Branch Retinal Vein Occlusion (BRVO)

Branch retinal vein occlusion is a process where hardening of the arteries causes a compression or notching of a vein within the retina. It will only affect one eye. Vision may be blurred or a ‘blackout’ area of vision may be experienced.

How does BRVO occur?

The retina is part of the brain and forms a thin nerve tissue lining within the eye. The retina functions like the film in a camera. The retina, like all other parts of the body needs a blood supply to keep it functioning. The retinal veins drain the 'used' blood from the retina to take it back to the heart, while the arteries take the blood supply into and around the retina at high pressure. The blocking off, medically called 'occlusion' of a retinal vein occurs when a retinal artery crosses over a vein and compresses it, thus occluding it. This can be imagined like you stepping down on a hose and blocking off or occluding its flow of water.

What does the blockage cause?

When blood flow through the vein is restricted, fluid builds up as it cannot drain from the eye. Some blood then leaks out into the retina blocking areas of vision. Fluid can also leak out of the blood and water log the eye causing central swelling, medically called ‘oedema’. This results in a reduction in clarity and blurred vision. The site of the blockage determines the degree or extent of the vision affected.

What are the risk factors?

The eye is unusual in that the arteries and veins travel through the retina alongside each other and occasionally, as a random event during development, they can cross over allowing the occlusion to happen.

The artery is most likely to do this if:
- Hypertension (high blood pressure)
- Diabetes
- Cholesterol
Cardiovascular disease
Smoking & obesity
It is essential to optimise the cardiovascular risk factors by insuring that the blood pressure, cholesterol and diabetes are optimally control.

How is BRVO diagnosed?
Diagnoses and then management of BRVO involves a thorough eye assessment including checking the pupils response to light, measurement of intraocular pressure and examination of the retina.

A Fluorescein Angiogram is performed to assess the circulation and the degree of the blockage. This procedure is where a dye is injected into the hand and then the eye is photographed over a period of five minutes as the dye flows through.

An OCT (Ocular Coherence Tomography) determines the degree of retinal swelling by scanning the eye with an ultrasound. This takes a very short time and is non-invasive.

Types of BRVO Treatment

BRVO is a condition that can be significantly helped with modern treatment. The choice of what treatment is best can only be made on an individual basis where the clinical pattern and duration of the problem are assessed and then the options discussed in light of all the findings.

Management can range from a period of observation through to surgery. These include:

1. **Observation**: In many patients, observation is the best approach for a couple of months to determine whether the occlusion will begin to resolve itself by creating 'bypass channels' so the blood can flow out of the eye again. Sometimes the kinking/blockage can be reduced if high blood pressure is controlled.

2. **Laser**: Laser is the traditional treatment option which "prunes" areas of poor circulation just like one would trim a plant that is not doing well. This ensures that the nourishment goes to the key parts of the plant rather than trying to supply everything - with the consequence that nothing is well supplied. Laser treatment involves a procedure where a bright flashing light is used to cauterise leaking blood vessels and to facilitate drying of the leaking fluid by making little outflow channels. Laser treatment can be very effective in simple branch vein occlusion particularly if there is not too much retinal bruising. Retinal bruising or haemorrhages prevents the laser working. As such, sometimes it is necessary to defer laser treatment until the
haemorrhages diminish. This, unfortunately, leaves poor vision for a longer time and also increases the prospect of permanent visual reduction. The good thing about laser treatment is that it can be delivered in my consulting room and has virtually no direct side-effects. It is, however, effective in only a small group of patients with a branch vein occlusion.

3. **Triamcinolone**: Very effective therapy where the predominant problem is retinal swelling 'macular oedema'. The anti-inflammatory properties of the Triamcinolone reduce the swelling and allow the blood vessels to start repairing. The side-effects of this injection are potential infection (perhaps two per thousand developed an infection called endophthalmitis), approximately 40% will have a mild elevation of the intraocular pressure but only approximately 20% would require drops to control the pressure for several months. A very common side effect is increased speed of cataract formation. A cataract is cured by a routine operation. This drug is injected into the eye in our consulting rooms.

4. **Avastin**: A new drug that is predominantly used for Macular Degeneration. It is very effective in reducing the retinal swelling 'macular oedema'. There have not been long term studies on this drug but it has been routinely used by Dr Heriot and across the world for over two years now with no known long-term side effects. The only side effect has been inflammation in the eye lasting a week to ten days. The vision may be blurred or fogged out during this time. The drug is injected into the eye in our consulting rooms.

5. **Surgery**: A breakthrough in management is a procedure called vitrectomy with or without “sheathotomy" whereby the artery crimping/blocking the vein is released surgically so that the blood flow through the vein can recommence allowing the retina to start recovering. The major long-term side effect of the surgery is cataract formation in older people. Other risks such as infection, etc. are very low and occur in 1:5000. Retinal tears can develop where the instruments are introduced into the eye in less than 5% of cases and are usually easily addressed with a small procedure where some spot welding using the laser is performed in conjunction with a gas bubble. This is a procedure in the operating theatre performed under local anaesthetic with sedation.

**Consultation**

Should you require a consultation for BRVO, please call 1800 986 695

At Eye Surgery Associates we are able to offer you appointments at any one of our three sites: **East Melbourne, Malvern and Doncaster.**