

**. PARANJAPE LASER CENTRE**

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**DIABETES AND EYE**

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## DIABETES AND EYE

Readers must be fairly aware about diabetes. However, everybody may not be well informed about serious effects of diabetes on human body.

Diabetes is basically of two types: -

- ◆ Juvenile (contracted during young age)
- ◆ Maturity onset (occurring in old age)

Diabetes can also be categorised depending on the medicines administered to the patients:

- ◆ Insulin dependent
- ◆ Tablets dependent
- ◆ Mixed

The Juvenile diabetes is mostly insulin dependent whereas the maturity one is tablets dependent.

In diabetic condition, keeping the blood sugar under control is necessary under all circumstances. It is not adequate to bring down sugar level with the help of medicines, it is equally important to maintain in the normal range. It should be 70 to 80% mg on fasting and 120 to 140%mg past perennial (after meals). Further, the patient must strictly follow the diet and regular exercise prescribed by the diabetologist, to make his life bearable. This is so, because various problems emerging out of diabetes make patient's life miserable.

Excess amount of sugar in blood gets converted into Sorbitol and such other harmful substances. When these circulate through the blood vessels they affect the walls of tiny blood vessels called the Capillaries and destroy the cells there. This results bulging in the capillaries, which may result into hemorrhage.

Due excess sugar in the blood, the affinity among blood cells increases, resulting into blood clot formation. In order to avoid formation of such harmful substances n the blood, it is utmost necessary to keep blood sugar under control.

The ill effects of diabetes start showing up, 5 to 10 years after one gets diabetic. If diabetes is kept under control, this period can be considerably prolonged; further the intensity of the ill effects too remains low. On the contrary, if the advice by the specialist is not followed strictly, the effects are seen to occur early and their extent could be quite damaging.

We are going to see the effects of diabetes on human eyes in this booklet.

The Retina of a person who is not suffering from diabetes is as shown in Fig-1.

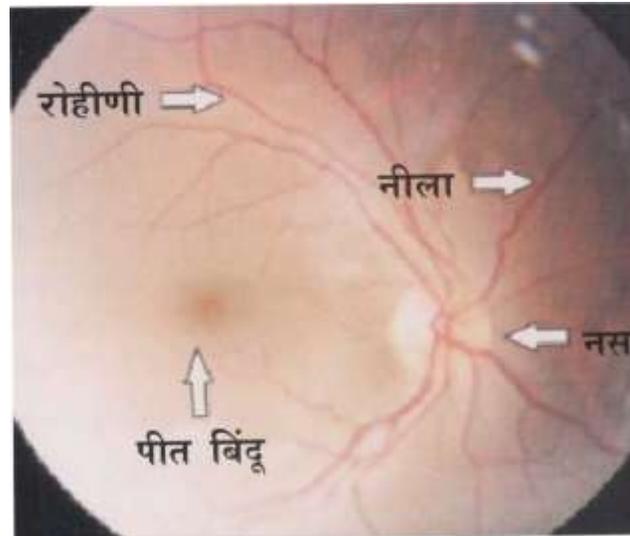


Figure 1

In human body, eye is the only organ in which blood vessels can be actually seen. In no other organ it is possible.

Diabetes not only affects eye but the entire body. However, it is only the eye, which can be treated directly.

Diabetes affects eyes mainly in two ways: -

- ◆ Effect on blood vessels in the Retina.
- ◆ Cataract.

Both these effects are significant and worrisome. These effects grow quite rapidly and despite proper care and treatment, expected restoration of eyesight is not possible.

**Cataract:** Due to uncontrolled diabetes, maturing of cataract is very fast, at times even in a few hours. Under such circumstances, planned surgery is not possible and an emergency operation is required.

**Effects on Retina:** These are broadly of two types-

- ◆ Primary
- ◆ Growth of unwanted blood vessels.

If the effects are of primary nature, the eyesight can be fairly saved with treatment. e.g.- Hemorrhage in a limited area, or edema. These effects occur due to certain chemicals.

Fig-2:-

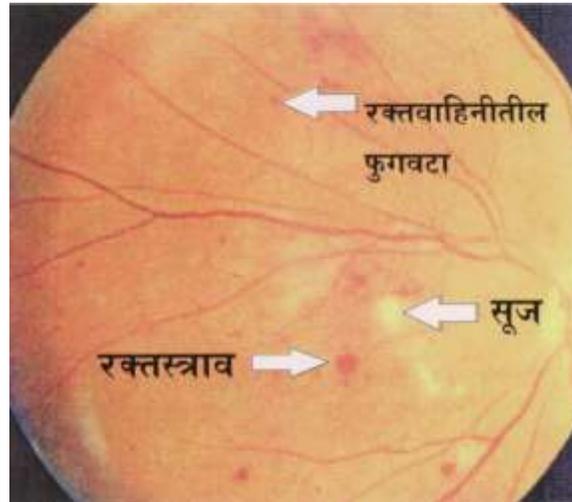


Figure 2

3-

However, situation is totally different if growth of unwanted blood vessels takes place. This occurs due to uncontrolled diabetes. The fluidity of blood depends upon sugar level in it. Thick blood cannot supply sufficient amount of Oxygen regularly. To make up for the supply of Oxygen, body develops new blood vessels. Such vessels are very delicate and can rupture easily even with a minor push, thus hemorrhage occurs in the cavity of the eye, eyesight weakens in no time.



Figure 3

As mentioned earlier, blood vessels in the eyes alone can be directly examined. Ophthalmologist examines effects on eyes by the following methods:

- ◆ Indirect Fundascopy
- ◆ Fluorescein Angiography

Due to Indirect Fundascopy, complete Retina can be examined in a few seconds and it gives eye-specialist a rough idea of the effects of diabetes of eyes. The advantages of this test are-

- ◆ Patient can be examined in O.P.D.
- ◆ Retina can be examined in spite of cataract.

Every diabetic patient must undergo this test every six months.

Fluresin Angiography – This test is important and essential. Ophthalmologist can get a clear idea of the extent of effects of diabetes. Further, the changes that cannot be observed with naked eye can be examined with this test. This helps in deciding the course of treatment. During this test, fluresin is injected in the vein of patient's hand. With the help of a special video camera, flow of flu resin in blood is recorded. The film is examined by eye-specialist and further course of treatment is decided.

The following figures show fluresin angiography in both – primary and unwanted blood vessels. -

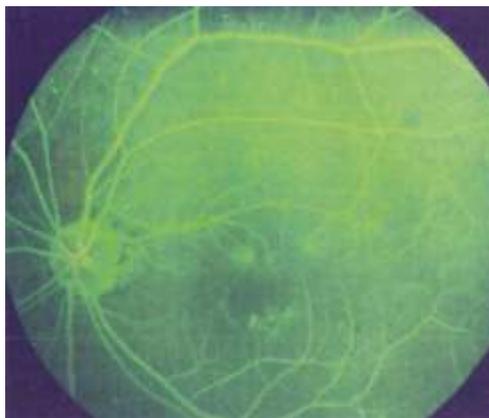
To counter the effects of diabetes on Retina, the only treatment available today is LASER treatment. This treatment helps in bringing the extent of diabetes under control. The following can be achieved with the help of LASER.-

- ◆ LASER arrests the development the harmful substances mentioned above. If treatment is started well in time, such ill effects of diabetes are kept under control.
- ◆ Macula on the Retina is very important in LASER treatment. The Macula imparts the distant and the near vision. Therefore for maintaining regular blood supply to Macula, by LASER treatment, blood supply to the peripheral Retina is reduced.

The responsibility of the patient increases after LASER treatment. In case a patient does not properly control diabetes, after this treatment, ill effects occur at places where treatment was not applied. At times these effects are seen where treatment was applied. Thus LASER treatment is effective only if patient keeps his diabetes under control; otherwise it is a waste.

Fluresin Angiography is advised every six months after LASER treatment; as treatment is easier if effects are detected in time.

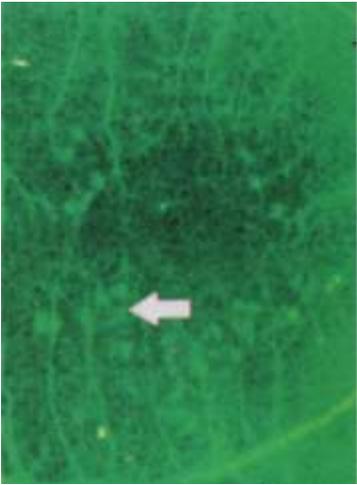
For Fluresin Angiography, we use Cobham make, RC-XV2 fundus camera. For LASER treatment, we use Carl-Zeiss-Germany machine.



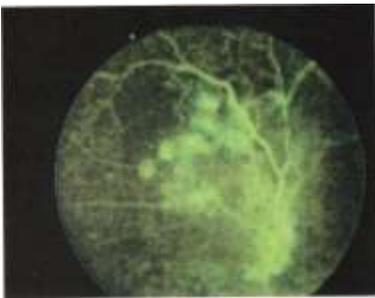
**Figure 4**



**Figure 5: Unwanted Blood Vessels**



**Figure 6**



**Figure 7**

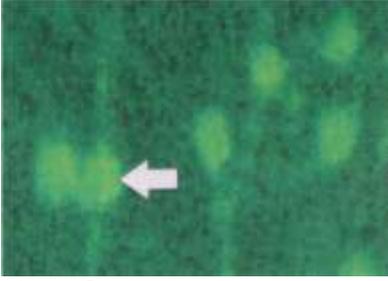


Figure 8



The information given above is academic. In case you are desirous of detailed information about the disease and medical treatment; please contact Dr.Anil Paranjape or Dr. Medha Paranjape.



## **SOME ULTRAMODERN TREATMENTS AND FACILITIES AVAILABLE IN THE HOSPITAL**

1. Examination rooms equipped with various apparatus like Slit lamp, Keratometer and Indirect-Ophthalmoscope.
2. Squint clinic for squint and Synoptophore, CAM Simulator Visuoscope etc for other sight defects.
3. Diode LASER- for defects of Retina.
4. Fundus Photography and Angiography camera.
5. A-Scan Biometer machine- Essential for deciding I.O.L number.
6. Glaucoma clinic (Glaucoma checkup and treatment): Applanation Tonometers, Gonioscopes, and Auto-Field Analyser.
7. Air-conditioned Operation Theatre – Well equipped with all facilities.
8. Ultramodern Operating Microscope.
9. Phaco Emulsification Machine: For surgery on cataract without stitches.
10. Vitrectomy equipment: for the operation on cavity opposite retina.
11. Ophthalmic Endoscope: For internal eye check up and treatment.
12. Well-equipped Eye Bank- Paranjape eye bank.

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