

# Laser treatment for retinal eye conditions

**i** Information for patients, families and carers  
Ophthalmology



This booklet answers the questions which patients commonly ask about laser treatment. If you have been offered laser treatment you may wish to discuss this information with a relative or carer. If you decide to proceed with laser treatment you will be asked to sign a consent form beforehand.

It is important that you understand why you need the treatment and that you are agreeing to go ahead with it.

## **Why am I being offered laser treatment?**

An examination of your eyes has shown that your eye condition is affecting some of the blood vessels within the retina or the structure of the retina. Unless we treat this problem you may be at risk of long term problems with your sight. The benefits of laser treatment greatly outweigh the risks.

## **What is laser treatment?**

Laser is an intense focused beam of light which is used to apply spots of heat to certain areas at the back of the eye. Laser treatment may be given for the following medical retinal conditions:

- Diabetic retinopathy
- Diabetic maculopathy
- Retinal vein occlusion
- Retinal tear

Laser treatment may also be given for some other less common medical retinal conditions.

Your treatment will take place in the Eye Clinic and you may need more than one visit depending on how your eyes react to the treatment.

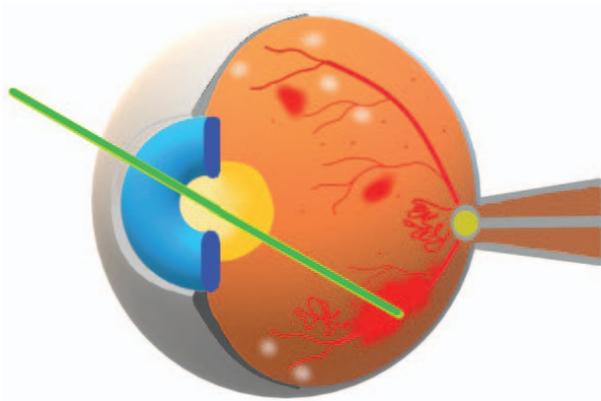
You may go straight home afterwards but you must not drive so please make arrangements for your journey home.

## **What does it involve?**

- Your vision will be tested and drops will be used to dilate the pupils.
- More drops will be administered, this time to numb the surface of the eye.
- When you are in position at the laser, a contact lens will be placed on the front of your eye to help your eyelid stay open and to focus the laser beam on to the retina.
- Laser burns are applied to the area of the retina requiring the treatment. It is very important to keep still during the procedure and to look in the direction instructed by the doctor.
- The laser treatment could take between 10 – 20 minutes. The length and type of laser treatment you receive will depend on the eye condition you have and the severity of the eye condition.

## Will the treatment be painful?

- Usually the treatment is not painful but some patients may feel some discomfort.
- Sometimes the treatment can cause a sharp prickling feeling when certain areas of the retina are treated. This can be where the nerves run underneath the retina.
- The beam of light used can be quite intense and may dazzle but your eye will adjust during the treatment.



**The image above shows an example of a laser light beam entering the eye**

## What should I expect after the laser treatment?

- Your sight will normally return to its previous level over the next 24 hours and you will be able to continue normal activities the following day. In some cases it may take a little longer for your vision to return to normal but this is quite rare.
- Your eye may ache after the treatment and you may find that taking some mild painkillers and resting will help.
- Vision may be blurry for a few hours and the treated eye may be sensitive to light. It may help to bring dark glasses with you to wear after the treatment.
- You may be aware of floaters in your vision; these should eventually settle down.
- If you have any new eye problems after the laser treatment you should seek medical advice. There are some useful telephone numbers in the back of this booklet.
- If you are using eye drops regularly you should continue to use them as normal.

## Laser treatment for diabetes

Laser treatment is commonly used in the treatment of diabetic eye disease. As diabetes advances, the blood vessels in the retina are vulnerable to damage and may leak. This leakage can cause damage to the surrounding tissue and prevent oxygen from reaching cells supplied by these vessels. More fragile blood vessels may then grow but they could also leak and this can result in sight threatening conditions such as diabetic retinopathy and diabetic macular oedema.

Laser is used to try and block or seal any abnormal blood vessels and prevent further leakage.

- Proliferative retinopathy requires extensive laser treatment. Early treatment will prevent severe sight loss. This type of laser is called Pan Retinal Photocoagulation (PRP). PRP involves using the laser to make small burns on the outer (peripheral) part of the retina which will hopefully cause the abnormal blood vessels to shrink and disappear. PRP has been used for many years and is an effective treatment in most cases.
- Maculopathy requires gentle treatment and macular laser is used to prevent serious sight loss. Gentle burns are applied close to the macular which is situated in the central part of the retina (the part of the eye used for near vision which we use for reading). These laser burns are applied to try to seal the leaking blood vessels.

## **Laser treatment for retinal vein occlusion (focal laser)**

Retinal vein occlusion is a condition where one of the blood vessels (veins) which transport blood away from the retina may be blocked. This causes fluid and blood to leak through the vessels causing swelling, lack of blood flow and the growth of new abnormal blood vessels.

These abnormal blood vessels are weak and may bleed. Laser treatment is used to seal the leaking blood vessels.

## **Laser treatment for retinal tear (retinopexy)**

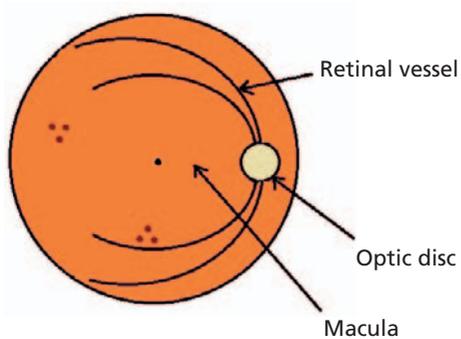
A retinal tear is a hole that forms in the outer part of the retina. Tears can happen due to the jelly (vitreous) in the eye coming away from the retina. Some people who are very short sighted are more at risk of developing a tear.

If untreated there is a high risk of retinal detachment. To prevent this from happening the doctor will seal the retina around the tear with laser spots.

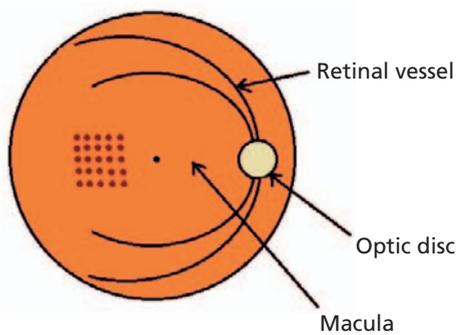
The laser is then performed either sitting upright at a slit lamp or in some cases by a special device worn on the doctor's head. This technique of 'indirect laser' for treating retinal tears involves the use of an instrument to press on the wall of the eyeball in order to reach parts of the retina that contain the retinal tear. In this case, you will be asked to lie flat and the doctor will press on your eye using a small instrument to allow a good view of the tear. Within our department the success rate for treatment of retinopexy is 90% of patients avoiding surgery for retinal detachment.

The laser treatment will form scar tissue to act as a barrier to try to prevent the retina from detaching. It usually takes about 14 days for the scar tissue to develop.

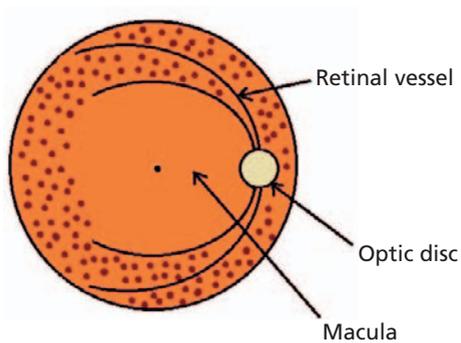
## Examples of retinal laser



**Focal laser**



**Macular laser**



**Pan retinal laser (PRP)**

## **What are the risks / complications of laser treatment?**

The complications will depend on the type of laser treatment you are receiving.

- Burn spots will be applied to your retina in order to try to seal the leaking vessel and in some cases you may be able to see some of the laser pattern after your treatment.
- If you are receiving PRP laser this means the laser burns are applied to the outer (peripheral) part of the retina. This is the area responsible for seeing from the side and in the dark.
- In some cases PRP laser can cause problems with night vision and peripheral vision. However this is normally in patients who have previously received several laser treatment therapies to control their retinopathy (damage caused by diabetes).  
In proliferative diabetic retinopathy, the risk of vision loss from no treatment is much higher than vision loss from laser therapy.
- Accidental laser burns cannot be completely avoided. You may find it difficult to keep still or may accidentally look at the laser as it fires. If we feel the risk of this happening is too high we may stop your treatment.

## Important points to remember

- The aim of the laser treatment is to try to stabilise the changes in your eye. It does not generally improve sight but in some cases it may.
- Without this treatment you may be at risk of your eye condition getting worse or your vision decreasing.
- Even when the laser procedure is successful, the condition may not be resolved completely. Some patients may require further treatment.
- Sometimes laser therapy is not successful and your vision may still deteriorate despite treatment.
- **Please be aware: if you are a driver and have received PRP laser to both eyes you must inform the DVLA.**

## Alternative treatments

In some cases (depending on the eye condition), laser can be used in combination with other treatments, such as injections of steroids or anti-VEGF therapies (treatments that block the production of VEGF - a chemical which promotes the growth of new vessels).

## Health advice

Other factors that may help you to protect your eyesight include:

- Quitting smoking
- Eating a healthy balanced diet
- Regular exercise
- Reducing alcohol intake.

If you have diabetes, it is important to attend your annual review with your GP / diabetic nurse to prevent any long term damage to your health. They may also recommend some educational courses such as DAFNE (type 1 diabetes) or DESMOND (type 2 diabetes).

If you require a booklet specific to your eye condition please ask a health care professional in the Eye Department.

## Useful websites

- Sheffield Royal Society for the Blind: [www.srsb.org.uk](http://www.srsb.org.uk)
- Royal National Institute of Blind People: [www.rnib.org.uk](http://www.rnib.org.uk)
- Diabetes UK: [www.diabetes.org.uk](http://www.diabetes.org.uk)
- Sheffield Teaching Hospitals NHS Foundation Trust: [www.sth.nhs.uk](http://www.sth.nhs.uk)
- A Sweet Life Diabetes Magazine: [www.asweetlife.org](http://www.asweetlife.org)
- Carbs & Cals: [www.carbsandcals.com](http://www.carbsandcals.com)

## Useful telephone numbers

Eye Clinic Reception	<b>0114 226 5793</b>
Eye Casualty, Royal Hallamshire Hospital	<b>0114 271 2726</b>
Sheffield Diabetic Eye Screening Service	<b>0114 226 5475</b>
Main switchboard, Royal Hallamshire Hospital	<b>0114 271 1900</b>
Ward I1 (out of hours)	<b>0114 271 2539</b>



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