RETINAL VEIN OCCLUSION

This leaflet is designed to give you some information about the condition called vein occlusion.

What is a retinal vein occlusion?

The veins of the body carry the blood back to the heart and the veins of the eye carry the blood from the tissues back to the heart. These veins can become blocked suddenly and is rather akin to having a small heart attack in the eye. There are a number of types of vein occlusions.

Branch Vein Occlusion

This is where one branch of the main vein has blocked and the results of this on the vision can be variable. The outlook generally for these is far better.

Central Retinal Vein Occlusion.

Is where the main central vein is blocked and the vision is usually drastically reduced. This is clearly a much more serious condition and the outlook for visual recovery and complications much worse.

What is the cause?

Like a heart attack it is often due to a thickening of the vessel walls in the eye which we term arterio-sclerosis and is a phenomenon which happens with age. It can also be related to high blood pressure and also high pressure within the eye (glaucoma). There are also other rarer causes whereby the blood becomes too thick and sludge’s within the veins of the eye.

Will any tests be undertaken?

The Doctor will be able to advise of any specific blood tests that are required to determine if there is a treatable cause. Typically a full blood count will be undertaken to see if the blood is too thick.

What is the treatment?

If there is an underlying cause such as high blood pressure or high eye pressure this will be specifically treated. Commonly, however, it is due to arterio-sclerosis and no specific
treatment is indicated.

**Will my vision return?**

In a central retinal vein occlusion it is very unlikely that full vision will return, however improvement especially if you have the new treatments with Lucentis, Macugen or Avastin (Bevacizumab) may be possible. In a branch retinal vein occlusion some recovery is usual and sometimes full recovery.

**Is any treatment indicated? – Anti-VEGF Treatments.**

Previous there was no specific treatment for the vein occlusions. However with the development of anti-VEGF agents for wet Age related macular degeneration these have been used very successfully in Vein occlusions. One large trial with Macugen showed very positive results and other small studies with Avastin (Bevacizumab) have also been very positive.

We now routinely use either Avastin (Bevacizumab) or Macugen to resolve the fluid that accumulates in central retinal vein occlusion and branch retinal vein occlusion’s. My experience with these injections is very positive.

While some drying of the retina occurs naturally my view is that if this process can be speeded up less long term damage to the retinal cells will occur. There is now evidence to suggest this.

Not all central retinal vein occlusion are alike and thus results can vary, and some vein occlusions can be very challenging to control and in these cases we may well also use Laser treatment.

Initially 3 injections are given into the eye one month apart and then the results are evaluated. Usually no more is required but further injections can be given if need be.
Below is our audit of our patients, the fact all the points on the graph are below the line indicate that most patients improve with treatment.

In My NHS clinics at The Hillingdon Hospital and The Western Eye Hospital we have Avastin (Bevacizumab) on the Hospital formulary for the treatment of Vein occlusions.

![Graph showing PRE and POST LogMAR VA following IV-Avastin in Retinal Vein Occlusions](image)

- Average age 73±10, 12 males
- Mean initial VA 0.96±0.33 (17 cases)
- Median of 3 injections (range 2-7)
- 16/17 showed some improvement 94%
- 1/17 worse
- Mean current VA 0.7±0.3 (P=0.02)

Below is an example of a dramatic improvement which is not uncommonly seen. The Optical Coherence Tomography pictures on the left are before treatment, and the ones on the right after. The retina has dried out considerably.

**Macugen injection 3 weeks 6/60 to 6/18**
In addition laser treatment can be helpful in certain situations and your doctor will advise you if this is appropriate.

Further publications are showing dramatic benefits as well. Early Bevacizumab Treatment of Central Retinal Vein Occlusion December’s AJO

The treatment for central retinal vein occlusion (CRVO) remains elusive with therapies being pursued from many different avenues.

Ferrara et al. evaluated the change in visual acuity and retinal appearance in patients after early initiation of intravitreal bevacizumab treatment for CRVO.

In this case series of six eyes of five patients with recent CRVO (less than three months’ duration), the patients received intravitreal bevacizumab (1.25 mg in 0.05 ml) as primary treatment. Changes in visual acuity, central macular thickness, venous tortuosity and diameter and optic disc edema were recorded.

The mean baseline visual acuity was 20/428 (logMAR units). The mean follow-up period was 12 months, and the number of bevacizumab injections ranged from four to 10. The patients showed a statistically significant decrease in optic nerve head swelling, venous tortuosity and venous diameter, with the largest proportion of change occurring within one month of the first bevacizumab injection. The mean visual acuity at last follow-up was 20/53 (logMAR units). No patient in the study developed collateral vessels at the optic nerve head.

These five patients experienced a dramatic improvement in visual acuity and clinical fundus appearance without collateral vessel formation.

The authors concede that the findings are difficult to explain with current theories of the pathophysiologic features of CRVO but that the results of the study suggest early initiation of anti-VEGF treatment might be studied in a larger trial for CRVO.

Lucentis Ranibizumab has now a licence for treating vein occlusions in the UK and USA. The pivotal phase III randomised trial showed very marked benefit from treatment sufficient to recommend a licence for this condition. Currently Novartis are applying for NICE approval for its use in the NHS.

The conclusion of the paper was “Ranibizumab provided rapid, effective, treatment for cystoid macular oedema following branch retinal vein occlusion with low rates of ocular and non ocular safety events.”

Are there any later complications?

In certain circumstances the retina can produce a vaso proliferative factor which causes new blood vessels to go on the iris (coloured part of the eye). This can then result in high pressure within the eye which can be very painful. The Doctor will make an assessment of this risk and also possibly undertake a Fluorescein angiogram if clinically indicated. If the risks of this complication are high then laser photocoagulation treatment to the eye
will be undertaken, not to improve the vision but to either prevent or treat the new vessels on the iris and so hopefully reduce the risk or severity of what is termed rubeotic glaucoma. This can be a very painful condition and is why close attention is placed to this particular aspect. This can occur even quite late and should you notice any pain develop in the eye then you should ask your General Practitioner to make a further appointment for you at the Clinic. However the risk of this complication is low.

**Will the other eye become involved.**

About 10% of people have the second involved, but only 25% of these occur with in 5 years and only 30% were a complete occlusion. Thus there is an increased risk, but most people will not have the second eye involved, and if it is most people (50%) have only a partial occlusion.

**Exercise and Eye Pressure**

Isokinetic exercises cause considerable reduction in intraocular pressure and may be helpful in glaucoma (Ophthalmologica 1999;213:290-4). Aerobic exercise also lowers intraocular pressure (IOP) and short-term studies show it may improve blood flow to the retina and optic nerve as well. Eye pressure can be lowered by exercise that raises the pulse just 20-25% --that could be a brisk walk -- for 20 minutes, a minimum of four times a week or Aerobics (Quigley H, in Glaucoma.org 2002, vol.19 newsletter).

In normal eyes of sedentary subjects who engage in moderate to heavy exercise for 3 months, a consistent decrease in IOP occurs (on the order of 1–2 mm Hg). The effect is diminished in physically fit subjects. If one stops exercising, the effect wears off in 3 weeks. Exercise may not be effective in lowering IOP in everyone. In one study IOP was lowered by at least 2 mm Hg by exercise in 34%. However, 57% had no change in IOP, while 9% had an IOP elevation (Survey of Ophthalmology 2001:46:43-55)

**Will glasses help?**

Not specifically. However you should always have the best possible glasses and your Optometrist or Ophthalmic Medical Practitioner can advise you on this.

**Is there an increased risk of stroke after a vein Occlusion.**

This has been studied and the answer is No.

Should you have any further questions or comments please ask your attending Doctor.

Mr. Nicholas Lee 2011

Lead Ophthalmic Clinician at The Hillingdon Hospital

Consultant Ophthalmologist at The Western Eye Hospital