



## LASERS IN EYE CARE

### FACT SHEET

(The term 'glaucoma' refers to a characteristic pattern of damage to the optic nerve)

A laser is a device that generates an intense beam of highly focused energy by stimulated emissions of photons (light energy). The word laser stands for light amplification by stimulated emission of radiation.

There are several different types of laser used to treat eye conditions.

#### **GLAUCOMA LASER TREATMENT**

##### **Laser iridotomy:**

A small opening in the iris (the coloured part of the eye), usually under the upper eyelid, is made to relieve increased eye pressure due to a type of glaucoma called angle closure glaucoma. A YAG laser is usually used. In angle closure glaucoma, a blockage to outflow of fluid from within the eye results in an extreme elevation of the pressure. This can quickly lead to severe, irreversible vision loss. The laser iridotomy creates a new route for the fluid to flow from behind the iris to the outflow pathway of the eye. The procedure is performed in the doctor's office with local anaesthetic drops.

Laser iridotomy is also performed as a preventive treatment for people who are at high risk of angle closure. These are generally individuals with narrow angles, where the space between the iris and the cornea is narrow, causing crowding of the trabecular meshwork (drainage system of the eye). The opening made in the iris is usually permanent. In many cases, ongoing treatment with pressure-lowering drops may not be needed, but the ophthalmologist will assess the need for treatment based on the pressure levels and the appearance of the optic nerve.

##### **Laser trabeculoplasty (ALT or SLT):**

Using an argon (ALT) or a selective (SLT) laser, tiny, evenly spaced burns are made on the trabecular meshwork. The laser does not create new drainage holes, but appears to stimulate the drainage mechanism to function more effectively. The procedure is used to treat suitable patients with open angle glaucoma and is often particularly effective in patients with pseudoexfoliation and pigment dispersion glaucoma. It may be used in an attempt to lower the eye pressure without the need for drops, or to improve the effectiveness of medication. Laser trabeculoplasty effectively lowers the pressure in most cases, but for many patients, it is not a permanent solution, in which case, ongoing treatment with drops or filtering surgery may be required. The procedure is usually performed with local anaesthetic drops in the doctor's office.

**Cyclodiode laser:**

The term cyclodestruction refers to a group of surgical procedures that reduce aqueous secretion by destroying a portion of the ciliary body, the structure in the eye which produces aqueous fluid. At present, diode laser is the most commonly used technique. The laser energy is directed to the ciliary body via a probe that is held against the wall of the eye. The procedure requires an eye block (anaesthetic injection next to the eye) or a general anaesthetic and is usually performed as a day case admission to the hospital. This procedure is most commonly used on eyes with very severe, end stage glaucoma and with poor visual potential, where other forms of surgery would be difficult or likely to fail. Although the treatment is usually effective, more than one treatment is sometimes required.

**Iridoplasty:**

An argon laser is used to apply laser energy in a circular pattern around the periphery of the iris, the coloured diaphragm in the eye. This causes a shrinking of the tissues and can help in deepening a crowded or shallow anterior chamber (the compartment in the front of the eye). This technique can be used in the management of narrow angle glaucoma and plateau iris syndrome.

**OTHER TYPES OF LASER USED IN OPHTHALMOLOGY**

**Laser refractive surgery (Lasik or PRK).** This involves the use of an excimer laser to permanently alter the shape of the cornea (the clear window at the front of the eye). This changes the focusing properties of the eye, allowing correction of refractive problems such as short-sightedness, long-sightedness and astigmatism. The treatment results in a thinning of the cornea. This may subsequently affect the accuracy of pressure measurements of the eye, resulting in an under-estimation of the actual pressure reading. If someone has had laser refractive surgery and is being assessed for glaucoma, it is important that the doctor be told so that this can be taken into account.

**Retinal laser.** An argon laser is used to treat several retinal conditions, such as retinal vein thrombosis, diabetic retinopathy and small retinal tears. The heat from a laser is used to seal or destroy abnormal, leaking blood vessels in the retina.

One of two approaches may be used when treating diabetic retinopathy:

**Focal photocoagulation.** Focal treatment is used to seal specific leaking blood vessels in a small area of the retina, usually near the macula, the central area of the retina. The ophthalmologist identifies individual blood vessels for treatment and makes a limited number of laser burns to seal them off.

**Scatter (pan-retinal) photocoagulation.** Scatter treatment is used to slow the growth of new abnormal blood vessels that have developed over a wide area of the retina. The ophthalmologist may make hundreds of laser burns on the retina to stop the blood vessels from growing. Two or more treatment sessions may be needed.

**Our Mission: To eliminate glaucoma blindness**

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