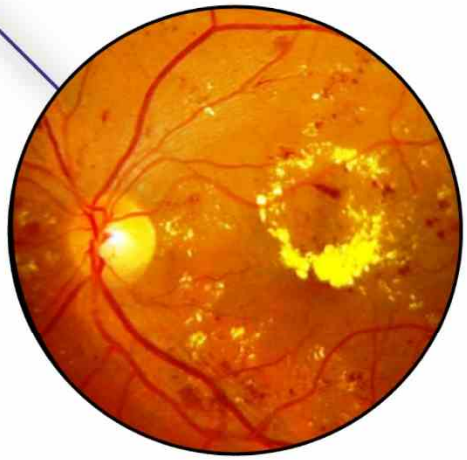
PANTHEO

EYE CENTER

Diabetic Retinopathy

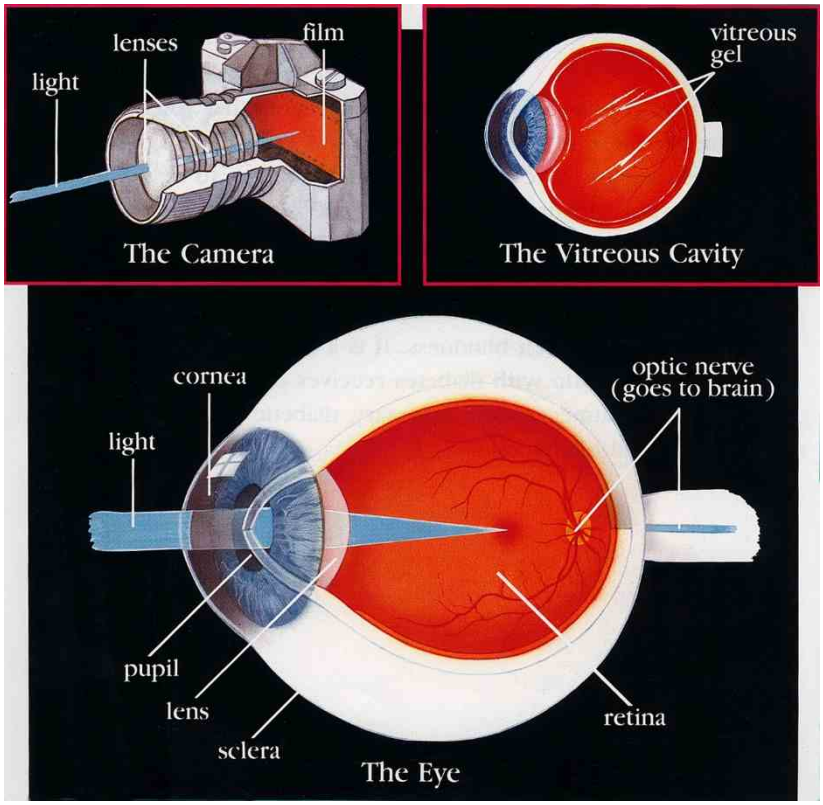


because sight is precious

Introduction

Diabetic retinopathy is a condition that can cause permanent loss of eyesight and even blindness. It is a major cause of loss of vision. But if a person with diabetes receives proper eye care regularly, and treatment when necessary, diabetic retinopathy will rarely cause total blindness.

How the eye works

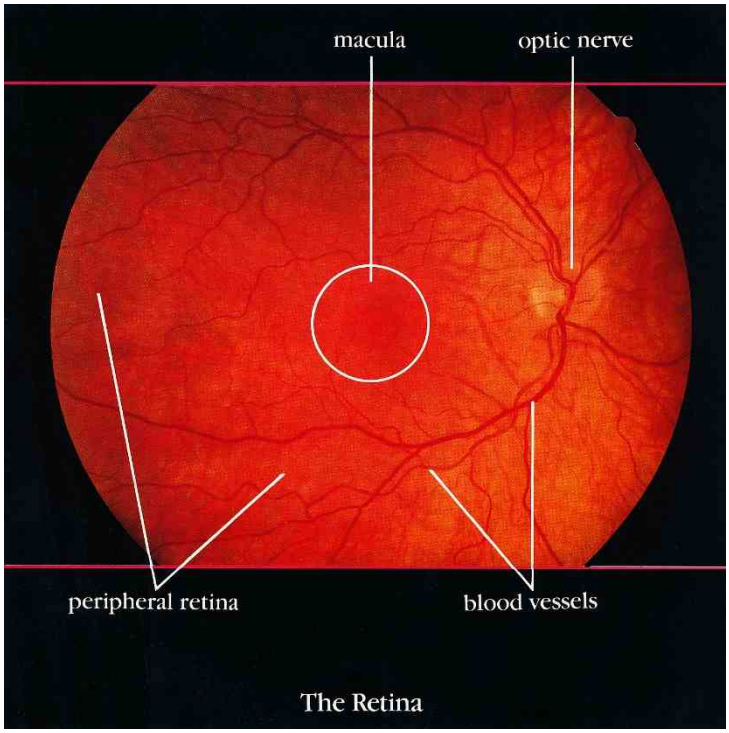


Before we talk about what can go wrong, it is important to understand how the eye works when it is working properly. The eye is like a camera. When you take a picture, the lens in the front of the camera allows light through and focuses that light on the film that covers the back inside wall of the camera. When the light hits the film, a picture is taken.

The eye works in much the same way. The front parts of the eye (the cornea, pupil, and lens) are clear and allow light to pass through. The light also passes through the large space in the centre of the eye called the vitreous cavity. The vitreous cavity is filled with a clear, jelly-like substance called the vitreous or vitreous gel. The light is focused by the cornea and the lens onto a thin layer of

tissue called the retina, which covers the back inside wall of the eye. The retina is like the film in a camera. It is the seeing tissue of the eye. When the focused light hits the retina, a picture is taken. Messages about this picture are sent to the brain through the optic nerve.

This is how we see.



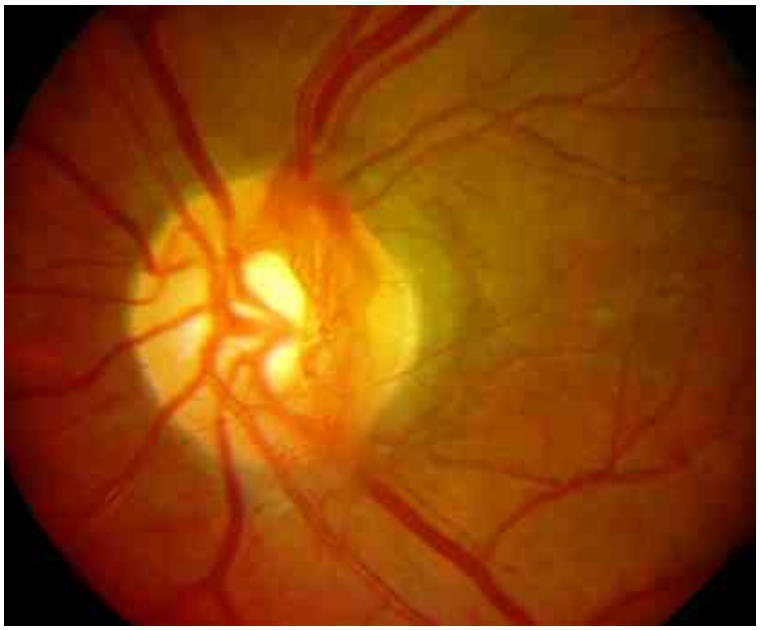
The retina

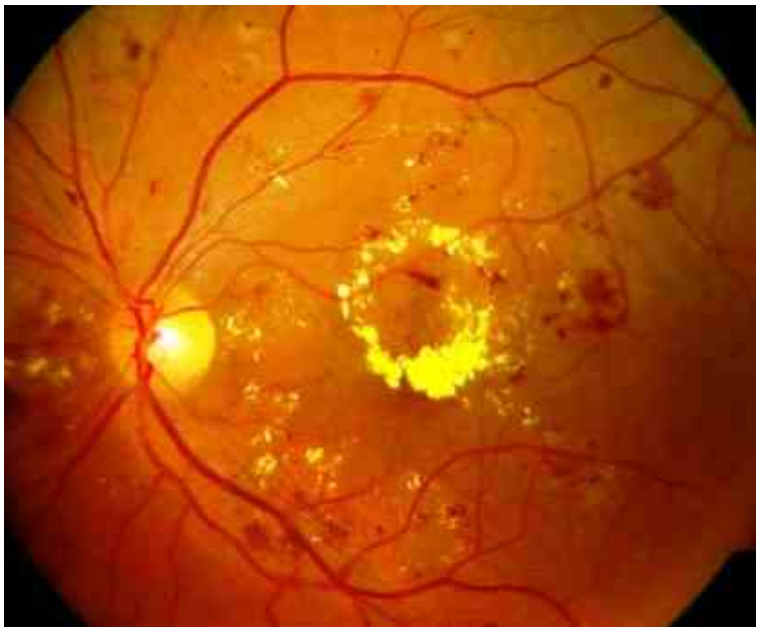
The retina has two parts: the peripheral retina and the macula. The peripheral retina gives us vision to the side, called óperipheralô vision. It is this part of the retina that is at work when we see something out of the corner of the eye. Because the peripheral retina is not able to see detail clearly, we cannot use the peripheral vision to read, drive, or even recognize a face. If you see someone off to your side, óout of the corner of your eyeô you may be able to tell who it is because you recognize the personôs general shape, but you wonôt be able to see the expression of the personôs face.

In order to see fine detail, you must look straight ahead, using the macula, the centre of the retina. Even though the macula makes up only a small part of the retina, it is one hundred times more sensitive to detail then the peripheral retina. The macula allows you to see tiny detail, read fine print, recognize faces, thread a needle, read the time, see street signs, and drive a car.

Diabetic retinopathy

In diabetic retinopathy the blood vessels of the retina become abnormal and develop tiny leaks. These leaks cause fluid or blood to seep into the retina. The retina then becomes wet and swollen (this is called oedema) and cannot work properly. Another problem with the retinal blood vessels in diabetes is that they can close. The retinal tissue, which depends on those vessels for nutrition, will no longer work properly. The areas of the retina in which the blood vessels have closed then trigger the growth of abnormal new blood vessels (this is called neovascularisation) that can be very bad for the eye because they can cause bleeding and scar tissue that can result in blindness.





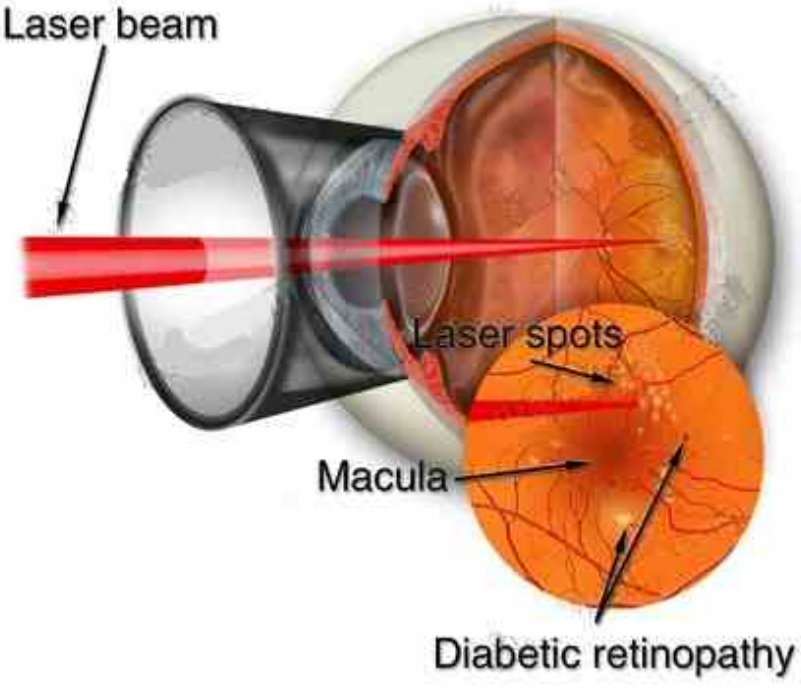
Fluorescein angiography and OCT

If your doctor diagnoses diabetic retinopathy and feels that laser surgery might be helpful, a special test called ***fluorescein angiography*** may be done. To do the test, dye is injected into a vein in the patientôs arm. The dye travels throughout the body, including the eyes. With a special camera photographs of the retina are taken as the dye passes through them. The photographs will provide a kind of map, which the doctor will use as a guide to the exact location and amount of laser surgery necessary.

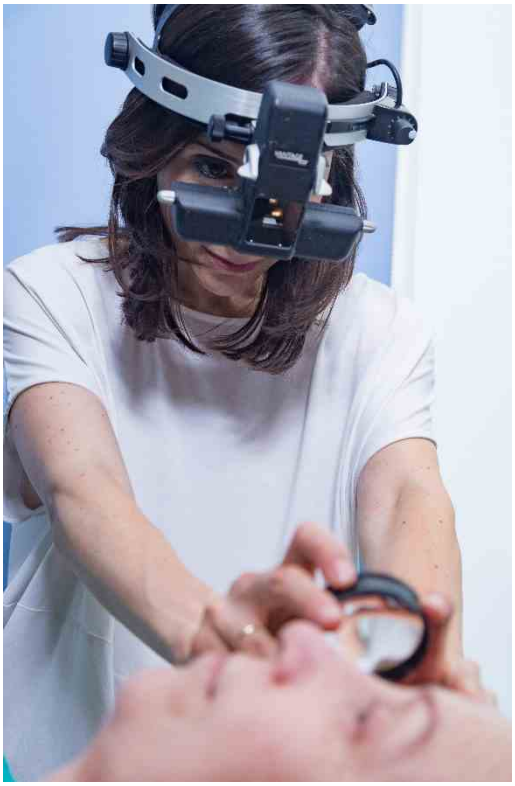
OCT is very specialised method of scanning the retina and viewing it in sections. It provides information about the thickness of the macula and which layers of the retina are damaged.

Laser surgery

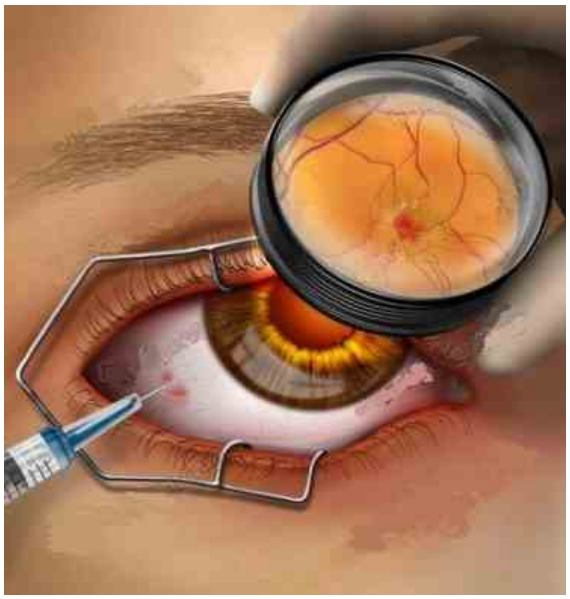
Laser surgery can be very helpful for the treatment of diabetic retinopathy. The laser beam is a high energy light that turns to heat when it is focused on the parts of the retina to be treated. The laser heat seals the leaking blood vessels of the macula and reduces their leakage. Essentially, the major purpose of laser surgery is to prevent further visual loss. Vision is not often improved by laser and it may even be reduced by laser treatment, especially in the initial stages. If however laser treatment is not performed when it becomes necessary then visual deterioration will usually progress rapidly.



Anti VEGF treatment – avastin and lucentis



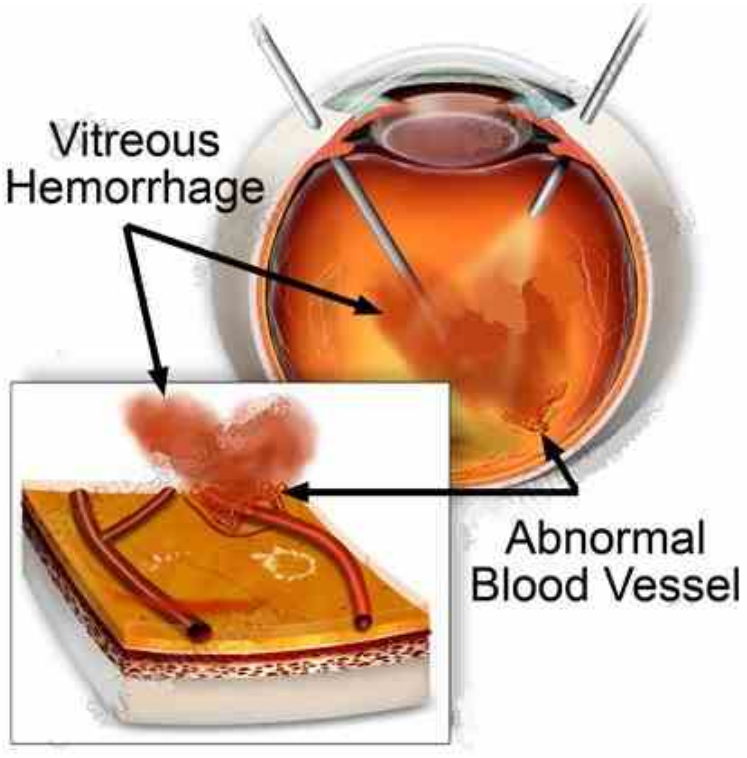
Eylea (aflibercept), Lucentis (ranibizumab) and Avastin (bevacizumab) are anti- vascular endothelial growth factor drugs (anti-VEGFs). Injection of an anti-VEGF drug into the vitreous cavity is used to reduce macular oedema (fluid at the back of the eye) and reduce new vessel growth. The injection is administered after the instillation of anaesthetic drops onto the eye which renders the procedure painless. The sterile environment of an operating theatre is used to minimize the risk of infection.



Anti VEGF injections have been shown by studies to improve vision and reduce the progression of diabetic new vessels.

Vitreous haemorrhage and vitrectomy

When a person does notice the sudden appearance of floaters, spider webs, spots in front of the eyes, or blurred vision, they should immediately call their eye doctor. Usually these are symptoms of a vitreous haemorrhage. If there is so much vitreous haemorrhage that laser surgery is not possible, or if the blood does not disappear on its own, it can be removed with an operation called a vitrectomy. Vitrectomy surgery is done in the hospital, under general or local anaesthesia. The blood-filled vitreous gel is removed. It is replaced during the operation with a gas bubble or a clear fluid that is compatible with the eye. Over time, the gas bubble or fluid is absorbed by the eye and is replaced by the eyeôs own fluid.



Conclusion

Measure your own vision in each eye, separately, each week. Know what you can see in each eye. If you notice a change in your vision, call your eye doctor for an appointment. It is important for all people with diabetes to have a thorough retinal exam regularly, about every six to twelve months, even when there are no problems. Also, be sure to talk to your own medical doctor about the importance of diet and exercise and the dangers of smoking and high blood pressure. And, most of all, learn to maintain the best possible control of your blood sugar. The complications of diabetes, especially diabetic retinopathy, can be reduced by long-term, strict control of blood sugar.

- ***Diabetic retinopathy treatment rarely improves vision significantly, prevention is much more important.***

Your doctor will always be available to answer your questions and to help in every way possible. You are encouraged to call with any unusual symptom or worry. Your doctor is here to help you.