Patient Information

Retinal Vein Occlusion

What is a retinal vein occlusion?

Occlusion (blockage) of a retinal vein is a common cause of sudden painless reduction in vision in older people. It occurs when a blockage, often due to a blood clot, forms in a retinal vein.

The retina is the thin membrane that lines the inner surface of the back of your eye. Its function is similar to that of the film in a camera. Blockage of one of the veins draining blood out of the eye causes blood and other fluids to leak into the retina, causing bruising and swelling as well as lack of oxygen. This interferes with the light receptor cells and reduces vision.

The condition is uncommon under the age of 60 but becomes more frequent in later life.

There are 2 types of retinal vein occlusion:

1. Branch Retinal Vein Occlusions (BRVO) are due to obstruction of one of the four retinal veins. Each vein drains approximately ¼ of the retina.

2. Central Retinal Vein Occlusion (CRVO) is due to obstruction of the main vein formed from the four branches which drain blood from the retina.

In general, visual loss is more severe if the central retinal vein is occluded.
What causes retinal vein occlusion?
A blockage occurs in the vein, often due to clot formation, causing complete obstruction of blood flow. The exact reason for this happening is unknown, but several common conditions make retinal vein occlusion more likely. These include:

- High blood pressure
- High cholesterol
- Glaucoma
- Diabetes
- Smoking
- Certain rare blood disorders

Risk factors for retinal vein occlusion and preventing recurrence
It is essential to identify and treat any risk factors to minimise the risk to the other eye and prevent a further vein occlusion in the affected eye, although, in a small number of cases, no risk factors can be found, with the cause being unknown. Treatment of the risk factors dramatically reduces the risk of a further vein occlusion occurring in either eye. Without treatment, there is a high risk of recurrence causing further damage to the sight of the affected eye and also damage to the sight of the other eye.

Raised blood cholesterol: Treatment with tablets is normally highly effective.

Smoking: The more you smoke, the greater the risk of another vein occlusion. Please speak to your GP if you need help to stop smoking. (Smokefree National Helpline: 0800 022 4332)

Glaucoma: In this common eye condition, the pressure in the eye is raised. This can cause gradual loss of side vision. It also increases the risk of retinal vein occlusion. Treatment with drops to reduce the pressure is normally highly effective in preserving sight and preventing further retinal vein occlusions.

Diabetes: Retinal vein occlusions are more common in people with diabetes. Detection and treatment of diabetes is highly effective in preserving vision and preventing further retinal vein occlusions.

Rare blood disorders: These are normally identified by simple blood tests. In the unlikely event that treatment is required, this will be supervised by a specialist in blood disorders.

Treatment of retinal vein occlusion

1. Fluid in the retina (macular oedema)
Persistent bruising and swelling at the centre of the retina (the macula) is the main cause of permanent loss of central
The swelling is caused by damaged blood vessels which leak fluid.

Different medicines such as anti-vascular endothelial growth factor (anti-VEGF) medicines or steroids may be helpful in reducing this leakage. These medicines are given by injection into the eye and the injections often need to be repeated as the effect of the medicine wears off.

**Anti-VEGF medicines** are given as a fluid injection and need to be given every month for the first three months. After that, they may be given roughly every 2 months, depending on whether they are necessary, until the end of the first year of treatment. In the second year of treatment, they may be given less frequently. Treatment usually continues for 1-2 years.

**Steroids** are usually given in the form of an implant injected into the eye which is repeated every four to six months as needed, again, typically for 1-2 years.

Injection treatment aims to stabilise or improve vision. About 45-55% of patients treated with anti-VEGF injections experience a significant gain in vision (a two to three line improvement on a standard vision chart). Steroid implants achieve a significant gain in vision (two to three line chart improvement as defined above) in up to 30% of patients. 20-30% of patients, however, experience no improvement in vision following injection treatment, be that anti-VEGF or steroid injection.

All injection treatments have potential side effects including a 1 in 2000 chance of infection causing decreased vision. Anti-VEGF injections are associated with increased risk of cardiovascular side effects. Steroid injections incur side effects including cataract formation and may cause raised pressure which can result in glaucoma.

**Laser treatment** may be used, alone or in combination with other treatments, to help stabilise or improve central vision in *branch* retinal vein occlusions. The laser treatment most commonly used in macular oedema is Macular Grid laser.

**Observation** or monitoring the condition of your eye is always an option if you would prefer not to have active treatment for macular oedema. Branch retinal vein occlusions have a better chance of natural resolution than central retinal vein occlusions. However, early active injection treatment of macular oedema has been shown to achieve the best results in terms of vision gained and your ophthalmologist can discuss this in more detail with you.

The above options for treatment of macular swelling have advantages and
disadvantages and may be more or less suitable for each person with retinal vein occlusion. More information on each treatment is available in leaflet form and on discussion with the ophthalmologist.

2. Abnormal new blood vessel growth (neovascularisation)

About 20% of patients with retinal vein occlusions develop abnormal blood vessels on either the iris at the front of the eye or on the retinal surface. These abnormal blood vessels can bleed or cause a marked pressure rise in the eye, leading to further loss of vision and, sometimes, pain.

This can normally be prevented by a specific type of laser treatment to the retina (called Pan Retinal Photocoagulation or PRP laser). This treatment is aimed at stabilising and preserving the condition of the eye and so will not improve vision. The treatment is most effective if applied before vision is lost from the consequences of new blood vessel growth. For this reason patients with central retinal vein occlusions are normally reviewed every four to six weeks for six months.

Additional investigations

The following procedures are frequently recommended for patients with retinal vein occlusion. Your doctor will explain the reasons for them in more detail.

- **Fluorescein angiography** is a diagnostic test which involves the injection of fluorescein (yellow) dye into your bloodstream via a vein in your hand or arm, followed by a series of retinal photographs taken over several minutes. The test gives your doctor more information about the condition of your retina and this helps decide which treatment is most appropriate.

- **Optical coherence tomography** (OCT) measures the amount of retinal swelling (macular oedema) which, like fluorescein angiography, helps decide which treatment is most appropriate. OCT is also used to monitor your retina over time and to show how effective treatment may have been. It is effectively ‘optical ultrasound’, a non-invasive test, using reflections from within your retina to provide a cross-sectional picture of the retina.

**Follow-up**

- Patients with central retinal vein occlusions are reviewed every four to eight weeks for about six months and then less frequently after that. Recurrence or deterioration is unlikely after this and most patients are discharged after one to two years.

- Patients with branch retinal vein occlusions are normally reviewed at
four to six-monthly intervals for one to two years.

- If injection treatment is given, appointments for injections or monitoring occur every four to eight weeks for the first year and then less frequently in the second year. Recurrence or deterioration is unlikely after this time.

What to do if you are concerned about your vision
If your sight deteriorates dramatically, or if your eye becomes painful, please contact Moorfields Accident and Emergency department or your local eye department.

You may find the following websites helpful.
www.rcophth.ac.uk
www.rnib.org.uk
www.iga.org.uk

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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 to Friday, 9am to 4.30pm, for information and advice on eye conditions and treatments from experienced ophthalmic-trained nurses.

Patient advice and liaison service (PALS)
Phone: 020 7566 2324 or 020 7566 2325
Email: pals@moorfields.nhs.uk
Moorfields’ PALS team provides confidential advice and support to help you sort out 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 start their 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 contact details. For more information about your rights under the NHS constitution, please visit www.nhs.uk/choiceinthenhs.