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Kingston Hospital NHS
NHS Foundation Trust

Proliferative diabetic retinopathy

Patient information leaflet

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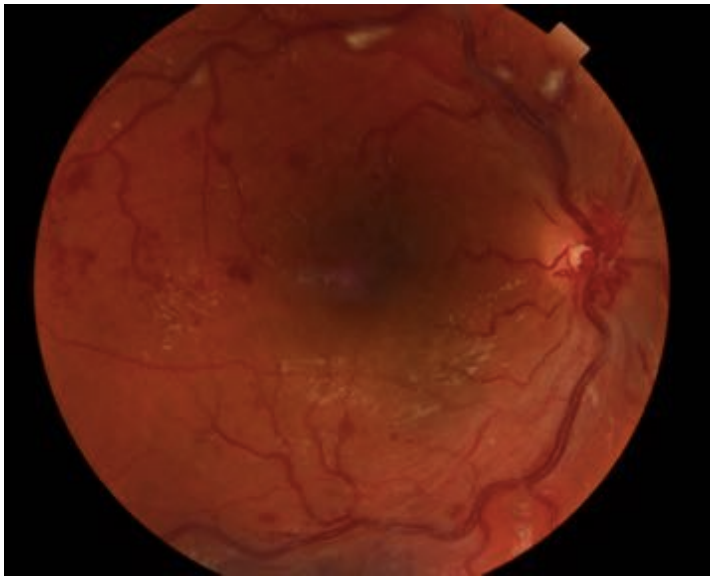
What is proliferative diabetic retinopathy?

This is a condition where abnormal blood vessels grow on the surface of the retina (light sensing tissue at the back of the eye) in patients who have long-standing diabetes mellitus.

Why does proliferative diabetic retinopathy occur?

High blood sugar levels cause damage to the blood vessels in the retina, resulting in the retina becoming starved of blood and therefore oxygen. The retina responds to this by growing 'new' blood vessels to improve the blood and oxygen supply. Unfortunately these new blood vessels do not grow in the correct place, and are often quite fragile. This means they can easily bleed or pull on the surface of the retina, leading to loss of vision, scarring and even retinal detachment.

Some patients also get abnormal vessels growing on the iris (coloured tissue at the front of the eye). This can lead to raised eye pressure and pain.



Photograph showing a patient with diabetic retinopathy.

What are the symptoms of proliferative diabetic retinopathy?

Patients are usually unaware of the serious changes occurring in the retina until the vision is lost due to bleeding or retinal detachment. This is why regular diabetic eye screening is important, as early identification of proliferative diabetic retinopathy and its timely treatment often saves the vision.

How is proliferative diabetic retinopathy diagnosed?

Proliferative diabetic retinopathy is diagnosed by:

1. **Slit lamp examination**

   This is the examination performed by your eye doctor in the clinic. Dilating eye drops will be instilled.

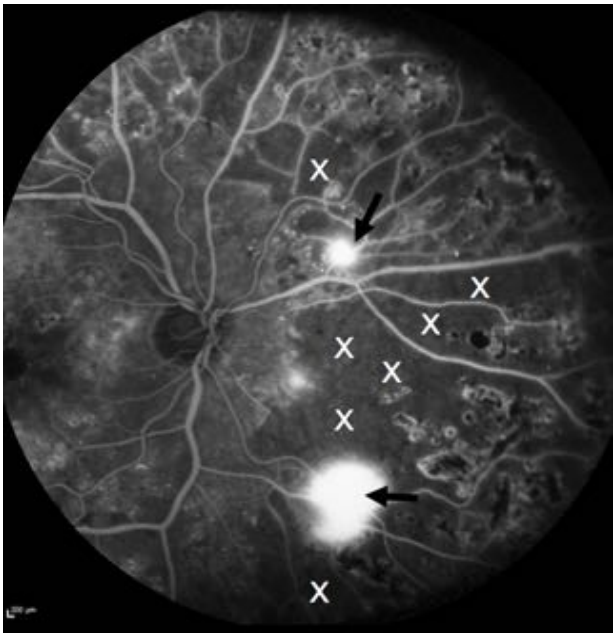
2. **Optical coherence tomography (OCT) retinal scan**

   A retinal OCT scan is performed at each visit. It is non-invasive, and uses light energy to produce detailed images of the different retinal layers to help identify the early changes.

3. **Fluorescein angiography (FFA)**

   A yellow dye called fluorescein is injected through a vein in the arm and a series of photographs are taken. Please see our FFA leaflet for more information.

   This dye test helps to give a detailed view of the blood supply of the retina and therefore helps us to identify early signs of reduced blood flow.



An example of a FFA photograph showing: areas with poor blood supply – darker in colour (marked with 'x'); and also the area of leakage from the abnormal new blood vessels (arrows).

What are the treatment options for proliferative diabetic retinopathy?

1. **Lifestyle changes**

   It is important to have good blood sugar, blood pressure and cholesterol control. This can help to reduce the risk of worsening of abnormal blood vessel changes.

2. **Observation**

   If the changes are mild and you do not have any high risk features, you may be observed for a period of time.

3. **Laser treatment**

   Most patients require laser treatment, which is explained in more detail below.

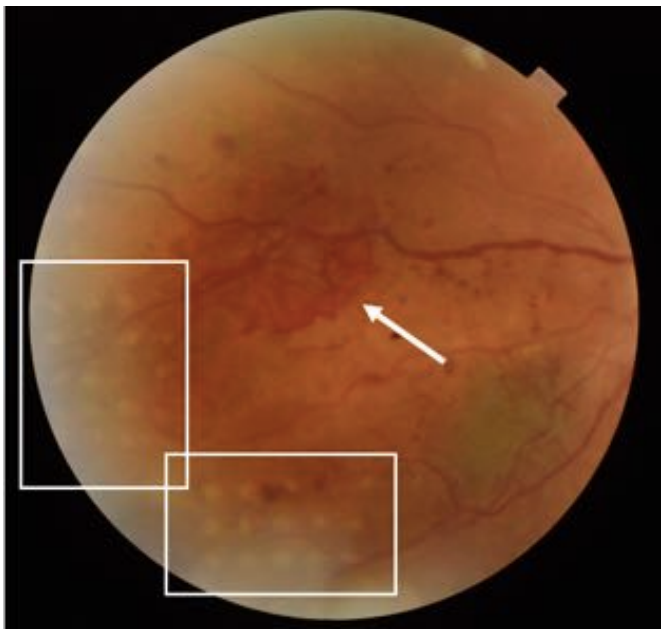
What is laser treatment?

Proliferative diabetic retinopathy is treated with **P**an**R**etinal **P**hotocoagulation (PRP) laser. This means that the laser treatment is applied to the whole ("pan") retina.

The aim of laser treatment is to reduce the area of retina which is starved of blood and oxygen, which reduces the drive of abnormal new blood vessel to grow, which is the cause of all the complications as above. When applied properly, PRP laser treatment reduces the risk of severe visual loss by 50%. It is important to remember that laser treatment does not improve vision but rather prevents visual loss by reducing the likelihood of complications, namely bleeding, retinal detachment, etc.

You may require more than one laser treatment to ensure adequate coverage of the retina, or if the abnormal blood vessels start to grow again.

Intravitreal injections (injections into the eye) of medications that helps to reduce the growth of blood vessels may also be recommended either before or after treatment. However at this stage PRP laser remains the gold standard treatment for proliferative diabetic retinopathy.



Photograph showing an area of abnormal new vessel growth (arrow). This patient has had some PRP laser treatment, the faint spots are the laser scars (white rectangle).

What does laser treatment involve?

1. The procedure is an outpatient clinic procedure, meaning you can go home the same day. The treatment may be administered over more than 1 session.
2. When you arrive, you will be given dilating drops to dilate the pupils. This will temporarily blur your vision for 4-6 hours. Therefore, it is a good idea to bring a friend or relative with you to the appointment.
3. The procedure is performed on a machine very similar to a slit lamp (microscope routinely used to examine the eye, where you rest your head on a chin-rest to be examined), except there is a laser added on.
4. You will be given topical anaesthetic eye drops to numb the eye. The eye doctor will then use a contact lens coated with a lubricant jelly onto the eye. This is used to focus the laser beam onto the retina. The contact lens is removed at the end of the procedure. You may hear a beeping sound and experience seeing flashing lights during the treatment.
5. Your vision will be blurry for 10 to 20 minutes immediately after treatment. You may find it helpful to bring a pair of sunglasses, as you may be more sensitive to light after the dilating drops.

What are the side effects of laser treatment?

Whilst there may be side effects of PRP laser treatment, not treating these abnormal blood vessels would lead to a high risk of blindness. As such, the benefits of the treatment far outweigh the risks.

Some of the possible side effects include:

- Altered night vision
- Macular oedema – waterlogging of the central retina. If this is already present prior to the laser treatment (diabetic macular oedema), the waterlogging may worsen and cause reduced vision and will need treatment either around the same time or shortly afterwards. Please see the 'Diabetic macular oedema' leaflet for more information.
- Blind spots in your central vision. If this is significant (often only occurs with extensive laser treatment), this may affect your ability to meet the legal visual requirement for driving. The treatment is performed in a way to minimise this risk as we understand driving is important to many of our patients.
- Permanent reduced vision. This is rare, and may occur due to pre-existing poor circulation to the macula, or due to an accidental laser burn to the fovea (area responsible for central vision).

For more information, please discuss further with the one of the nursing staff or with you eye specialist when you attend for your appointment.

Contact details

Royal Eye Unit

Mon-Fri 8.30am to 5pm

0208 934 6404

Moorfields at St Georges' Hospital (Duke Elder Ward)

Mon-Fri 5pm to 8.30am, weekends and Bank Holidays

020 8672 1255 ext 2064/0638