

# Patient Information

# Laser treatment for glaucoma – pattern scanning laser trabeculoplasty (PSLT)

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## Introduction

This leaflet has been written to help you understand more about a type of laser treatment for glaucoma that has the medical name pattern scanning laser trabeculoplasty (PSLT).

It explains what the treatment involves, the benefits and risks of it and what you should do afterwards. This information is designed to help you decide whether you would like this treatment, and to make you aware of what to expect when you come to hospital.

## What is glaucoma?

Glaucoma is an eye disease that can affect sight, usually due to a build-up of pressure within the eye. This eye pressure is known as intraocular pressure (IOP). If it is not treated or if treatment is delayed, it can cause blindness.

A fluid (called aqueous humour) is produced inside the eye. This fluid is needed to

- Provide nutrients to the front of the eye, especially the cornea and lens.
- Remove waste products from the eye.

The fluid drains mainly through a structure called the trabecular meshwork. This meshwork lies inside the eye in the angle where the cornea meets the iris. The normal pressure in the eye is between 10 and 21 millimetres of mercury (mmHg). If for any reason the fluid flow is blocked and cannot normally get out, the pressure can rise and glaucoma may occur.

## **What treatment options and alternatives are there?**

There are various treatment options, including tablets, eye drops, laser treatment and drainage surgery, which includes; trabeculotomy, iStent, trabeculectomy and glaucoma tube surgery. Your consultant will discuss all the possible options with you and you can decide which option you prefer. Eye drops and laser trabeculoplasty are by far the most commonly used initial treatments.

You do not have to have treatment – it is ultimately your decision. However, if glaucoma is not treated, it may eventually cause blindness.

Please note that almost all glaucoma treatments and procedures, including laser treatments, are used to control / slow down glaucoma and not to improve your vision. **Once vision is lost from glaucoma, you cannot get it back. All treatment for glaucoma is aimed at slowing down the rate of progression of glaucoma, to reduce the risk of complete blindness during your lifetime.**

## **What is PSLT?**

Patterned scanning laser trabeculoplasty (PSLT) is a computer-guided laser trabeculoplasty, and is a newly developed treatment modality using PASCAL<sup>®</sup> (Topcon Medical Laser Systems, Santa Clara, CA, USA).

This laser is used to treat the trabecular meshwork to improve drainage of eye fluid through the meshwork. The aim of this treatment is to reduce pressure in your eye.

The advanced laser system is used to target only the melanin-rich (pigmented) cells in the drainage channel of the eye.

This means that only these cells are affected and the surrounding tissue is left intact and unharmed. This gentle laser treatment activates the body's own immune system to improve drainage through the trabecular meshwork, and by doing so, reduce eye pressure.

It is not a permanent treatment and may need to be repeated in the future to continue to control eye pressure effectively, provided the treatment was initially effective.

## **Why is this treatment recommended?**

It is often recommended as an option for patients who have

- Raised eye pressure and who are at risk of glaucoma (Ocular Hypertension).
- A type of glaucoma called open-angle glaucoma, where there is resistance to fluid draining out at the trabecular meshwork.
- Glaucoma that continues to get worse despite using eye drops.
- Glaucoma in the early stage.

## **What are the benefits?**

PSLT can lower raised pressure in the eye (IOP) without the side effects or difficulty of taking eye drops. The treatment is particularly suitable for people who cannot correctly use, or are intolerant to glaucoma medications. It can also be used alongside medication to give a better IOP-lowering effect. It could be used during various stages of glaucoma, but it is most effective in the initial stages of glaucoma.

PSLT has the advantage of not causing any damage to the tissue treated. It is a flexible treatment option and can be repeated if necessary, if you wish.

## **How successful is it at lowering IOP?**

Studies show that there is a success rate of over 80 per cent for PSLT, which is over four out of five patients where eye pressure may be reduced by up to 31 per cent. Most patients respond well to the treatment, but others may not respond at all.

Current evidence supports PSLT laser treatment to be more effective than eye drops and also more cost effective.

Usually, we cannot predict how well the laser will work for you as it depends on the stage of your glaucoma and what type you have, as well as the individual characteristics of your eye.

It might take from a few weeks to a few months to see how your eyes have responded to the PSLT laser treatment. If your eye pressure does not decrease enough after the first treatment, you may need to have more laser treatment about six months later, or you may need to use some additional eye drops.

The effects of the laser treatment may wear off in time – about half of all treatments stop working after five years. However, the treatment can be repeated as required.

### **What are the risks?**

As with all treatment, PSLT laser carries some risks of complications. It is important that we tell you about these risks so that you have the information you need to make a decision about it.

PSLT is generally regarded to be quite safe; however, there are some rare side effects that may occur:

- Your vision may be blurred for a few hours after the treatment. However, the chance of your vision being permanently affected from PSLT is extremely small. If you are concerned that your vision is not returning to normal, please contact the Urgent Referral Clinic. Due to this, you are also advised not to drive yourself to the hospital, as you may be unable to drive back home.
- It is possible that the pressure in your eye may increase immediately after the treatment. We will give you special eye drops to prevent this from happening.

Unlike some glaucoma medications, with PSLT laser there are no reports of allergic reactions or side effects that affect your whole body.

Other very rare complications may include inflammation, a headache, iritis (inflammation of the iris in your eye), swelling of the cornea, conjunctivitis or eye pain.

## What happens before the treatment?

If you are using certain anti-glaucoma eye drops, they may interfere with the effectiveness and success of the PSLT treatment. Therefore, you may be asked to stop them for at least four weeks before the treatment, and may not use them after the laser treatment.

The drops you may be asked to stop are latanoprost 0.005 per cent (Xalatan), bimatoprost 0.01 per cent or 0.03 per cent (Lumigan), tafluprost (Saflutan) or travaprost 0.004 per cent (Travatan). Some of these might be used in combination with other drops, so we will give you instructions about these as well. **This will however be individually and appropriately advised at the consultation as appropriate.**

## What happens during the treatment?

Treatment takes place in the Eye Clinic outpatient department. A nurse will check your vision. You will then be seen by an eye doctor who will put some drops into your eye to make your pupil small, and to prevent and blunt the possible pressure spiking effect of the laser. These drops may take up to half an hour to work and may cause temporary brow ache and a headache. The doctor will also explain the treatment to you and discuss any concerns or questions you may have. If you are happy to proceed with the treatment, you will need to sign a consent form.



It is very important for you to be seated comfortably with your chin on the chin rest of the laser machine. You will need to have your forehead pressed against the forehead band of the machine. **You must stay very still during the laser procedure. Any movement might defocus the laser and it may not work as well as it could.**

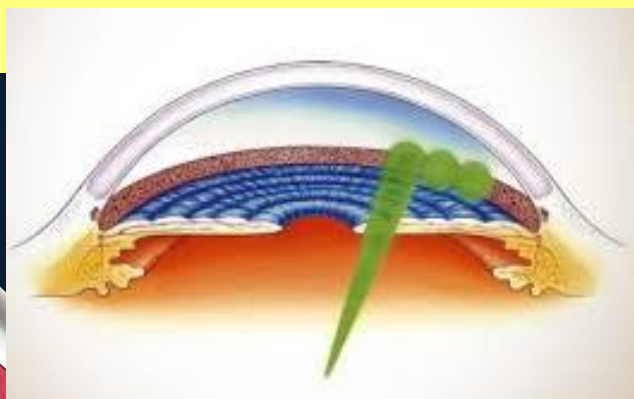
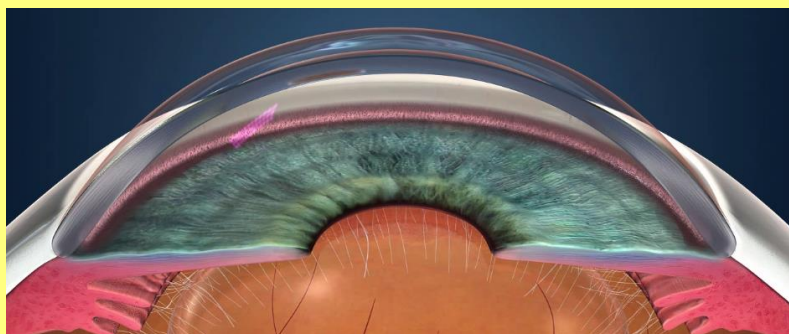
Image is indicative of laser trabeculoplasty and is provided courtesy of Lumenis.

After this, you will need to sit in front of the laser machine which looks similar to the slit lamp used to examine your eyes in clinic (see figure 1).

The eye doctor will put anaesthetic drops into your eye to numb the front of it. These drops may sting slightly for a few seconds before the front of your eye goes numb.

The eye doctor will then put a special lens, a bit like a contact lens, against the front surface of your eye. This is not painful but it may feel a little strange and rarely, in some cases, it may cause some redness or irritation in your eye.

**Figure 1 shows the  
PSLT laser machine**



Actual area of laser application

The above images show the exact location of the laser application (the trabecular meshwork).

During the laser treatment, you might see some flashes of light and hear clicking noises. Most patients tolerate the laser treatment well, but some might feel slight discomfort.

### **How long does it take?**

The treatment itself takes between 15 and 20 minutes; however, the whole visit may take a few hours.

### **What happens after the treatment?**

The doctor will put some more pressure-lowering drops into your eye at the end of the laser treatment and will re-check your eye pressure within an hour of the treatment.

### **Follow up**

We will make an appointment for you to come back to the Eye Clinic, usually within **four weeks** of your treatment. This follow-up appointment is to check your eye pressure and that your eye is settling after the treatment.

### **What do I need to do at home?**

You can carry on as normal when you get home. You will not have a patch over your eye. You will not be given any extra drops (in addition to your usual ones).

### **What should I look out for at home?**

#### **If you have any of the following after treatment:**

- Reduced vision or loss of vision.
- Severe pain that does not go away.
- Any abnormal discharge from your eye, especially if it is increasing.

Please contact the **Urgent Referral Clinic** team at Russells Hall Hospital Eye Clinic on **01384 456111 ext. 3633**.

### **Can I find out more?**

You can find more information on PSLT, glaucoma and risk of blindness from glaucoma from the following references / links.

Turati M, Gil-Carrasco F, Morales A, Quiroz-Mercado H, Andersen D, Marcellino G, Schuele G, Palanker D. Patterned laser trabeculoplasty. Ophthalmic Surg Lasers Imaging. 2010;41:538-45.

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Gazzard G, Konstantakopoulou E, Garway-Heath D, Garg A, Vickerstaff V, Hunter R, Ambler G, Bunce C, Wormald R, Nathwani N, Barton K, Rubin G, Buszewicz M; LiGHT Trial Study Group. Selective laser trabeculoplasty versus eye drops for first-line treatment of ocular hypertension and glaucoma (LiGHT): a multicentre randomised controlled trial. Lancet. 2019 Apr 13;393(10180):1505-1516. doi: 10.1016/S0140-6736(18)32213-X. Epub 2019 Mar 9.

<http://www.glaucoma-association.com/>

<http://www.topcon-medical.eu/eu/products/137-pattern-scanning-laser-trabeculoplasty-pslt.html>

<http://www.glaucoma-association.com/about-glaucoma/what-is-glaucoma>

[http://www.nei.nih.gov/health/glaucoma/glaucoma\\_facts.asp](http://www.nei.nih.gov/health/glaucoma/glaucoma_facts.asp)

<http://www.rnib.org.uk/eyehealth/eyeconditions/eyeconditionsdn/Pages/glaucoma.aspx>

<http://en.wikipedia.org/wiki/Glaucoma>

<http://www.nice.org.uk/guidance/cg85/ifp/chapter/About-this-information>

<https://www.rcophth.ac.uk/patients/glaucoma/>

## **What if I have any problems or questions after reading this leaflet?**

**If there is anything you do not understand, or you are concerned or worried about any part of the treatment, contact:**

The **Urgent Referral Clinic** team at Russells Hall Hospital Eye Clinic on **01384 456111 ext. 3633** (9am to 4.30pm, Monday to Friday).



## Eye emergency, out of hours

In case of an eye emergency after the closing hours of the Eye Clinic at Russells Hall Hospital (including weekends and bank holidays), please contact:

### **Birmingham and Midland Eye Centre on 0121 507 4440**

The doctor on call is usually based at the Eye Centre, City Hospital, Dudley Road, Birmingham. They may need to call you back, and if necessary, they will arrange for you to visit them.

**Note:** the information in this booklet is provided for information only. The information found is **not** a substitute for professional medical advice or care by a qualified doctor or other health care professional. **Always** check with your doctor if you have any concerns about your condition or treatment. This is only indicative and general information for the procedure. Individual experiences may vary and all the points may not apply to all patients at all times. Please discuss your individual circumstances with your eye doctor.

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