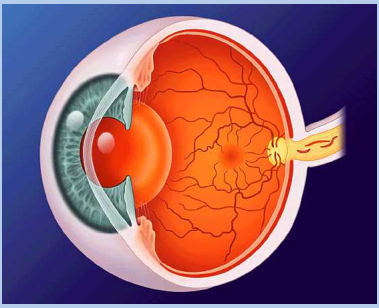
DIABETIC RETINOPATHY

P. D. HINDUJA HOSPITAL
& MEDICAL RESEARCH CENTRE

Diabetes mellitus is a chronic disease which impairs the body's ability to use and store sugar. Diabetes may affect vision by causing cataract, glaucoma and most importantly, damage to blood vessels inside the eye.

1) What is the retina?



Graphic representation of Normal Eye

The retina is a thin, transparent tissue of light sensitive nerve fibers and cells. It covers the inside wall of the eye like wallpaper covers the walls of a room. The retina functions like a film in a camera; light passes through the lens of the eye and is focussed on the retina. The light sensitive retinal fibers are responsible for "taking the picture" and transmitting the image via the optic nerve to the brain.

The central portion of the retina is most important for critical vision and is called the macula.

2) What is diabetic retinopathy?

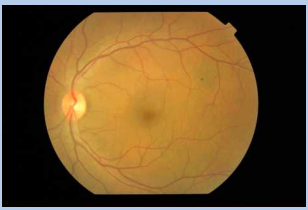
Specific changes in the retina that can occur in people with diabetes mellitus are termed diabetic retinopathy.

3) Who is most likely to get affected by diabetic retinopathy?

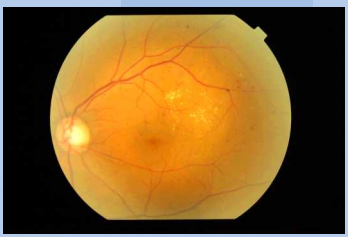
Any one with diabetes. The longer someone has diabetes, the more likely he or she will get diabetic retinopathy. Nearly half of all people with diabetes will develop some degree of diabetic retinopathy during their life time.

4) What abnormalities are seen in the retina in diabetic retinopathy?

The changes affect the small blood vessels i.e. capillaries of the retina (termed microangiopathy). The inner lining of these blood vessels are weakened and small outpouchings occur. These



Fundus photo of a normal Retina

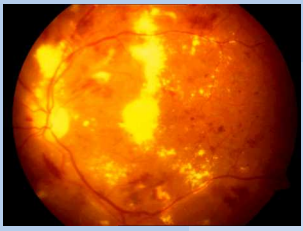


Fundus photo showing early Diabetic retinopathy

are called microaneurysms.

The blood vessels also become abnormally permeable and allow substances to leak freely into spaces where they should not normally enter. This leakage causes thickening of the retina called retinal edema and deposition of lipoprotein material called hard exudates.

5) What are the more advanced changes in diabetic retinopathy?



Fundus photo showing advanced Diabetic retinopathy

The more advanced changes in diabetic retinopathy are the closure of the retinal capillaries. Lack of blood supply to the retina from capillary closure may be more difficult to detect and may be apparent only with the use of fluorescein angiogram. The retina being starved of oxygen, stimulates the growth of abnormal blood vessels on the retina. The process is termed retinal neovascularization.

Fundus photo showing vitreous hemorrhage

6) Why "bleeding inside the eye" occurs?

The abnormal blood vessels are brittle and have a tendency to bleed easily. Such bleeding occurs either between the vitreous (Jelly) and the retina or into the vitreous itself when it is termed as vitreous Haemorrhage. Such bleeds may clear spontaneously or may remain as

Fundus photo showing fibrovascular proliferation & TRD

such. Sometimes repeated bleeds occur. Abnormal growth of scar tissue (fibrovascular proliferation) is also a complication of diabetic retinopathy and this can contract and pull the retina causing it to detach. This is called a "traction retinal detachment" (TRD)

7) How does vision get affected in diabetic retinopathy?

A decrease in vision occurs if retinal edema occurs at the macula; if traction retinal detachment involves the macula; or if a vitreous haemorrhage locates itself in front of the macula.

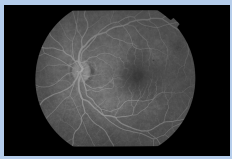
8) How would the patient know that a bleed has occurred inside the eye?

Seeing black spots, floaters and cob webs or sudden loss of vision.

9) When and how frequent should a diabetic patient be examined?

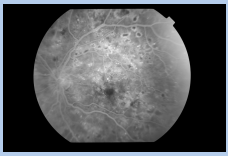
If you have diabetes, you should have a detailed eye examination by a retinal specialist.

- No diabetic retinopathy - yearly check up
- Early diabetic retinopathy- 6 monthly check up
- Rest as per ophthalmologist's recommendation usually after every 4-6 months.



FFA of normal retina

10) What is fundus fluorescein angiography (FFA)?



FFA of a patient with Diabetic retinopathy

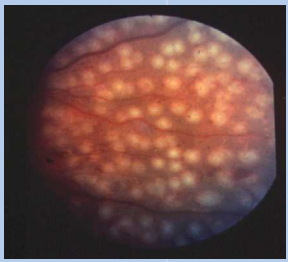
It is an investigative procedure that supplements clinical evaluation. It involves injection of a dye into veins and photographing the retina with blue light.

It detects abnormal leakage or fluid.

It detects abnormal blood vessels.

Laser photocoagulation being done

11) Why laser photocoagulation?

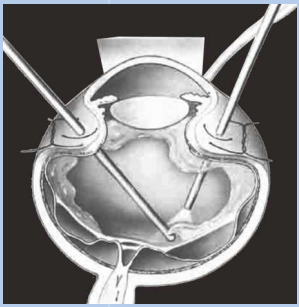


Fundus photo showing Laser burns (white dots) on the retina

The purpose of the treatment is to arrest progress of the changes within the retina and help to retain existing vision. By intentionally destroying some portion of the retina, photocoagulation helps regression of abnormal new blood vessels thereby reducing the risk of vitreous haemorrhage/TRD. It also reduces abnormal leakage of fluid and lipids by obliteration of leaking microanerysms. Laser helps to provide long term stability to the eye vis-à-vis diabetic retinopathy.

12) Does laser treatment improve vision? Does laser cure the disease?

In majority of patients laser treatment helps to maintain the vision and prevents further visual loss. It decreases the risk of blindness by 50%. It does not eliminate the black spots/floaters which one may be seeing and doesn't resolve vitreous haemorrhage which has occurred already. Inspite of laser treatment there is a small chance that the disease process may progress with associated visual loss.



Graphic representation of vitreous surgery

13) Can laser lead to decrease in vision?

Vision is likely to be blurred for a few hours after treatment. Side vision and dark adaptation may be affected. It is important to know that despite laser treatment, visual loss can occur in a group of patients, thus necessitating vitreous surgery.

14) What does vitreous surgery achieve?

With the development of new surgical techniques in vitreous microsurgery, patients who develop these complications have a 60-70% chance of improvement in vision. The purpose of

vitrectomy is to remove the blood and abnormal scar tissue from inside the eye.

15) What precautions can you take to protect your vision?

Successful treatment of diabetic retinopathy depends not only on early detection through eye examinations and treatment by an ophthalmologist, but also on the patients' attitude and attention to medication and diet.

It is important to remember that diabetic retinopathy may be present without any symptoms. Early detection of diabetic retinopathy is the best protection against vision loss.

Facilities available at Hinduja Hospital Ophthalmology Clinic for treating Diabetic Retinopathy :

- Specialist retinal surgeons available daily for examining and treating patients with Diabetic retinopathy
- Digital Fundus Camera for Digital Fundus Fluorescein Angiography in patients with Diabetic retinopathy
- Iridex Green Laser for Laser treatment of Diabetic Retinopathy

Points to Remember

I Even an eye with normal vision may have changes of diabetic retinopathy, which if detected and treated early can prevent future vision loss.

I All diabetics need routine evaluation of their eyes (retina) by an ophthalmologist to look for diabetic retinopathy. Even if diabetes (blood sugar) is under control diabetic retinopathy may be present.

I Although treatment (laser and / or surgery) is meant to arrest the disease, in some cases diabetic retinopathy may progress inspite of the same.

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