

## **Diabetic Retinopathy**

Diabetes can affect sight by causing cataracts, glaucoma, and most importantly, damage to blood vessels inside the eye, a condition known as "diabetic retinopathy". Diabetic retinopathy is a complication of diabetes that is caused by changes in the blood vessels of the retina. When blood vessels in the retina are damaged, they may leak blood and grow fragile, brush-like branches and scar tissue. This can blur or distort the vision images that the retina sends to the brain.

Diabetic eye disease is a leading cause of blindness in Australia. People with untreated diabetes are said to be 25 times more at risk for blindness than the general population. The longer a person has had diabetes, the higher the risk of developing diabetic retinopathy. Fortunately, with regular, proper eye care and treatment when necessary, the incidence of severe vision loss has been greatly reduced. If you have diabetes, your ophthalmologist can help to prevent serious vision problems.

### **Background Diabetic Retinopathy**

Background diabetic retinopathy (BDR) may occur at any point in time after the onset of diabetes. In general, this is the first "stage" of diabetic retinopathy and, therefore, the least concerning. This condition is often present without any visual symptoms. Findings in the retina include dot and blot hemorrhages (tiny hemorrhages in the retina itself), microaneurysms (out-pouchings of capillaries), and exudates (retinal deposits occurring as a result of leaky vessels). The development of this condition in type I (juvenile-onset) diabetics is rarely present prior to three or four years following the onset of diabetes. In type II (adult-onset) diabetics, background diabetic retinopathy may be present at the time of diagnosis of the condition. Primary care practitioners should refer patients with diabetes to ophthalmologists, accordingly.

**Proliferative Retinopathy** describes the changes that occur when new, abnormal blood vessels begin growing on the surface of the retina. This abnormal growth is called neovascularization. If these abnormal blood vessels grow around the pupil, glaucoma can result from the increasing pressure within the eye. These new blood vessels have weaker walls and may break and bleed, or cause scar tissue to grow that can pull the retina away from the back of the eye. When the retina is pulled away it is called a retinal detachment and if left untreated, a retinal detachment can cause severe vision loss, including blindness. Leaking blood can cloud the vitreous (the clear, jelly-like substance that fills the eye) and block the light passing through the pupil to the retina, causing blurred and distorted images. In more advanced proliferative retinopathy, diabetic fibrous or scar tissue can form on the retina.

**Macular Oedema** describes the condition where retinal blood vessels can develop tiny leaks. When this occurs, blood and fluid seep from the retinal blood vessels, and fatty material (called exudate) deposits in the retina. This causes swelling of the retina and is called diabetic macular oedema. When this occurs in the central part of the retina (the macula), vision will be reduced or blurred.

Many people with severe, vision-threatening diabetic retinopathy have no symptoms! Regular ophthalmic examinations are crucial to obtaining treatment before it is too late!

## **Symptoms**

- Difficulty reading
- Blurred vision
- Sudden loss of vision in one eye
- Seeing rings around lights
- Dark spots or flashing lights

NOTE: Pregnancy and high blood pressure may aggravate diabetic retinopathy.

The symptoms described above may not necessarily mean that you have diabetic retinopathy. However, if you experience one or more of these symptoms, contact your eye doctor for a complete exam.

## **Treatment**

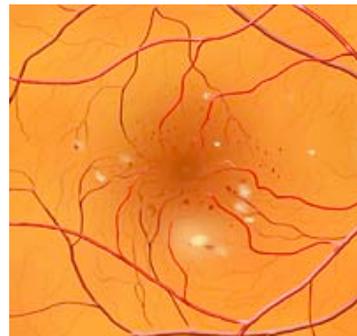
In mild cases, treatment for diabetic retinopathy is not necessary. Regular eye exams are critical, though, to monitor any progression. Strict control of blood sugar and blood pressure levels can greatly reduce or prevent diabetic retinopathy.

In more advanced cases, treatment is recommended to stop the damage of diabetic retinopathy and prevent vision loss.

**Laser surgery** is often helpful in treating diabetic retinopathy. To reduce macular oedema, laser light is focused on the damaged retina to seal leaking retinal vessels. For abnormal blood vessel growth (neovascularization), the laser treatments are delivered over the peripheral retina. The small laser scars that result will reduce abnormal blood vessel growth and help bond the retina to the back of the eye, thus preventing retinal detachment. Laser surgery may be performed in your ophthalmologist's office or in an out-patient clinic. Laser surgery can greatly reduce the chance of severe visual impairment.

**Intraocular Steroid Injection** is a newly emerging treatment for diabetic macular oedema. This therapy helps reduce the amount of fluid leaking into the retina, resulting in visual improvement. Due to the chronic nature of diabetic eye disease, this treatment may need to be repeated or combined with laser therapy to obtain maximal or lasting effect.

**Cryotherapy (freezing)** may be helpful in treating diabetic retinopathy. If the vitreous is clouded by blood, laser surgery cannot be used until the blood settles or clears. In some of these cases retinal cryotherapy may help shrink the abnormal blood vessels and bond the retina to the back of the eye.



**Vitrectomy** may be recommended in advanced proliferative diabetic retinopathy. Vitrectomy removes the blood-filled vitreous and replaces it with a clear solution. Your ophthalmologist may wait from several months to a year to see if the blood will clear on its own, before going ahead with a vitrectomy. This microsurgical procedure is performed in the operating room.

Retinal repair may be necessary if scar tissue has detached the retina from the back of the eye. Severe loss of vision or even blindness can result if surgery is not performed to reattach the retina.

### **What Is Your Part In Treatment?**

Successful care of diabetic retinopathy depends not only on early treatment by your ophthalmologist, but especially on your attitude and attention to medications and diet. You must maintain blood sugar levels, avoid smoking and watch your blood pressure. Physical activity usually poses no problem for people with background retinopathy. Occasionally, people with active proliferative retinopathy are advised to restrict their physical activity.