



DIABETIC RETINOPATHY

What is diabetic retinopathy?

Diabetes has damaging effects on blood vessels all over the body. When the blood vessels that support the retina become damaged, they may leak fluid, bleed or lead to the growth of scar tissue. All of these changes can cause blurring, distortion or even loss of vision.

The severity of diabetic retinopathy is dependent on the length of time a person has had diabetes and the quality of one's blood sugar control. Type 1 diabetics who have juvenile diabetes tend to have retinopathy at younger ages. Those individuals with poor blood glucose control also have increased risk of retinopathy.

Even though diabetic retinopathy is the leading cause of new blindness in adults in the United States, with improved diagnosis and treatment, only a small percentage of people who develop diabetic retinopathy will go on to develop severe vision loss.

What are the different types of diabetic retinopathy?

Background retinopathy

This is an early form of the disease, and it is also the most common. In this stage, the blood vessels within the retina have started to leak fluid and bleed. The accumulation of fluid in the retina causes it to swell. The blood vessels also leak cholesterol-like material, called **exudates**, into the surrounding retina. Depending on how severe the leakage is and where in the retina the damage or swelling occurs, will determine the effect it has on the vision. When the swelling occurs in the macula, the center part of the retina, this can cause changes in the central vision. This is called **macular edema**.

Proliferative retinopathy

When the normal blood vessels of the retina become so damaged that they can no longer bring enough fresh oxygen to the retina, the eye will try to grow new blood vessels to replace the damaged ones. This process is called **neovascularization**. Unfortunately, when the eye tries to grow new blood vessels, they grow upon any surface, including the retina and into the jelly, called the **vitreous**, which fills the center of the eye. These vessels have very fragile walls that may break and bleed. This bleeding can cause massive floaters and block all or part of the vision. Occasionally, as the blood vessels break and bleed, they convert into strands of scar tissue, which can pull on the retina and cause a **retinal detachment**. A retinal detachment is a serious ocular condition that often requires surgery to correct.

Sometimes the blood vessels will grow in the front of the eye and block off the drain. This causes the pressure within the eye to rise, which is a type of glaucoma (**neovascular glaucoma**).

How is diabetic retinopathy diagnosed?

It is very important that you have at least an annual eye exam, and more frequent exams if recommended by your eye doctor. In order to detect retinopathy, particularly at its earliest stages when there may be no visual symptoms, a complete eye exam, including pupil dilation, must be performed. When retinopathy is detected, other tests may be needed in order to determine if you require treatment. One of these tests requires that you receive a dye injection in order to study the blood vessels in the retina. This test is called a fluorescein angiogram.

How is diabetic retinopathy be treated?

Treatment depends primarily upon the type and severity of the retinopathy. The most important aspect of treatment, however, is prevention. By keeping your blood glucose under tight control, and paying attention to diet and exercise, you can significantly reduce your chances of developing retinopathy.

Laser surgery

Although it is called surgery, it does not involve any cutting of the skin or eye. It is performed by directing a beam of light into the eye to treat the damaged parts of the retina. In cases of background diabetic retinopathy with macular edema, the laser is used to seal off leaking blood vessels and to stimulate the eye to reabsorb the fluid and exudates. When abnormal blood vessel growth is present, as in proliferative diabetic retinopathy, laser is used to treat the peripheral retina. This in turn decreases the blood vessel growth and welds the retina to the wall of the eye, which can help prevent a retinal detachment. Laser surgery is often performed in the office and usually only requires topical or local anesthesia.

Cryotherapy

When the eye is filled with blood from abnormal vessels, and the view into the eye is too clouded to treat with laser. Cryotherapy can be used to administer a freezing burn through the outside wall of the eye to achieve the same effects as laser.

Vitrectomy

Vitrectomy surgery involves removing the vitreous gel from the center of the eye and replacing it with clear fluid. In cases where the vitreous is filled with blood and several months have passed without spontaneous clearing, surgery may be recommended to speed healing and restoration of the vision. Your eye can function normally without the vitreous. Even though the blood may be severely impairing your vision, your doctor may advise waiting to see if the blood clears on its own before recommending surgery, particularly if you can see well with your other eye. Vitrectomy surgery is also performed to repair retinal detachments caused by excessive scar tissue that develops in proliferative retinopathy.

Early detection of diabetic retinopathy is the best way to prevent vision loss. With careful monitoring, treatment can often be initiated before your vision is affected. The available treatments are highly effective, but are best when combined with healthy lifestyle habits.