

Medical retina

Proliferative diabetic retinopathy (PDR)

Diabetic eye disease is a leading cause for blindness registration among working age adults in England and Wales.

It is caused by changes to the tiny blood vessels of the retina (the light sensitive layer at the back of the eye). Proliferative diabetic retinopathy is caused by abnormal new blood vessels that grow on the surface of the retina. This is the most advanced stage of diabetic retinopathy. At this stage, you may not have symptoms but are at high risk for vision loss.

How does proliferative diabetic retinopathy cause vision loss?

In proliferative diabetic retinopathy, the blood vessels that nourish the retina are blocked. The retina sends signals that trigger the growth of new abnormal blood vessels. These vessels are thin and fragile. By themselves, they do not cause vision loss. However, vision loss occurs when they bleed into the retina and gel-like fluid fills the eye. In advanced stages of proliferative diabetic retinopathy, scar tissue pulls the retina away from the back of the eye (retinal detachment). Abnormal

blood vessels can also increase the pressure within the eye (rubeotic glaucoma). If left untreated, severe vision loss and even blindness will occur.

Who is at risk of proliferative diabetic retinopathy?

All people with type 1 and type 2 diabetes are at risk of proliferative diabetic retinopathy. The longer you have had diabetes, the more likely you are to develop this condition. However, large studies have shown that the people who have good control of their blood sugar levels, cholesterol, and blood pressure are less likely to develop proliferative diabetic retinopathy.

How is proliferative diabetic retinopathy found?

Proliferative diabetic retinopathy can be found during your yearly visit to your local diabetic eye screening programme. You may not notice changes in your vision at this stage but digital photographs of your eye may show signs of proliferative diabetic

retinopathy. A referral will be made for you to the medical retina clinic at Moorfields. If you are attending clinics at Moorfields, you do not need to attend diabetic eye screening. When your treatment is complete, you will be discharged from Moorfields. After you have been discharged, it is important you carry on going to your yearly local diabetic eye screening appointments.

What happens when I go to the medical retina clinic?

You will have a comprehensive eye examination that includes:

- **Visual acuity test:** A sight test that measures how well you see at different distances
- **Eye pressure test:** We check the pressure of your eyes. Numbing drops may be used as part of this test.
- **Dilated eye examination:** Drops are placed in your eyes to widen (dilate) your pupils so that we can examine the back of your eyes.

You may also undergo tests such as:

- **Optical coherence tomography (OCT):** This test is similar to having a photograph taken of your eye. Pictures are taken using light reflected from the back of your eye. This test allows the eye care practitioner to identify fluid collecting in the macula and plan your treatment.
- **Widefield retinal photography:** This test is also similar to having a

photograph taken of your eye. It takes only a few seconds to take a wide-angled image of the retina. This test allows the eye care practitioner to assess and monitor the severity of diabetes in your eye.

- **Fluorescein angiography:** In this test, dye is injected into a vein in your arm. Pictures are taken as the dye passes through blood vessels in the eye. This test allows the eye care practitioner to identify leaking blood vessels in the eye and plan your treatment.

How is proliferative diabetic retinopathy treated?

Proliferative diabetic retinopathy is treated with laser therapy. This is done together with improving the control of your blood sugar, blood pressure, and cholesterol levels. This can be achieved by regular visits to your general practitioner or hospital doctor. Please ask to see the **specialist diabetes nurse** at Moorfields if you wish to discuss this further. If you have very advanced proliferative diabetic retinopathy, you may require surgery.

The treatments for proliferative diabetic retinopathy are:

1. laser therapy
2. surgery

What is laser therapy?

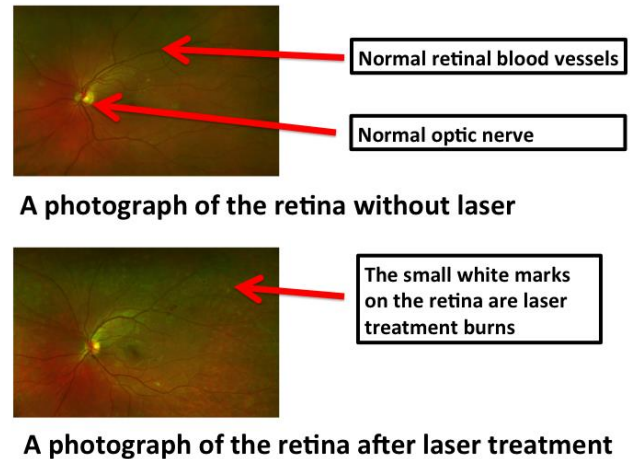
This treatment uses laser to produce small areas of heat on the retina. This creates small laser burns scattered across the retina. Usually a thousand laser burns are applied in one session. Usually two to three sessions are required to achieve this. The goal of laser therapy is to cause the abnormal blood vessels to shrink and disappear. Laser therapy does not improve your vision. The aim is to prevent severe vision loss.

What happens during laser therapy?

Laser therapy takes place in the outpatient medical retina clinic. You will have drops to widen your pupils and numb your eye. The lights in the room will be dim. You will sit facing the laser machine and the doctor will place a contact lens on your eye. This will allow the doctor to see to the back of the eye and prevent you from blinking. During laser therapy, you will see flashes of light. You may feel a stinging sensation that can be uncomfortable.

After laser therapy, your vision will be a little blurry for the rest of the day. You will need someone to accompany you home after the treatment. You may wish to bring a pair of sunglasses as your eyes will be sensitive to bright lights.

Please see opposite picture for an example of a retina without laser treatment (first image) and after laser treatment (second image)



What are the side effects of laser therapy?

You may experience temporary worsening of vision on the day of laser therapy. This is caused by the bright flashing lights from laser treatment. This usually recovers by the next day. There is a small risk of loss of side vision (visual field) because of laser therapy. This is uncommon due to the development of newer and safer lasers. More than 90% of persons who receive laser will retain enough side vision for driving. In proliferative diabetic retinopathy, the risk of vision loss from no treatment is much higher than laser therapy. Sometimes laser therapy does not work and your vision can still get worse despite treatment.

Can I drive after laser therapy?

The driver and vehicle licensing authority (DVLA) makes the decision on whether you will be able to drive. You should inform the DVLA when you have had laser therapy. They will arrange to have your side vision (visual field)

tested at your local optometrist before making a decision.

What is retinal surgery for proliferative diabetic retinopathy?

In proliferative diabetic retinopathy, bleeding can occur in the retina and gel-like fluid that fills the eye. This blood usually clears on its own within six months. If this fails to clear you may need surgery to remove the blood. In advanced proliferative diabetic retinopathy, scar tissue can form in the retina. This causes the retina to pull away from the back of the eye (retinal detachment). Surgery will be required to remove the scar tissue and repair the retina.

How can I contact at Moorfields? **Moorfields Retinal Services help line**

Phone: 07872 419 211
Monday to Friday 8am-4.30pm

Out of hours

Phone: 020 7253 3411
or go to the accident and emergency department at Moorfields Eye Hospital, City Road, London EC1V 2PD.

Moorfields Eye Hospital pharmacy department

Phone: 020 7566 2369
Monday to Friday 9am to 5.30pm

Author: Adam Mapani, Robin Hamilton
Revision number: 5
Approval date: November 2018
Review date: November 2021

Moorfields Eye Hospital NHS Foundation Trust

City Road, London EC1V 2PD
Phone: 020 7253 3411
www.moorfields.nhs.uk

Moorfields Direct telephone helpline

Phone: 020 7566 2345
Monday-Friday, 8.30am-9pm
Saturday, 9am-5pm
Information and advice on eye conditions and treatments from experienced ophthalmic-trained nurses.

Patient advice and liaison service (PALS)

Phone: 020 7566 2324/ 020 7566 2325
Email: moorfields.pals@nhs.net
Moorfields' PALS team provides confidential advice and support to help you with any concerns you may have about the care we provide, guiding you through the different services available at Moorfields. The PALS team can also advise you on how to make a complaint.

Your right to treatment within 18 weeks

Under the NHS constitution, all patients have the right to begin consultant-led treatment within 18 weeks of being referred by their GP. Moorfields is committed to fulfilling this right, but if you feel that we have failed to do so, please contact our patient advice and liaison service (PALS) who will be able to advise you further (see above). For more information about your rights under the NHS constitution, visit www.nhs.uk/choiceinthenhs

