advanced CATARACT CARE

By Eric J. Poulsen, M.D.

Cataract surgery has entered a new era due to the possibility of not only curing cataracts, but also the possibility of eliminating the need for glasses or contact lenses altogether…forever.

To understand the new advances in cataract technology, it is first important to understand how the eye works. Your eye functions similar to a camera. Light rays focus through your cornea and lens onto the retina, and sensors inside the eye pick up the image. These sensors send signals to the brain where the image is perceived, requiring each part of the eye to work properly for the image to be clearly seen. If the cornea and lens do not focus the light rays properly due to refractive error (see types of Refractive Errors, page 25) or clouding of the lens, the image projected onto the retina will be blurry (see diagram 1, page 24). Glasses, contact lenses or LASIK (laser vision correction) may correct refractive errors. However, if the lens itself is cloudy, none of these will help. When your eye's natural lens becomes cloudy enough to obstruct vision to any significant degree, the condition known as cataract occurs.

Common symptoms of cataract include: blurry or cloudy vision, glare, decreased night vision, and a loss of vibrant color perception. Cataracts, however, do not cause any sort of pain or pressure sensations in the eyes.

Causes & Prevention

Your eye's natural lens is located behind the pupil and is transparent at birth, but may gradually become cloudy as a result of aging, injury, or certain diseases like diabetes. While cataracts are usually acquired later in life, occasionally babies are born with cataracts.

Other causes of cataract include frequent exposure to cigarette smoke, ultraviolet sunrays, vitamin deficiencies, and certain medications. Quitting smoking and wearing a wide-brimmed hat or sunglasses while outdoors may reduce the risk of developing cataracts.

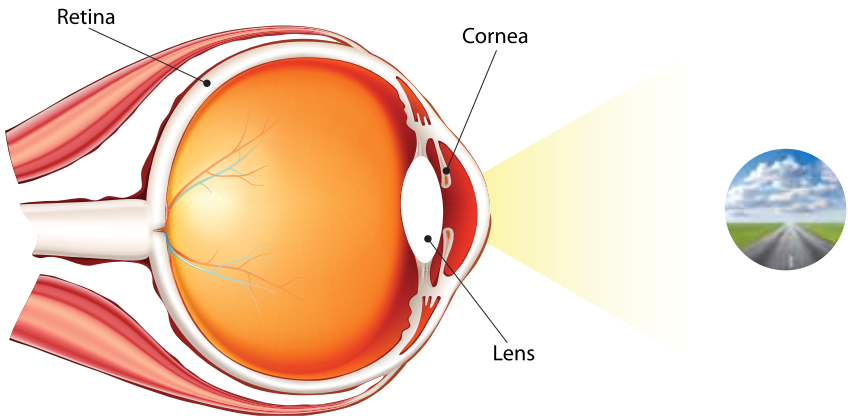
Advances

Surgery is the only effective treatment for cataracts. No medication, eye drop, herb, or other supplement has ever been found to relieve cataracts.

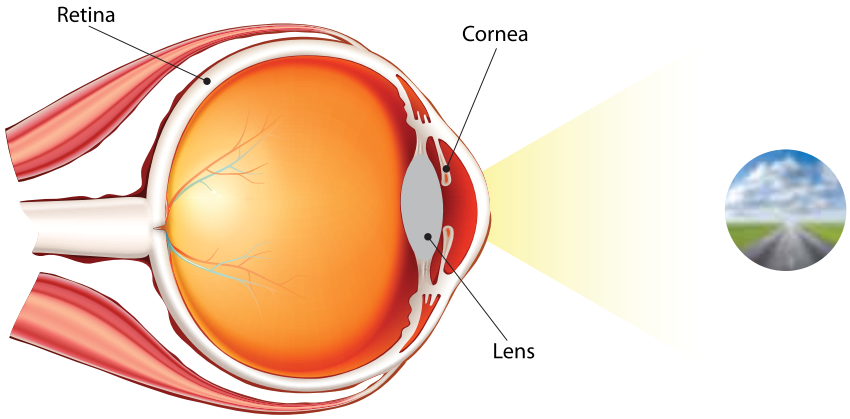
Many people remember their parent's or grandparent's cataract surgery. The healing process was lengthy, and they may have been required to wear thick glasses to see afterward. Now, however, new techniques have dramatically reduced the healing time from cataract surgery. Most people resume their normal activities as quickly as the day after surgery. The technology and development of new lens implants has also provided better vision after cataract surgery than ever before.

Diagram 1

healthy eye



cataract eye



modern cataract surgery FACTS

- Outpatient
- Usually 10-15 minute procedure
- Eyedrop anesthesia (no shots) with IV augmentation
- Ultrasound (Phaco) used to remove the cataract
- Typically painfree during and after the procedure
- No sutures
- Usually noticeably improved vision within hours to days
- Eyedrops used for three to four weeks following surgery
- May eliminate or dramatically reduce the need for glasses

The IOL Difference

Not until recently did standard lens implants fully eliminate a person's need for glasses after cataract surgery. Cataract surgery involves removing the cloudy lens from the eye and replacing it with a clear artificial lens, or intraocular lens (IOL), a corrective or prescription-powered lens. The removal of the lens is a process called phacoemulsification, or "phaco," where ultrasound energy is used to break up the cataract into tiny fragments that can be gently removed without affecting other delicate structures in the eye.

The IOL is a tiny, clear plastic disk placed in the eye during cataract surgery to replace the cloudy, cataract lens that had to be removed. An IOL replaces the focusing power of the eye's natural lens. Ideally, the IOL is placed behind the iris, but occasionally it may be placed in front of the iris. IOLs are typically made of soft acrylic plastic or silicone that is pliable, so they can be folded and inserted into the eye through a tiny incision (see diagram 2, page 25). IOLs are inert, meaning they cannot be rejected by the body's immune system. They are also long-lasting and generally never require replacement.

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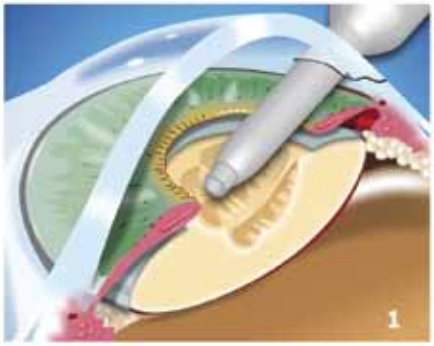
The latest technology in IOL lens implants are revolutionizing vision after cataract surgery because they have the ability to completely eliminate the need for glasses in many people.

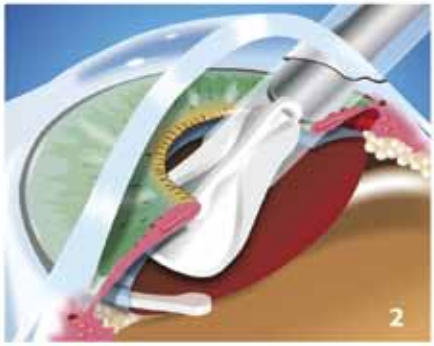
The Patient Impact

Until recently, all IOLs were monofocal, which means they could only focus at a single distance. Directly following cataract surgery, there was always the need for the patient to wear glasses. Now, new IOLs are "multifocal," meaning that they can focus at more than one distance. Multifocal IOLs allow a person to be able to focus at near and far distances, eliminating the need for glasses in most patients. Imagine being able to do all the things you like to

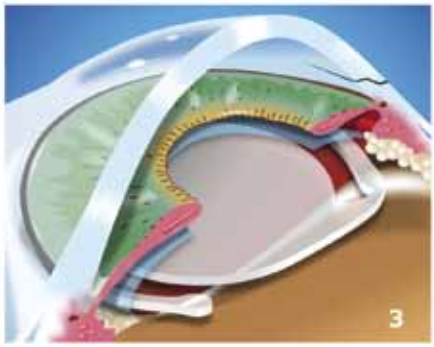
Diagram 2



The "phaco" using ultrasonic vibrations to break up the cloudy lens (cataract).



Insertion of the new lens implant.



The new lens in position after insertion.

do, such as drive a car, watch a movie, do computer work, or read, without the need for glasses or contact lenses.

Only certain doctors have the proper training and experience needed to perform surgery utilizing the new IOL technology. Cataract patients should ask their doctor about whether or not they offer the new multifocal IOL technology. And the good news is that Medicare and most other insurance plans now cover elements of cataract surgery using the new IOL technology.

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Choosing the Right IOL

There are four different types of IOLs that can replace a cataract patient's natural lens.

- **Monofocal IOLs:** are also known as fixed focus lenses and only focus at a single distance. These lenses are used to correct nearsightedness or farsightedness, but not both at the same time. Therefore, patients that choose monofocal cataract lenses still usually require glasses or contacts for a complete range of vision.
- **Toric IOLs:** are a type of monofocal lens that corrects nearsightedness or farsightedness, but also correct astigmatism (a condition where the cornea is irregularly-shaped, causing reduced clarity). Reading glasses are still commonly required.
- **Multifocal IOLs:** are lens implants that have separate levels within the lens that provide correction at different focal distances, similar to a bifocal or a progressive lens in a pair of prescription glasses. Usually, a multifocal cataract lens is implanted in each eye of the patient on different surgery days. The eyes and brain can adapt to the multifocal lenses over a six to 12-week period of time. Glasses are rarely needed with multifocal lenses because they correct both nearsighted and farsightedness.
- **Accommodating IOLs:** correct distant and intermediate vision. They work with the eye muscles that once controlled the natural lens. When the eye-focusing muscles move, the artificial lens also moves in a way that is similar to how a patient's natural lens used to move. This enables a range of distances at which images can be seen clearly. Reading glasses are sometimes needed.

Something to Look Forward to

Until recently, lasers have not played a significant role in cataract surgery, but recently the FDA has approved the use of femtosecond lasers (a type of laser used to perform eye surgery) for assisting the surgeon with certain elements of the cataract removal. This technology is very new and still being developed, but some doctors in our area are likely to be among the first in the country to make laser-assisted cataract surgery available to their patients. ■

types of Refractive Errors

Myopia (Nearsightedness):
Distant vision is blurrier than near

Hyperopia (Farsightedness):
Near vision is blurrier than far

Astigmatism:
Near and distant vision blurred or doubled due to an irregularly-shaped cornea.

Presbyopia:
Loss of near focusing range after age 40, causing the need for reading glasses or bifocals

About the Author: *Eric J. Poulsen, MD, received his medical degree from the University of California, Davis School of Medicine and performed his residency with Duke University Medical Center. Dr. Poulsen is a board certified ophthalmologist from the American Board of Ophthalmology and is a member of the California Medical Association, American Academy of Ophthalmology, American Society of Cataract and Refractive Surgery, and the Fresno-Madera Medical Society.*