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RETINAL VEIN OCCLUSION

What is a retinal vein occlusion?

The retina is the thin light-sensitive layer of tissue that lines the back of the eye; it relays the images that you see to the brain. Oxygen and nutrient-rich blood are pumped all over the body by veins and arteries. The nerve cells, like all organs in the body, need a constant supply of blood. Retinal vein occlusion occurs when a vein in the retina becomes blocked (either partially or completely). When this happens, the vision is affected.

The following symptoms may be a sign of retinal vein occlusion or other eye problems:

- Vision that is blurred
- An area in the eye where vision is missing

Typically there is no associated pain or discomfort, and only one eye is affected

What causes a retinal vein occlusion?

In the retina, arteries and veins cross over and can overlap one another. In some cases an artery can harden due to atherosclerosis and press onto a vein, narrowing it. This causes clotting of the blood, which may block the blood flow in the vein, causing a retinal vein occlusion. People with diabetes, high blood pressure, high cholesterol, and other conditions that affect the blood vessels are more likely to develop this condition. Since the risk factors are of a general nature, this condition can occur in the other/second eye too. If left untreated, retinal vein occlusions may cause permanent vision loss.

How is a retinal vein occlusion diagnosed?

Your ophthalmologist will be able to diagnose this condition, and evaluate the extent of the damage caused by a retinal vein occlusion. A thorough eye examination with dilation of the pupils can identify this condition, and any complications caused by the retinal vein occlusion. An optical coherence tomography (OCT) scan of the retina may be performed to determine the presence of swelling in the retina. Fluorescein angiography may assist in assessing the extent of retinal ischaemia using a special dye that is injected into the bloodstream. The retinal condition can worsen in the first few months after the occlusion, so regular check-up examinations are very important.

How is a retinal vein occlusion treated?

Unfortunately there is no effective treatment for the occlusion itself; all therapeutic efforts therefore focus on the main complications of the occlusion, being macular swelling/oedema and new blood vessel growth.

Macular swelling/oedema is the result of leakage of fluid into the retina, specifically the macula, from the blood vessels damaged by the occlusion. This causes a decrease in central vision. Treatment is targeted at reducing the swelling in an attempt to stop or reverse this loss of central vision.

Neovascularisation (new blood vessel formation/growth) happens when large areas of the retina are ischaemic (have no blood supply). The ischaemic retina releases a substance called VEGF (vascular endothelial growth factor), which stimulates the formation and growth of new blood vessels in the eye. These new blood vessels can grow on the retina and cause bleeding into the gel at the back of the eye (vitreous), with resultant loss of vision. They can also develop in the front of the eye and cause an increase in the eye pressure.

**** Both of these complications can cause severe and permanent loss of vision.***

The **treatment** of a retinal vein occlusion is **determined by** the following factors:

- the **type of occlusion** - branch retinal vein occlusion *or* central retinal vein occlusion
- the **severity of the occlusion** - non-ischaemic *or* ischaemic
- the **stage** of the condition/disease – acute *or* chronic

Since retinal venous occlusions have a very variable course, the treatment is individualised for each patient. These are the available treatment options for the complications of a retinal vein occlusion:

- **Retinal laser treatment/photocoagulation**
  Retinal laser is used to treat and prevent the growth of new blood vessels in the eye in cases with ischaemic retinal vein occlusions. The laser destroys the poorly perfused (ischaemic) areas of the retina, so that the release of VEGF is decreased or stopped. If this is done early and adequately, serious complications such as haemorrhage and increased eye pressure can be prevented. Improving vision is not possible under these circumstances. Laser is seldom used to treat macular oedema, but it may be useful in cases that don't respond well to first line therapies, like eye injections.
- **Eye injections**
  The injection of certain drugs/pharmaceutical agents into the eye is the "gold standard" treatment for macula oedema. Two groups of drugs have been shown to be very effective in reducing inflammation and macula oedema; corticosteroids and anti-VEGF (vascular endothelial growth factor) agents.

  Corticosteroids
  Various long-acting cortisone preparations are available, and once injected are effective for up to 6 months. Unfortunately they all cause cataract and raised eye pressure.

  Agents that block VEGF (Avastin®, Lucentis®, Eylea®, Vsiqq®)
  These drugs have been shown to act against new blood vessel growth and are effective against macular swelling/oedema. These agents have virtually no side effects, but do act for a shorter period of time and therefore need to be re-injected at frequent intervals (4 to 12 weeks depending on the agent). These agents are the mainstay of treatment for macular oedema in retinal venous occlusions.
- **Surgery**
  Surgery is often required when new blood vessels have caused haemorrhages into the gel of the eye. Some studies have shown that the removal of the vitreous gel from the back of the eye (vitrectomy) with peeling of the internal limiting membrane of the retina is effective at treating macular oedema in retinal vein occlusion cases.

Retinal vein occlusion is a complex disease with a very variable course; it therefore requires an individualised approach and some expertise in determining the most appropriate treatment. As always, prevention is better than treatment. Attention to nutrition, blood pressure and cholesterol, avoidance of smoking and attention to general health is vital, as it will help prevent this vision-threatening condition.