International Glaucoma Association

The Charity for People with Glaucoma
Established 1974

Laser Treatment for Glaucoma

Introduction

Lasers have been used in the treatment of glaucoma for many years and as there are a number of different types of glaucoma so there are a number of different laser treatments available that aim to achieve goals that are specific to the condition. In open angle glaucoma laser treatment can reduce the intraocular pressure (IOP) by increasing outflow of aqueous fluid from the eye (laser trabeculoplasty), or decrease the formation of aqueous fluid (cyclophotocoagulation). In narrow angle glaucoma aqueous outflow is improved via laser iridotomy where a small hole is made in the iris, or via iridoplasty where the iris is tightened and the drainage angle opened.

1. Laser for chronic open angle glaucoma

A. "Argon" laser trabeculoplasty (ALT)

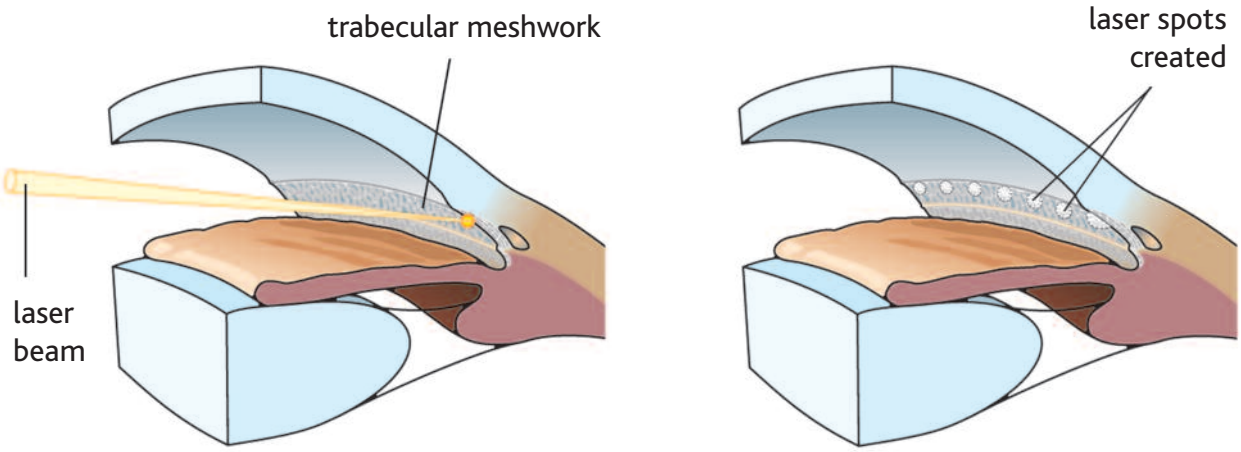
Introduced in 1979 this was first performed with an argon laser, although today most lasers are frequency doubled YAG lasers that perform a similar function. The trabecular meshwork is targeted with usually half of the eye treated in a single session with the other half treated later if necessary. The treatment is almost painless and quick to perform only requiring eye drop anaesthesia. Treatment may be used in place of eye drops but is usually used as an adjunct to continuing treatment with drops. The effect may wear off after a few years, requiring a different type of laser therapy or additional medical treatment/formal surgery.

B. Selective laser trabeculopalsty (SLT)

Introduced in 1998 this is similar to laser trabeculoplasty but uses a much more gentle laser beam of larger size. Results are best if all 360 degrees of the trabecular meshwork is treated at one sitting and similar reductions in IOP to those produced by ALT have been reported.

The main advantages over ALT is that SLT can be repeated if the effect wears off and the treatment is easier to perform than ALT.

Cross section of eye showing laser trabeculoplasty. Selective laser trabeculoplasty aims at the same part of the eye but is lower power



C. Trans-scleral photocoagulation (cyclodiode or diode laser cycloablation)

In this therapy the laser targets the ciliary body that produces the aqueous. Treatment requires general anaesthetic or a well delivered local anaesthetic injection. Although originally reserved for eyes with poor vision, careful placement of a limited number of shots has been shown to be relatively safe and effective at lowering the IOP in eyes with good vision. The treatment can be repeated if the IOP is not considered low enough or the effect wears off with time. Cyclodiode has been advocated in a number of other forms of glaucoma where very high IOPs occur and traditional surgery is contraindicated or impossible.

ALT, SLT and cyclodiode have been used to good effect in secondary open angle glaucoma such as that associated with pseudoexfoliation and pigment dispersion. ALT and SLT give few after effects and are well tolerated, but patients undergoing cyclodiode may require strong painkillers afterwards and it is wise to be accompanied to the hospital when undergoing this therapy. Unlike in formal glaucoma surgery, most eyes undergoing the above treatments will require some anti-glaucoma drops in the long-term to control the IOP at the desired level. Post laser eye drops, usually steroids, are required for a short time in most eyes and monitoring of IOP and inflammation require the patient to attend a number of times following laser treatment.

2. Laser treatment for closed and narrow angle glaucoma

A. Laser iridotomy

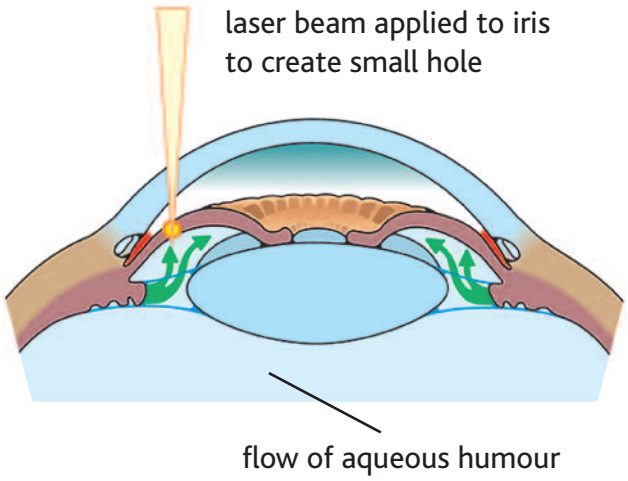
In this treatment a small hole is made with the laser in order to relieve a narrow or closed angle. The aqueous then passes through the hole inducing the iris to fall back away from the drainage meshwork thus allowing the aqueous to drain freely through the meshwork. Treatment is with the Yag laser, first used in 1984, and no anaesthetic other than numbing eye drops is usually required.

Brown irises are often thicker and may require pre-treatment with a different laser and in this instance anaesthesia other than drops may be required. It is often necessary to perform the treatment on the other eye to prevent a rise in IOP at a later date. In some eyes the iris does not fall back as desired and other treatments are required.

Even with a good iris position, the eye may still require medication, or sometimes surgery, to control the IOP. Laser iridotomy is most often used following an attack of acute angle closure (red eye, blurred vision and severe pain are the symptoms of this condition) where the other eye is usually at risk and also requires laser iridotomy to prevent a similar attack.

B. Peripheral iridoplasty

In an eye that has undergone a laser iridotomy but the iris has not fallen back well, an argon (or frequency doubled Yag) peripheral iridoplasty may be used. Laser is applied to the outer margins of the iris to shrink the iris away from the drainage meshwork and open the drainage angle.



Anaesthesia other than drops may be required. Both forms of laser treatment for closed/narrow angle glaucoma require post-laser drops, usually in the form of steroids and perhaps anti-glaucoma drops temporarily or indefinitely.

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Charity registered in England & Wales No. 274681 and in Scotland No. SC041550

Printed: July 2014
Review date: July 2017

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For more information

For a free information pack, or to discuss your glaucoma, please call Sightline on **01233 64 81 70**

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A full list of references and information sources used in the compilation of this leaflet is available on request by phone: 01233 64 81 70 (Sightline) or by email: info@iga.org.uk

Formed in 1974, the IGA has the mission to raise awareness of glaucoma, promote research related to early diagnosis and treatment and to provide support to patients and all those who care for them. Funded entirely by its members and donors (no government or statutory funding) the Association provides its services free of charge to anyone in need of assistance.

If you found this leaflet helpful and would like to support our work, please contact us on 01233 64 81 64 or visit www.glaucoma-association.com to make a donation or become a member (benefits: quarterly magazine, invitations to patient meetings, support research).

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