

Cataract surgery, which is also called lens replacement surgery, is the removal of the natural lens of the human eye that has developed a cataract, an opaque or cloudy area. The eye's natural lens is usually replaced with an artificial intraocular lens.

Cataract types include:

Cataracts affecting the centre of the lens, called nuclear cataract

Cataracts that affect the edges of the lens, called cortical cataract

Cataracts that affect the back of the lens, called posterior sub capsular cataract

Cataracts in new born baby, called congenital cataract

Tests before a cataract include

A full ocular examination.

Vision and refraction

Slit lamp examination

Corneal topography.

Specular microscopy

DBR (digital biometry reading)

Blood pressure measurements.

High-risk patient (Heart disease) cardiology opinion

Blood sugar measurements in diabetic patients.

General fitness for before cataract surgery.

There are three major cataract surgery procedures:

Phacoemulsification.

Small incision cataract surgery (SICS)

Extracapsular cataract extraction (ECCE).

The instructions before a cataract surgery are Do not drink anything except for clear water after midnight the night before surgery. If you do not fast, we will need to cancel your surgery. Take your daily medications as usual on the morning of surgery with small sips of water. If you are diabetic, do not take any oral diabetic medication the morning of surgery.

After cataract do the following:

Use your eye drops as instructed.

Take it easy for the first 2 to 3 days.

Use your eye shield at night for at least a week.

Take painkillers if you need to.

Bathe or shower yourself as usual.

Wear your eye shield when washing your hair.

use your shield, old glasses or sunglasses outdoors

Plan on taking one to three days off of work to be sure you have enough time to rest, but it is normal to resume most normal activities within a couple of days.

Complications after a cataract include:

Posterior Capsule Rupture/Vitreous loss.

Cystoid Macular Edema.

Endophthalmitis.

Vitreous/Suprachoroidal Haemorrhage.

Retinal Tears/Detachment.

Lens Dislocation.

Betnesol and Predforte are the most commonly used antibiotic eye drops after cataract surgery. You will use these drops several times a day for 3 to 6 weeks after your surgery.

Wear your eye bandage, patch, or shield for as long as your doctor recommends. You may only need to wear it when you sleep. You can only shower or wash your body the day after surgery. Keep water, soap, shampoo, hair spray, and shaving lotion out of your eye, especially for the first week.

Patients are instructed to clean the lid margins and adjoining area with surgical cotton (given to them in their postoperative medicine kit) and advised not let any fluid or foreign body enter the eye. Dark glasses (sunglasses) are recommended to be worn outdoors for protection and to reduce glare.

We usually recommend waiting until your eye has settled, at around 6 weeks after surgery, before getting an eye test for your new glasses from your optician.

The patient should be made aware of the frequency and duration of postoperative visits, the time to visual recovery, and the need for postoperative eye drops. Finally, the patient should have the opportunity to ask questions and clarify with the surgeon any doubts he may have.

you'll need to take rest for a few days. Driving will be off-limits, and you shouldn't bend over, pick up heavy things, or put any pressure on your eye. For the first week, your doctor will likely suggest you wear an eye shield while you sleep.

Cataract surgery cannot be done on people who have a detached retina. Have a medical condition of the eyes, such as an infection. Advanced diabetes that has affected your retina. Have corneal diseases such as corneal opacification, ulceration or any other corneal disease.

Counselling is considered as purposeful conversation to help out to take decision making. Counselling in the eye care has been evolved & the important objectives are: To develop & enhance the awareness about eye diseases. To boost up the patient compliance towards the surgery or treatment.

Refractive errors are a type of vision problem that makes it hard to see clearly. They happen when the shape of your eye keeps light from focusing correctly on your retina (a light-sensitive layer of tissue in the back of your eye).

Nearsightedness / Myopia

Farsightedness/ Hyperopia

Astigmatism

Presbyopia

Nearsightedness / Myopia :

Nearsightedness, or myopia, is a condition in which nearby objects are seen clearly, but distant ones are blurred.

Nearsightedness can be inherited and is often discovered during childhood.

However, you can develop nearsightedness in early adulthood. People that develop myopia in early adulthood usually do not develop high amounts of nearsightedness.

Farsightedness/ Hyperopia:

Farsightedness, or hyperopia (also referred to as hypermetropia), usually causes distant objects to be seen clearly, but close objects to appear blurred. Farsightedness often runs in families.

When someone has higher levels of farsightedness, their distance vision may become blurry in addition to their near vision. Many people mistake farsightedness for presbyopia, the refractive error that usually occurs over 40 years of age.

Astigmatism:

Astigmatism usually occurs when the cornea has an irregular curvature. The cornea is curved more in one direction, causing blurry vision. Astigmatism can cause blurry vision at all distances, and it often occurs along with farsightedness or nearsightedness.

Most people have very small amounts of astigmatism. Larger amounts of astigmatism cause distortion in addition blurry vision. Very high amounts of astigmatism sometimes have a difficult time achieve 20/20 vision

Presbyopia:

Presbyopia is the normal aging process of the lens of the eye. It is the loss of elasticity of the lens that occurs with aging, causing difficulty focusing at close ranges. Scientists also believe that in addition to the loss of elasticity of the lens, the muscle that makes the lens change focus, called the ciliary body, also begins to not work as well.

Presbyopia usually becomes significant after the age of 40-45 years of age but people between 35-40 may exhibit early signs depending on their visual state, work and lifestyle

Emmetropia:

Emmetropia is the term used to describe a person's vision when absolutely no refractive error or de-focus

exists. Emmetropia refers to an eye that has no visual defects. Images formed on an emmetropic eye are perfectly focused, clear and precise.

Eyes that have emmetropia do not require vision correction. When a person has emmetropia in both eyes, the person is described as having ideal vision.

When an eye is emmetropic, light rays coming into the eye from a distance come to perfect focus on the retina.

If you are not emmetropic, then you have a refractive error

Bifocal lens removes the requirement of carrying two different eyeglasses with us. They provide the user with a much clearer vision at near as well as far distances. These lenses are of great use but they usually have a line of separation in between the lenses.

Who needs bifocal glasses?

Bifocal lenses are used for people who are both nearsighted and farsighted. It is common for people who are over the age of 40 to begin to notice a change in their vision and require the need for bifocals. As we age, our eyes begin to have trouble focusing on objects at different distances away.

Progressive lenses have zones meant for Near, intermediate and distance vision. These zones blend into one another. Typically, the top portion of the lens helps with distance viewing, and comes into play as you look straight ahead.

Almost anyone with a vision problem can wear these lenses, but they're typically needed by people over age 40 who have presbyopia (farsightedness) -- their vision blurs when they're doing closeup work like reading or sewing.

Distance glasses are used for myopia to correct distance vision which is anything beyond arm's length.

Varifocal lenses work by changing power from the top to the bottom of the lens. Moving your eyes up and down the lens will give you clear vision for distance, near and in between. So you'll be able to see the road ahead of you, as well as the speedometer.

near vision /Presbyopic glasses are used for hyperopia and presbyopia to correct close vision with 35cm from your face.

Handling Method for Your Glasses

1. Remove glasses with both hands. When you take off your glasses, use both hands to remove each temple (or arm) of the glasses from behind your ears. ...
2. Rest your glasses with the frames up. Even clean surfaces can leave scratches on lenses. ...
3. Take off your glasses during certain activities.

Storing glasses in the case protects both the lenses from scratching, as well as the frame from any damage. Glasses not kept in a case can be accidentally bumped, which may result in a misalignment of the frame. A misaligned frame, can have a negative impact on the how well you see through your eyeglass lenses

If you don't have a case, you can use a soft cloth, pouch, or bag to wrap each pair individually. Avoid overcrowding: Avoid overcrowding the drawer with too many sunglasses. This can cause them to rub against each other and cause scratches or other damage.

Microfiber cloths should be hand-washed frequently with a lotion-free dish soap (like Dawn original) and allowed to air dry. DON'T use your shirttail or other clothing to wipe your lenses. Abrasive fabrics can scratch your lenses. DON'T use household cloth.

The different types of Spectacle frames are

Rimless frames,  
semi-rimless frames,  
Full rimmed frames,

low nose bridge fit frames,  
wire frames,  
Brow line frames

Concave lenses: These are thinnest in the centre, which helps to correct myopia/ Near nearsightedness

Convex lenses: These lenses are thickest in the centre, like a magnifying glass. Which helps to correct hyperopia / farsightedness.

Cylindrical lenses: These curve more in one direction than in the other, this helps to correct astigmatism

A pupil distance meter is a device used to measure the distance between a person's pupils before they are fitted with glasses, in order to ensure the lenses are centered in the visual axis. It may also be used to confirm a measurement previously recorded using a ruler.

If you have diabetes, it's important to get a comprehensive dilated eye exam at least Six months or once a year. Diabetic retinopathy may not have any symptoms at first, but finding it early can help you to protect your vision. At later stage patient will recognize visual symptoms (eg: vision changes, floaters, distortion) that could be a progression of conditions and patient will consult ophthalmologist immediately when they occur.

There are two types of diabetic retinopathy,  
Nonproliferative diabetic retinopathy &  
Proliferative diabetic retinopathy

Non-proliferative diabetic retinopathy (NPDR): This is the early stage of diabetic retinopathy. In NPDR, the blood vessels in the retina become weak and may leak small amounts of blood or fluid into the eye. If this leaking and swelling happens over the macula, it is known as macular edema. If the swelling continues to advance, it can cause the blood vessels to close off entirely, leading to macular ischemia, which will cause irreversible central visual loss that is not treatable and is permanent.

Stage 1: Mild nonproliferative diabetic retinopathy  
Stage 2: Moderate nonproliferative diabetic retinopathy  
Stage 3: Severe nonproliferative diabetic retinopathy

Proliferative diabetic retinopathy (PDR): This is the advanced stage of diabetic retinopathy. In PDR, new, weak blood vessels develop on the surface of the retina and into the vitreous gel inside the eye. These new vessels are prone to bleeding, which can cloud the vitreous and lead to extreme vision loss. Scar tissue can also form, leading to retinal detachment and potentially complete blindness.

Both types of diabetic retinopathy can impact one or both eyes. It is essential to note that diabetic retinopathy is a progressive medical condition. NPDR can progress to PDR over time, specifically if diabetes is not managed properly. Regular eye exams are important for early detection and management of diabetic retinopathy to prevent severe vision loss.

Diagnostic tests for diabetic retinopathy are crucial for early detection and monitoring of the condition. Here are some diagnostic tests used by ophthalmologists or optometrists to diagnose diabetic retinopathy .

Visual field testing: This test measures peripheral vision and can help detect any loss of side vision caused by diabetic retinopathy or other eye conditions.

**Amsler grid test:** Amsler grid test can detect early and sometimes subtle visual changes in various macular diseases, including diabetic macular edema.

**Tonometry:** Tonometry measures intraocular pressure (IOP) and is primarily used to diagnose glaucoma, which is more common in people with diabetes.

**Dilated eye examination:** This is the most common and important test for Diabetic retinopathy. The eye doctor will use eye drops to dilate the pupils, allowing them to analyze the inside of the eye more thoroughly. Using a unique magnifying lens, they will inspect for signs of diabetic retinopathy, such as abnormal blood vessels, inflammation, and changes in the retina.

**Visual acuity testing:** Visual acuity test uses an eye chart to measure how well you can see at various distances (near and far distances). It helps determine how much diabetic retinopathy may have impacted central vision.

**Fundus photography:** In this assessment test, high-resolution photographs are taken of the inside of the eye to confirm the presence and progression of diabetic retinopathy.

**Fluorescein angiography:** In this diagnostic test, a special organic dye is injected into a vein in the hand or arm. The dye travels through the blood vessels in the eyes, making them visible in photographs. Your doctor utilizes a special eye camera to take pictures of the retina. You look into one side of the camera while the doctor looks through the other side. The camera flashes a dim blue light into the eye, which causes the dye flowing through the retina arteries to appear fluorescent green. The doctor takes pictures of the eyes to examine more closely later. This test helps identify leaking blood vessels, blockages, and abnormal blood vessel development in the retina.

**Optical coherence tomography (OCT):** OCT is a non-invasive imaging technique that provides clear and detailed cross-sectional images of the retina. It helps assess the thickness of the retina and recognize swelling (edema) or fluid accumulation in the macula. This test is useful for quantitative as well as qualitative assessment of structural differences that occur in diabetic retinopathy. It also enables the detection of subclinical diabetic macular edema.

To reduce swelling in your retina, eye doctors can use lasers to make the blood vessels shrink and stop leaking. If you have advanced diabetic retinopathy, Ophthalmologist will advise patient for the laser treatment.

In PRP laser: it reduces growth of new blood vessels in the retina.

**Grid Laser:** This treats swelling in the macula. The macula is a spot in the middle of the retina that helps you see clearly.

**Focal Laser:** This seals up small areas of leakage in the retina.

Laser treatment will be done by qualified Ophthalmologist at hospital

Put numbing medicine in your eye

Aim a laser into your eye using a special lens

Treatment may take from a few minutes to about 30 minutes. During the treatment, you may see flashes of light and your eye may sting or feel uncomfortable. Your vision will be blurry for the rest of the day, so you'll need someone to drive you home. You may need three sessions of laser treatment.

After laser treatment:

You may get an eye patch to wear. You may wear it for just a few hours. Or you may wear it for a few days. You may be told to use eye drops. Laser treatment rarely causes pain. You'll be given medicine to treat eye irritation, if it occurs.

## INJECTIONS

In some cases of diabetic maculopathy, injections of a medicine called anti-VEGF may be given directly into your eyes to prevent new blood vessels forming at the back of the eyes. This procedure can help you to stop the problems in your eyes getting worse, and may also lead to an improvement in your vision.

### During treatment:

A healthcare professional cleans the skin around your eyes, usually with an antibacterial solution of povidone-iodine. Then they attach small clips called eye speculums to your eyes in order to keep them open during the injection.

Next, they numb your eyes using an anesthetic drop or gel. In some cases, your doctor might use a small needle near the eye to administer the anesthetic.

A very thin, short needle is inserted into the eye to dispense the medication. You shouldn't feel pain, but you might feel a slight pressure. This part only takes a few seconds and the eye clips are removed. Your eye and surrounding area are cleaned.

The whole process should take between 15 and 30 minutes.

You may have a little eye irritation for a few hours afterward. Some people notice a tiny spot of blood at the injection site. Your doctor may prescribe antibiotic eyedrops to prevent infection.

You will probably be allowed to return home after the treatment. The doctor may ask you to stay a night if your condition is a little critical. The doctor may also advise you to wear an eye patch for a few days. It does not take too long to recover if you take proper care.

Your vision may not improve right away, but you'll probably be able to resume your usual activities quickly. Be sure to return to the hospital for your follow-up appointments.

Intravitreal injections often need to be repeated in chronic conditions such as diabetic macular edema, and retinal vein occlusions, which require frequent hospital visits.

### Possible risks and side effects of anti-VEGF injections:

eye irritation, discomfort, bleeding inside the eye, floaters or a feeling of having something in your eye, watery or dry, itchy eyes.

### Surgical removal of the vitreous gel (vitrectomy):

This surgery may help improve vision if the retina hasn't been severely damaged. It's done when there is bleeding (vitreous hemorrhage) or retinal detachment. These two problems are rare in people with early-stage retinopathy.

This surgery is also done when severe scar tissue has formed. It can be used to treat macular edema.

Surgery may be carried out to remove some of the vitreous humour from the eye. This is the transparent, jelly-like substance that fills the space behind the lens of the eye. The operation, known as vitreoretinal surgery, may be needed if: a large amount of blood has collected in your eye

there's extensive scar tissue that's likely to cause, or has already caused, retinal detachment

During the procedure, the surgeon will make a small incision in your eye before removing some of the vitreous humour, removing any scar tissue and using a laser to prevent a further deterioration in your vision. Vitreoretinal surgery is usually

carried out under local anaesthetic and sedation. This means you will not experience any pain or have any awareness of the surgery being performed. After the procedure

You should be able to go home on the same day or the day after your surgery.

For the first few days, you may need to wear a patch over your eye. This is because activities such as reading and watching television can quickly tire your eye to begin with.

You will probably have blurred vision after the operation. This should improve gradually, although it may take several months for your vision to fully return to normal.

Your surgeon will advise you about any activities you should avoid during your recovery.

Risks and side effects:

Possible risks of vitreoretinal surgery include:

- developing a cataract
- further bleeding into the eye
- retinal detachment
- fluid build-up in the cornea (outer layer at the front of the eye)
- infection in the eye

There's also a small chance that you will need further retinal surgery afterwards. Your surgeon will explain the risks to you.

Have regular eye examination for six months

Have strict glycemic control as risk of developing DR

Eat healthy

Take regular medicine

Exercise regularly

Avoid alcohol intake and smoking

It can also help you prevent or delay vision loss.

