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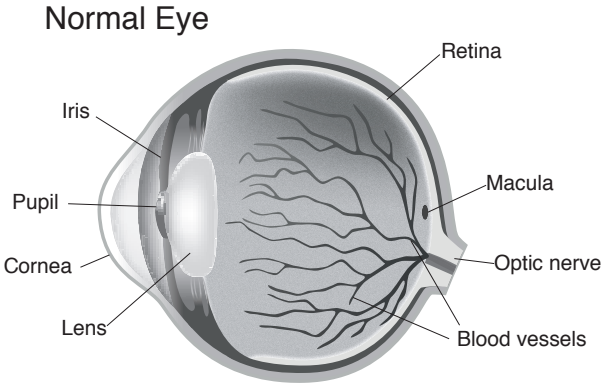
Patient Information: Retinal Vein Occlusion

What is a retinal vein occlusion?

The retina lines the back of the eye. It functions a bit like the film in the back of a camera, by absorbing light to form an image of the outside world. The retina is supplied by fine arteries that deliver oxygen, and fine veins that remove the waste products of metabolism.



A blockage in these fine veins is called a retinal vein occlusion (RVO). Sometimes this just affects a single branch of the extensive network of veins that supplies the retina – this is called a branch retinal vein occlusion (BRVO). Sometimes the central vein that drains all of the retina is affected – known as a central retinal vein occlusion (CRVO).

What causes retinal vein occlusion?

The retinal veins can be compromised by many factors. The most common are increasing age, high blood pressure, raised cholesterol and diabetes. Retinal vein occlusion can also occur in the absence of any predisposing factors.

What are the symptoms of retinal vein occlusion?

A small branch retinal vein occlusion sometimes causes no symptoms, but if the macula is involved vision is often reduced. The macula is the part of the retina responsible for fine central vision, and is located in the very back of the retina. The most important part of the macula is at its very centre, and is called the fovea.

Since a central retinal vein occlusion involves all the vessels of the retina, including the macular veins, vision is usually reduced. The degree of vision loss varies substantially, from mild to severe.

Vision loss occurs due to several factors, occurring alone or in combination:

1. Loss of the vessels supplying the macula, termed ischaemia.

2. Leakage of fluid from damaged veins. This fluid can accumulate at the macula (macular oedema), causing blurred vision.

3. Abnormal, fragile new vessels can grow inside the eye (neovascularisation). These can cause severe bleeding inside the eye (vitreous haemorrhage) or high eye pressure (rubeotic glaucoma).

What are the treatments for retinal vein occlusion?

Unfortunately ischaemia cannot be treated, but there are treatments for macular oedema and neovascularisation, if these have damaged or threaten vision.

The most common treatments are injections of anti-VEGF or steroid drugs into the eye, or laser therapy. If these are advised, and you choose to proceed, then you will be asked to sign a consent form indicating that you understand the risks and benefits of treatment. These are summarised below.

It is important that you fully understand the pros and cons of any treatment before proceeding, so if you have any further questions or concerns please do ask Professor Jackson for more information.

The forehead above the eye to be treated will often be marked, indicating the side to be treated.

What are anti-VEGF eye injections?

These drugs aim to stop a chemical (vascular endothelial growth factor or VEGF) that makes the damaged vessels leak fluid. Hence, anti-VEGF injections can be used to treat macular oedema. They also reduce new vessel growth, so they can treat neovascularisation.

The main anti-VEGF drugs are:

1] Ranibizumab (Lucentis)
2] Aflibercept (Eylea)
3] Bevacizumab (Avastin)

Because the first two drugs are expensive, some self-funding private patients opt to use bevacizumab (Avastin), which costs less. Bevacizumab has not been licensed for the treatment of retinal vein occlusion. However, it is widely used 'off-label' for retinal vein occlusion in multiple countries, such as the USA, and it is thought to have relatively similar safety and effectiveness to ranibizumab and afilbercept.

Anti-VEGF injections usually need to be repeated, typically several times a year. Over time, the injection frequency tends to reduce and injections can often be discontinued, but the number of injections that people need varies widely.

What do anti-VEGF intravitreal injections involve?

Your injection will be usually given at an outpatient visit. A nurse will get you ready for your treatment. You will lie on a couch in a treatment room. You will be given eye drops to numb the front of your eye and an iodine eyewash will be used to clean your eye and the skin around it (if you are allergic to iodine please let Professor Jackson know). Your face will be covered by a special drape and your eyelids will be held gently open with a small clip during the procedure, so that it does not matter if you blink.

Professor Jackson will give the injection into the white of your eye. Most people say that the injection is painless, or stings for just a moment, but it is usually less stressful or painful than people first imagine.

Your vision may be blurry after your injection so you should not drive until your vision returns to normal. This is mainly due to the dilating eye drops that are given to examine your prior to injection.

What are the benefits of anti-VEGF intravitreal injections?

If you have macular oedema the injections usually aim to improve vision, or if fluid is expanding to involve the macula they may help prevent an impending loss of vision. The injections may also help reduce neovascularization, although more commonly that is treated with PRP laser (see below).

What are the risks of anti-VEGF intravitreal injections?

Following your injection you will often get a bloodshot eye or see moving spots (floaters) in your vision. These are normal side effects and should improve in a few days. If they do not, or if they get worse, please contact our office.

Some people might feel a little bit of pain or discomfort after their injection. If needed, you can take everyday painkillers such as paracetamol, but if the pain does not go away or gets worse you should contact our office.

Other common side effects are an increase in eye pressure and detachment of the vitreous (gel-like substance inside the eye). High eye pressure usually settles, and posterior vitreous detachment is not usually damaging to the eye. You can get an abrasion on the surface of the eye. This is often quite painful, but usually resolves over a day or two.

Injections can occasionally damage the natural lens of your eye, or lead to detachment of the retina; both can damage the vision and require surgery, but thankfully they are rare.

The most serious problem is infection inside the eye (endophthalmitis). This requires urgent treatment with an antibiotic injection into the eye, and despite treatment endophthalmitis can often damage the vision, sometimes severely so. It could even lead to loss of the eye. However, endophthalmitis is extremely rare, occurring in only about 1 in 2,000 to 1 in 6,000 injections.

It is possible that anti-VEGF injections may be associated with an increased risk of stroke or heart attack, although the risk is small, and indeed some studies question if it exists at all. However, if you have previously had a stroke or heart attack please inform Professor Jackson.

What are steroid injections or implants?

Steroid injections reduce the leakiness of blood vessels in the macula, and thereby reduce macular oedema. The most commonly used steroid is Ozurdex. This is a very small implant that is injected into the eye. It slowly releases drug over time.

What are the benefits of steroid injections?

The key advantage of steroids is that they last longer than anti-VEGF injections. Ozurdex usually last from a few to several months. Because it lasts quite a long time, fewer injections may be needed than anti-VEGF injections.

What are the risks of steroid injections?

The main downside is that steroids cause cataract (a clouding of the natural lens of the eye), but not in those who have already had cataract surgery. Therefore, steroids are usually reserved for those who have already had cataract surgery. The second important downside is that they can cause high eye pressure. This may need treatment with eye drops, or rarely surgery, to avoid or treat glaucoma (a condition characterized by loss of peripheral vision). They are not associated with a risk of heart attack or stroke. Except for these differences, the risks and side effects are similar to anti-VEGF injections, including loss of vision from endophthalmitis.

What things should I look out for after an eye injection?

You should be on the lookout for any symptoms that might suggest a problem after an injection. Surface irritation of the eye, redness, small floaters and blurred vision are expected, but if your vision is getting worse rather than better, eye pain is increasing, you notice lots of flashing lights in your vision, or a shadow or veil coming over your vision, then you should contact our office immediately.

What is macular laser?

Macular laser may be required to treat macular oedema. Macular laser aims to dry up the leaking macular fluid, and thereby treat macular oedema.

What happens during macular laser?

Macular laser is done during an outpatient visit and takes about 5-15 minutes.

Drops are put into your eyes to dilate your pupil and numb your eye. You sit in a chair with your chin and forehead resting on a chin and head-rest. A contact lens is placed on the surface of your eye to keep it open and focus the laser beam onto the macula.

You will see a bright flash of light as the laser is fired, multiple times. You should keep your gaze steady in one position, usually looking straight ahead. If you need a break or feel dizzy, let Professor Jackson know, as it is fine to take a break. Otherwise, keep still and keep your head resting against the head rest (patients often tend to drift back during treatment).

What are the benefits of macular laser?

Macular laser is generally a very safe procedure, but all eye treatments carry some degree of risk. However, Professor Jackson will not present macular laser as an option unless he feels the benefits outweigh the risks.

The aim of macular laser is to reduce or resolve macular fluid. If the fluid already involves your central macula then successful treatment will usually improve your vision (although not necessarily to normal, as other factors such as macular ischaemia may coexist). If the fluid threatens, but does not yet involve the centre of your macula, then macular laser will not improve your vision, rather, it aims to reduce the risk of you losing vision from neighboring fluid that might otherwise spread to involve the centre of your macula (the fovea).

What are the risks of macular laser?

Your vision will be temporarily blurred due to the bright lights of the laser and the dilating eye drops. The effect of the bright lights wears off within a few minutes, but the dilating drops take several hours to wear off, so do not drive to the consultation. The dilating drops also cause increased sensitivity to light, until they wear off, hence sunglasses can sometime help, but are optional.

Your eye may well be a bit sore, red and gritty due to the contact lens, but this should settle over the day. Less commonly, the contact lens can cause an abrasion on the surface of the eye, and this may take a day or two to heal. If your eyes feel gritty or sore that is normal, and you can buy some over the counter artificial tears and use them as required, alongside your painkillers such as paracetamol, but if your eye is still painful contact our office.

Macular laser may lead to small blind spots to the side of your central vision. Very rarely, if the laser accidentally hits the fovea, then you can have a serious and permanent loss of central vision, but this is very rare (less than a 1 in 100 risk).

Macular laser may need to be repeated if the macular oedema persists, or recurs, but it usually only requires one or two sessions.

What is pan-retinal photocoagulation (PRP) laser?

If you have new blood vessels growing inside the eye (neovascularisation), a large area of peripheral retina may need to be treated with laser, to stop new vessels forming. This is known as pan-retinal photocoagulation or PRP laser.

What are the benefits of PRP laser?

PRP aims to make the new vessels get smaller and start to disappear. This reduces the risk of severe loss of vision in the future from vitreous haemorrhage and rubeotic glaucoma. Importantly, PRP *does not aim to improve your vision*, it is instead about reducing the risk of vision loss in the future.

What are the risks of PRP laser?

PRP will often make your peripheral vision worse. This can be frustrating, as intuitively people expect laser to help their vision, yet it can instead make it worse. Loss of peripheral vision is however worth it, if it protects the more important central vision. You should be aware that loss of peripheral vision may affect your eligibility to drive. Your colour vision and night vision may also be affected.

Very rarely, PPR laser can severely damage central vision if the laser accidentally hits the fovea, but that is rare (less than a 1 in 100 risk).

What happens during PRP laser?

The experience is similar to macular laser, as detailed above. However, PRP laser takes longer (10-30 minutes) and can be more uncomfortable, as a larger number of laser spots are needed, and often you will feel some discomfort during treatment. Accordingly, treatment is often staggered over 2-3 treatment sessions.

It may be necessary to 'top-up' PRP laser, in people who have already had PRP laser. Top-up treatment tends to be much less extensive, and is therefore much quicker.

During the treatment you will be asked to move your eyes in certain directions. As noted in the macular laser section above, if you need a break please let Professor Jackson know.

Any further questions?

If you have any further questions regarding retinal vein occlusion and the benefits and risks of treatment please do not hesitate to contact our office on 020 7060 1968.