

# Southern Ophthalmology

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**Diabetic Retinopathy** -Diabetic retinopathy is a complication of diabetes and a leading cause of blindness. It occurs when diabetes damages the tiny blood vessels inside the eye, resulting in damage to the retina. The retina is the light-sensitive tissue at the back of the eye. A healthy retina is necessary for good vision.

If you have diabetic retinopathy, at first you may notice no changes to your vision. But over time, diabetic retinopathy can get worse and cause vision loss. Diabetic retinopathy usually affects both eyes.

**Who is at risk for diabetic retinopathy?** - All people with diabetes - both type 1 and type 2 - are at risk. That's why everyone with diabetes should get a comprehensive dilated eye exam at least once a year.

During pregnancy, diabetic retinopathy may progress very quickly and create severe visual problems for women with diabetes. To protect vision, every pregnant woman with diabetes should have a comprehensive dilated eye exam as soon as possible. Your doctor may recommend additional exams during your pregnancy.

**How diabetic retinopathy causes vision loss** - Blood vessels damaged from diabetes can cause vision loss in two ways:

1. Fragile, abnormal new blood vessels can develop. These new blood vessels can leak, blurring vision. This is known as proliferative retinopathy.
2. Fluid can leak into the macula, the part of the retina responsible for sharp detailed central vision. The fluid causes the macula to become swollen, blurring vision. This condition is called cystoid macular oedema. It can occur at any stage of diabetic retinopathy, although it is more likely to occur as the disease progresses. About half of the people with proliferative retinopathy also have cystoid macular oedema.

Blood vessels damaged from diabetes can cause vision loss in a number of ways:

The presence of repeatedly high glucose levels in the blood damages blood capillary walls causing initially leaking of fluid into retinal tissues especially the macula which is the area of the eye responsible for fine detailed vision and hence loss of this type of vision. This is called cystoid macula oedema (the acronym CME is often used for this condition). This is Exudative Maculopathy.

The second effect of the presence of the high glucose concentration in the capillaries is to cause sufficient damage to the vessel walls and the red blood cells that the blood vessels block causing lack of blood flow which in turn starves the tissues of survival nutrients. This stops the retina from working in the areas affected. Occurring in the macula it is called Ischaemic Maculopathy. Furthermore this effect, which can occur in all retinal areas, stimulates the growth of abnormal blood vessels which leak further, bleed and create fibrous tissue which contracts, damaging and moving the retinal surfaces. This is called Proliferative Diabetic Retinopathy.

These diabetic changes can occur separately or can co-exist.

In the early stages before visual loss occurs, changes can be detected by your eye care personnel. The presence of these changes, called Background Diabetic Retinopathy, is important to detect as it is the signal to take action to prevent further damage. You do this by seeking the appropriate care.



Normal vision



Same scene viewed by a person with diabetic retinopathy

**Symptoms of Diabetic retinopathy** - Symptoms representative of diabetic retinopathy include blurred vision and/or metamorphopsia (straight lines appear distorted). Early detection of diabetic retinopathy is essential for the preservation of vision. Don't wait for symptoms. Be sure to have a comprehensive dilated eye exam at least once a year.

**Diabetic retinopathy is detected during a comprehensive eye exam that includes:**

- **Visual acuity test.** This eye chart test measures how well you see at various distances.
- **Dilated eye test.** Drops are placed in your eyes to widen, or dilate, the pupils. Your eye care professional uses a special magnifying lens to examine your retina and optic nerve for signs of damage and other eye problems. After the exam, your close-up vision may remain blurred for several hours.
- **Tonometry.** An instrument that measures the pressure inside the eye. Numbing drops may be applied to your eye for this test.

**Your eye care professional checks your retina for early signs of the disease, including:**

- Leaking blood vessels.
- Retinal swelling (macular oedema).
- Pale, fatty deposits on the retina - signs of leaking blood vessels.
- Damaged retinal tissue.

### **Diabetic Retinopathy treatment**

During the early stages of diabetic retinopathy, no treatment is needed, unless you have macular oedema. To prevent progression of diabetic retinopathy, people with diabetes should monitor and control their levels of blood sugar, blood pressure, and blood cholesterol. Regular exercise and a sensible diet is also required. Your GP may enlist an endocrinologist to help with these points.

Proliferative retinopathy is treated with injections into the eye, laser surgery, or surgery inside the eye.

## **What happens during laser treatment?**

Both focal and scatter laser treatment are performed in your doctor's office or eye clinic. Before the surgery, your doctor will dilate your pupil and apply drops to numb the eye. The area behind your eye also may be numbed to prevent discomfort.

The lights in the office will be dim. As you sit facing the laser machine, your doctor will hold a special lens to your eye. During the procedure, you may see flashes of light. These flashes eventually may create a stinging sensation that can be uncomfortable.

You will need someone to drive you home after surgery. Because your pupil will remain dilated for a few hours, you should bring a pair of sunglasses.

For the rest of the day, your vision will probably be a little blurry. If your eye hurts, your doctor can suggest treatment.

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