked questions is 'Will laser eye surgery help?'. In this article, we will attempt to explain how lasers are being used in the treatment of some eye conditions and clear up some common misconceptions.

Laser stands for Light amplification by stimulated emission of radiation. A Laser basically produces light of a single wavelength only, with all waves being exactly in step. Many areas of medicine currently use this technology, but one of the areas many of us are aware of is in the treatment of refractive errors (short-sighted, long sighted & astigmatism). The primary function of the eye is to focus light. Rays must be refracted or bent to meet at a single point. If light focuses in front or behind the retina you have a blurred image. A refractive error means that the shape of the eye structure does not properly bend light for focusing. Glasses or contact lenses are commonly used to correct this problem, but increasingly, laser eye surgery is being used to alter the shape of the eye. It must be stressed that this particular use of a laser does not treat or cure those with eye conditions such as macular de-generation. It would also not be carried out on individuals with ongoing medical conditions, glaucoma, diabetes, un-controlled vascular disease or auto immune conditions.

Some Ophthalmologists feel this treatment allows for an unparalleled degree of precision and predictability.

There are two types of procedures carried out, Photorefractive Keratectomy (PRK) and more recently Laserinsitu Kera-tomileusis (Lasik).

PRK is an outpatient procedure. It works by reshaping the cornea, removing microscopic amounts of tissue from the out-er surface. The shape of the cornea is entered into a computer, which calculates the degree of change needed. It normally takes 1-3 days before the patient may return to a normal routine. Temporary side effects can include haze/glare and halos around lights.

Lasik is a more complex procedure and can be used for the more severe refractive errors. The ophthalmic surgeon uses a knife called a microkeratome to cut a flap of corneal tissue, and removes the targeted tissue be-neath it with the laser and rep-laces the flap. This procedure is said to have a faster recovery time.

As with any type of surgery there can be associated risks with both procedures. These include under/over correction, infection, a decrease in vision and excessive corneal haze/halos.

The use of laser for patients with macular degeneration is, unfortunately, still very limited. ARMD is the chief cause of irre-versible loss of central vision in the developed countries, affect-ing people of 50 ears or older. There are two types of ARMD: the dry form presents slowly and the wet form presents with sudden on-set.

Argon laser photocoagulation remains as the only standard treat-ment available for wet ARMD. Only 10-15% of patients are suit-able for treatment and it cannot restore vision already lost. The aims are to seal abnormally leaking vessels of the retina and dis-courage growth.

To find out whether a patient is a suitable candidate, fluorescein angiography is carried out. A yellow dye is injected into the arm, which travels through the body, and into the retina. A series of photographs are taken to show the changes taking place at the back of the eye.

If the criteria is met for treatment, the procedure is non-invasive and without pain. It takes about 15-20 minutes. The ophthal-mologist uses the fluorescein pictures to determine where to aim the high-energy laser to seal leaking vessels. Increased blurring gradually reduces over weeks and the patient may require fol-low up visits. In addition to sealing vessels, the laser also burns

out the photoreceptors lying above them. Surgery is a difficult choice.

Photodynamic therapy of low-energy laser photocoagulation was introduced recently and offers some new hope for a wider group of patients suffering from this disease. Again, this treatment only aims to stabilize vision. A dye that reacts to light is injected into the patient's arm and travels to the retina. It pools in those damaged new blood vessels of the retina. A different type of laser is used with a lower power (a cold laser). When the dye is exposed to the laser it seals off leaking vessels. It does not destroy the adjacent cells like conventional treatment. Again, certain criteria need to be met before the treatment would be considered and it is not yet widely available.

A trial is currently under way in America for the use of laser treatment in dry ARMD. Hoping to improve the long-term visual outcome of those with this condition.

Diabetic retinopathy is another condition where laser treatment is used. This condition causes changes to the blood vessels of the retina. New, fragile vessels may leak fluid or blood creating scar tissue. This blurs and distorts vision and left untreated may lead to blindness. The laser is used to seal leaking vessels, helping to reduce the chance of a retinal detachment.

Again, there are side effects to this treatment, including increased blurriness in the vision for several weeks after treatment as well as small areas called scotomas where the photoreceptors of the retina are destroyed.

Lasers are sometimes used to treat glaucoma. A small opening can be made in the eye tissue to allow fluid to drain out. The type of laser surgery used depends on the type of glaucoma and the health of the eye. Generally, drug therapy remains the preferred method of treatment.

There is a common myth that lasers can be used to remove cataracts. This is not yet the case. After a cataract is removed by surgery, there often remains an outer membrane lens capsule. This membrane can slowly thicken and cloud vision. Laser surgery can open this membrane helping to clear vision without an

operation. This is called a capsulotomy.

Hopefully, this has covered the main areas of laser use in eye treatment at this time. If you have more specific questions as to your suitability for laser treatment it would be advisable to discuss this with your Ophthalmologist

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