

Cataract

Your eye works a lot like a camera. Light rays focus through your lens onto the retina, a layer of light-sensitive cells at the back of the eye. Similar to photographic film, the retina allows the image to be “seen” by the brain.

Over time, the lens of our eye can become cloudy, preventing light rays from passing clearly through the lens. The loss of transparency may be so mild that vision is barely affected, or it can be so severe that no shapes or movements are seen—only light and dark. When the lens becomes cloudy enough to obstruct vision to any significant degree, it is called a cataract. Eyeglasses or contact lenses can usually correct slight refractive errors caused by early cataracts, but they cannot sharpen your vision if a severe cataract is present.

The most common cause of cataract is aging. Other causes include trauma, medications such as steroids, systemic diseases such as diabetes, and prolonged exposure to ultraviolet light. Occasionally, babies are born with a cataract.

Cataracts typically develop slowly and progressively, causing a gradual and painless decrease in vision. Other changes you might experience include blurry vision; glare, particularly at night; frequent changes in your eyeglass prescription; a decrease in color intensity; a yellowing of images; and in rare cases, double vision.

As the eye’s natural lens gets harder, farsighted (presbyopic) people, who have difficulty focusing up close, can experience improved near vision and become less dependent on reading glasses. However, nearsighted (myopic) people become more nearsighted, causing a worsening in their distance vision. Some kinds of cataracts affect distance vision more than reading vision. Others affect reading vision more than distance vision.

Reducing your exposure to ultraviolet light by wearing a wide-brimmed hat and sunglasses may reduce your risk for developing a cataract, but once one has developed, there is no cure except to have the cataract surgically removed.

With a routine, outpatient surgical procedure, an ophthalmologist (Eye M.D.) can remove the cataract, making either a small incision (phacoemulsification) or a larger incision (extracapsular extraction). Usually, a synthetic intraocular lens (IOL) is inserted at the time of cataract extraction to replace the focusing power of the natural lens. IOLs can be monovision (fixed-focus for a preset distance) or multifocal, which allows focused vision at many distances. The time to have cataract surgery is when the cataract is affecting your vision enough to interfere with your normal lifestyle.

Cataract surgery is a very successful operation. One and a half million people have this procedure every year in the United States, and 95% have a successful result. As with any surgical procedure, complications can occur during or after surgery, and some are severe enough to limit vision. But in most cases, vision, as well as quality of life, improves.

Cataracts in Children

A cataract is a clouding of the eye's normally clear lens. The lens of the eye plays an important role in focusing images on the retina, the light-sensitive nerve cells lining the back of the eye. If the lens loses its clarity, light rays do not focus clearly, and your vision becomes blurry. Just as it is hard to see through a dirty window, it is hard to see through a cataract. Although most cataracts occur in older adults, they can appear in children, in one or both eyes, often at birth. They look like a white or gray spot in the pupil.

Cataracts in children can be inherited, or they can develop because of an infection or a disease acquired before birth. They can also be caused by an injury. In most cases, no specific cause is found.

Children may lose vision permanently because of amblyopia ("lazy eye") if a severe cataract is not removed quickly. The better eye may also need to be patched. Mild cataracts may not need treatment.

The focusing power of the original lens, removed during cataract surgery, must be replaced to restore vision. Intraocular lenses (IOLs), permanent synthetic lenses placed inside the eye, can be implanted in older children much as they are in adults. In infants and small children, IOLs are controversial because a child's eyes change and grow during the first few years of life, and the prescription needed for good vision changes as well. Many surgeons prefer contact lenses or even eyeglasses for younger children.

Regardless of the type of correction, children need follow-up exams to avoid possible complications, which can include glaucoma, scar tissue formation in the pupil, and amblyopia. Often, children will need eye muscle surgery if the eye "turns" or "crosses."

Despite these problems, cataracts are the single most treatable cause of childhood blindness. After surgery, most children can see the blackboard in school (20/60–20/100). While some do not do as well, with appropriate correction, many children see almost normally after cataract surgery.

Extracapsular Cataract Extraction

Extracapsular cataract extraction (ECCE) is a method for surgically removing a cataract, which is a clouding of the eye's naturally clear lens. A cloudy lens interferes with light passing through to the retina, the light-sensing layer of cells at the back of the eye. Having a cataract can be compared to looking at the world through a foggy window.

In extracapsular extraction, an incision is made in the side of the cornea at the point where the cornea and sclera, the white part of the eye, meet. Carefully entering the eye through the incision, the surgeon gently opens the front of the lens capsule and removes the hard center, or nucleus, of the lens. The soft lens cortex is then suctioned out leaving the back of the capsule in place.

An incision requiring sutures is necessary because the lens is removed in one piece. A plastic implant called an **intraocular lens (IOL)** is substituted for the original lens. The implanted IOL allows light to be focused on the retina.

It may be up to six weeks before the sutures are removed and best-corrected vision is achieved. During recovery, it may be necessary to avoid bending over or lifting heavy objects.



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Intraocular Lenses

An intraocular lens (IOL) is a tiny, lightweight, clear plastic or silicone disc placed in the eye during cataract surgery. An IOL replaces the focusing power of the eye's natural lens.

Your eye's natural lens plays an important role in focusing images on the retina. When a cataract develops, the lens loses its clarity. Light rays cannot focus clearly, and the image you see is blurry. Eyeglasses or contact lenses usually can correct slight refractive errors caused by early cataracts, but they cannot sharpen your vision if an advanced cataract is present.

The only treatment for a severe cataract is to remove the eye's natural lens and replace it with an IOL. Intraocular lenses offer many advantages. Unlike contact lenses, which must be removed, cleaned, and reinserted, the IOL remains in the eye after surgery.

An IOL may be implanted either in front of or behind the iris. Behind the iris is the most frequent placement site. IOLs can be made of hard plastic, soft plastic, or soft silicone. Soft, foldable lenses can be inserted through a small incision, which shortens recovery time following surgery.

The rapid evolution of IOL designs, materials, and implant techniques has made them a safe and practical way to restore normal vision after cataract surgery.

Multifocal and Accommodative Intraocular Lenses to Treat Cataract

When you have a cataract, the lens of your eye becomes cloudy. Light cannot pass through the lens easily, and your vision becomes blurred. During cataract surgery, the ophthalmologist (Eye M. D.) removes the cloudy, natural lens and replaces it with a clear, artificial lens called an **intraocular lens (IOL)**. The IOL helps your eye regain its focusing ability and allows you to see clearly again.

The most common type of IOL is the **monofocal or fixed-focus IOL**. The monofocal lens helps you attain clearer vision at one distance. Note that eyeglasses and contact lenses are still required in order for you to see clearly at all ranges of distance.

Another type of IOL is the **multifocal IOL**. The multifocal lens has several rings of different powers built into the lens. The part of the ring you look through will determine if you can see clearly at far, near, or intermediate distances.

A third type of IOL is the **accommodative IOL**. The accommodative lens has a hinge designed to work with your eye muscles, allowing the lens to move forward as the eye focuses on near objects and backward as the eye focuses on distant objects. This movement allows you to focus clearly at different distances.

Implanting an IOL takes about 20 minutes and is an outpatient procedure. In addition to a preoperative eye exam, your eye surgeon will take some measurements of your eyes and will give you topical or local anesthesia. The surgeon makes a few small incisions close to the edge of the cornea and then inserts a small, ultrasound instrument to break up the center of the eye's natural lens. The lens is then vacuumed out through one of the incisions. The surgeon folds and inserts the IOL through the same incision. These incisions are usually self-sealing, requiring no stitches. Once implanted, a multifocal or accommodative IOL allows you to focus on near or distant objects.

Risks associated with implanting IOLs include overcorrection or under-correction, infection, increased floaters, retinal detachment, dislocation of the implant, halos, glare, dry eye, decreased contrast sensitivity, clouding of a portion of the IOL, and loss of vision.

If you are going to have cataract surgery, you and your ophthalmologist should discuss which IOL may be best for your vision needs.



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Phacoemulsification

Phacoemulsification (Phaco) is a surgical method used to remove a cataract, which is a clouding of the eye's naturally clear lens. A cloudy lens interferes with light passing through to the retina, the light-sensing layer of cells at the back of the eye. Having a cataract can be compared to looking at the world through a foggy window.

In phacoemulsification, an ultrasonic oscillating probe is inserted into the eye. The probe breaks up the center of the lens. The fragments are suctioned from the eye at the same time. A small incision that often does not require sutures to close can be used, since the cataract is removed in tiny pieces. Most of the lens capsule is left behind and a foldable intraocular lens (IOL) is implanted permanently inside to help focus light onto the retina. Vision returns quickly and one can resume normal activities within a short period of time.

Posterior Capsulotomy

A posterior capsulotomy is a laser procedure that sometimes is necessary after cataract surgery.

During cataract surgery, part of the front (anterior) capsule of the eye's natural lens is removed to gain access to and remove the lens. The clear, back (posterior) capsule remains intact and supports an intraocular lens (IOL), a plastic or silicone disc that is implanted in the eye and replaces the natural lens. As long as that capsule stays clear, you will experience good vision. But in 10% to 30% of cases, the posterior capsule loses its clarity. When this happens, the ophthalmologist (Eye M.D.) can create an opening in the capsule using a laser in order to restore normal vision. This procedure is called a posterior capsulotomy.

Before the laser procedure, the ophthalmologist does a thorough ophthalmic examination to make sure there is no other reason for vision loss.

The posterior capsulotomy is painless and takes approximately five minutes. Eye pressure is measured 30 minutes after the operation to make sure it is not elevated, and anti-inflammatory medicated eyedrops are usually prescribed for three days following the procedure. Vision usually improves within hours.

Potential but rare complications following laser posterior capsulotomy are increased intraocular pressure and retinal detachment.