

- Associated diseases like hypertension, cardiac and renal diseases, and pregnancy

How can diabetic retinopathy be detected in the early stages?

The **only** way to detect this disease early is to have a dilated retinal examination, because there may not be any associated symptoms initially. Only when vision is affected in the advanced stages does a patient realize that something is wrong. A routine eye check-up for glasses by an optician will not reveal serious underlying diabetic retinopathy.

What are the symptoms of the disease?

There are often no early warning signs. When macular edema develops, vision becomes blurred, making it difficult to perform activities like reading and driving. The vision worsens gradually. Bleeding inside the eye may lead to sudden and severe reduction of vision. When the bleeding is mild, black spots or floaters appear in front of the eye.

Who can diagnose diabetic retinopathy?

A qualified ophthalmologist or general physician with appropriate screening instruments can diagnose a patient of diabetic retinopathy and stage the disease appropriately. Dilated examination and direct viewing of the retina alone can detect diabetic retinopathy.

What is laser photocoagulation?

A laser is a powerful light energy used to treat the diseased areas of the retina. Laser treatment is indicated in people with diabetic macular edema or for proliferative diabetic retinopathy.

How is it done?

Laser photocoagulation is best performed by a retinal specialist or qualified ophthalmologist with special training in laser photocoagulation. Laser surgery is performed in the outpatient area of a hospital/clinic. Before starting the procedure, the ophthalmologist will dilate the pupil and administer drops to numb the eye. You will be seated in front of the laser machine, a special lens will be applied to the eye and the laser light will be projected into the eye.

The patient may leave once the treatment is over. Since the pupils remain dilated for a few hours, the near vision will be blurred for some time. You can resume routine activities but should avoid doing strenuous or even moderate exercises for 6–8 weeks for the laser to be effective.

Can one session of laser photocoagulation arrest the progress of diabetic retinopathy?

No, one session of laser treatment may not be enough. In proliferative diabetic retinopathy, three or more sessions are required. Even after the sessions you will need periodic evaluation and further laser treatment or sometimes surgery

may be needed as diabetes is a life-long disease and complications may recur any time, despite good control of diabetes.

Note: Laser photocoagulation may not improve the vision, it mainly helps stabilize the existing vision.

What is the treatment for advanced diabetic retinopathy?

You may need to undergo complex vitreous surgery. Only experienced retinal surgeons, equipped with the appropriate instrumentation, can perform this form of surgery.

Do I need to undergo any other systemic checks?

Yes, it is very important for you to undergo a complete systemic work-up. You need to be investigated for kidney and cardiac function as well as a blood lipid profile. A regular check-up with a diabetologist is very essential.

If there is an emergency at night, during a weekend, or on a holiday, come for emergency care to the Institute. Always mention the patient's ID number, name and the doctor's name in all communications.



L V Prasad Eye Institute

Hyderabad

Kallam Anji Reddy Campus
LV Prasad Marg, Banjara Hills, Hyderabad 500034
Tel: 91 40 39892020 / 30612108; **Fax:** 91 40 23548339
Emergency Services: 91 40 30612100
Email: appointment@lvpei.org, info.hyd@lvpei.org

Bhubaneswar

Patia, Bhubaneswar 751024, Orissa
Tel: 91 0674 3989202 / 3987999 / 2725424; **Fax:** 91 0674 3987130
Emergency Services: 91 0674 3987220
Email: B.LVPEI-Appointment@lvpei.org, info.bbsr@lvpei.org

Visakhapatnam

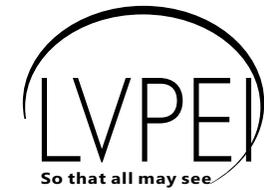
GMR Varalakshmi Campus
Door No: 11-113/1, Hanumanthawaka Junction
Visakhapatnam 530040
Tel: 91 0891 3984555; **Fax:** 91 0891 3984444
Email: GMRV-Appointment@lvpei.org

Vijayawada

Kode Venkatadri Chowdary Campus
Tadigadapa Village, Penamaluru Mandal
Vijayawada 521137
Tel: 91 0866 3062020
Email: kvc-appointment@lvpei.org

Website: www.lvpei.org

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LV Prasad Eye Institute

Diabetes and the Eye



Diabetes mellitus or diabetes is characterized by increased levels of blood sugar, due to impaired production or reduced effectiveness of insulin.

Patients with diabetes stand the risk of developing diabetic retinopathy due to changes in the blood vessels of the retina caused by poor glucose control. Blindness due to diabetic retinopathy is one of the leading causes of preventable blindness.

The retina is a layer at the back of the eye that senses light and sends images to the brain. In diabetic retinopathy the blood vessels in the retina become fragile and get blocked, leading to water collection (edema), lipid deposition, retina hemorrhages, and the formation of new vessels on the retina. Vision loss can occur due to the lipid and water deposition in the centre of the retina (diabetic maculopathy), or due to bleeding inside the eye from new blood vessels (vitreous hemorrhage), or due to membrane formation over the retina which “pulls” on the retina (traction retinal detachment).

Symptoms

In the early stages there are no warning signs; the treatment works best in this stage if detected by a routine retinal examination. In relatively advanced stages, the vision worsens gradually or suddenly, making reading or driving difficult. Bleeding in the eye can lead to black spots or floaters or total blockage of vision. Persons with advanced diabetic retinopathy may find it difficult to:

- recognize faces from a distance or read bus numbers,
- read fine newsprint, bills, or low contrast text,
- write in a straight line,
- tolerate bright light or see in dim light,
- move about independently outdoors after dusk, and
- tell the time from a wristwatch or read the print on an insulin syringe.

Need for early detection

The life expectancy of diabetic patients has increased with the availability of better medicines. However this means an increase in the incidence of diabetic retinopathy and its blinding complications. People with diabetic retinopathy are 25 times more likely to experience permanent vision loss than those with other sight-threatening ailments. Early detection and appropriate treatment can help prevent this. The only method of early detection is a regular and dilated retinal examination.

The recommended check-up schedule for a patient of diabetes with no diabetic retinopathy or its milder forms is:



- No or minimal retinopathy detected – once a year
- Mild to moderate non-proliferative diabetic retinopathy – between 6 to 12 months
- Moderate to severe non-proliferative diabetic retinopathy – between 3 to 6 months
- Very severe non-proliferative diabetic retinopathy–2-3 months
- After photocoagulation–1 to 6 months or as advised by the treating ophthalmologist.

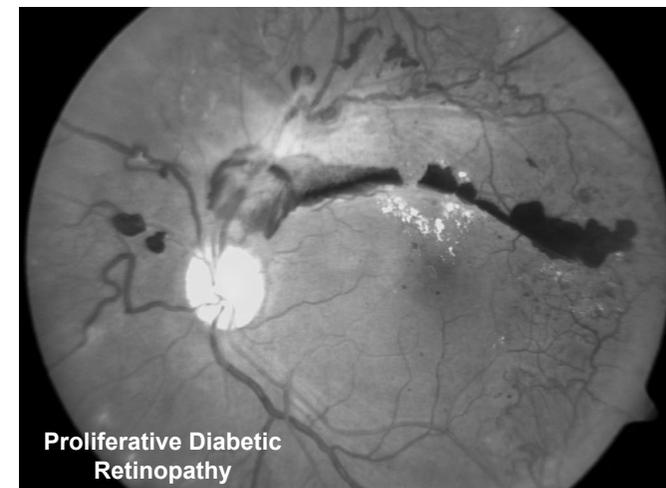
Diabetic retinopathy and pregnancy

Pregnancy can increase the progression of diabetic retinopathy. Hence pregnant women with diabetes should have an eye examination every three months. Controlling blood sugar after the progression of diabetic retinopathy has less effect than controlling it in the initial years of the disease.

How to combat diabetic retinopathy

The first and foremost is good blood sugar control, as this can prevent or delay the occurrence or progression of diabetic retinopathy. Clinical studies show that good blood sugar control during the first 10 years of a diabetic life helps reduce the incidence of diabetic retinopathy. With intensive treatment for blood sugar control there is five times reduction in the risk of progression of diabetic retinopathy over an eight-year period.

Since high blood sugar levels and intermittent high fluctuations in the levels increase the incidence of diabetic retinopathy, it is necessary to not only control blood sugar but also fluctuations of blood sugar levels. Hence regular exercise, good dietary habits, and taking medication as scheduled



are vital. Patients with hypertension, low hemoglobin, hyperlipidemia, cardiomyopathy, and nephropathy (protein urea) are at a higher risk of developing diabetic retinopathy associated complications. So it is essential to keep these systemic factors under control.

Diabetics have peripheral neuropathy with reduced sensitivity to touch and temperature. It is important to take care of the feet (diabetic foot) as there is an increased risk of getting injured. Injuries in diabetics heal slowly and there is more risk of getting infected, including leg infections.

Laser treatment: This is indicated in patients of diabetic retinopathy with maculopathy (lipid deposits in the center of the retina) and proliferative diabetic retinopathy (new blood vessels formation). This treatment can be done on an outpatient basis.

Surgical treatment: Vitreous surgery is needed if there is vitreous hemorrhage (bleeding inside the eye), retinal detachment due to traction membrane formation, or non-resolving macular edema.

Frequently Asked Questions

What is good control of blood sugar?

A fasting blood glucose level of 110 mg/dl and or 150–160 mg/dl two hours after meals is generally considered good control.

What are the risk factors for diabetic retinopathy

- Duration of diabetes (longer the duration, more the risk of diabetic retinopathy)
- An increase in and large fluctuations in blood sugar levels