VISION SERVICES

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Cataracts

Cataracts are a common eye condition where the lens inside the eye becomes cloudy. Assuming we live long enough, everyone is susceptible to getting cataracts. It is a normal part of aging. Cataract surgery is the treatment used to restore your vision, possibly making it even better than before your cataracts developed.

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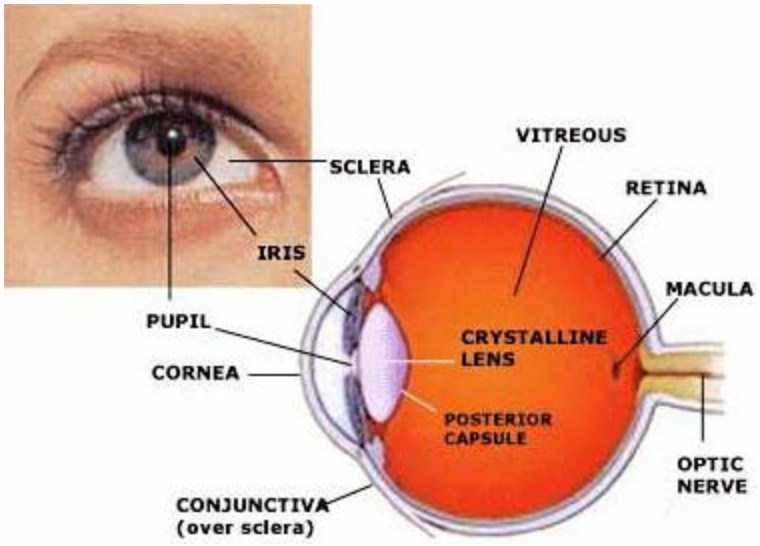
Cataracts (CAT-a-racts)

The word "cataract" comes from an ancient word meaning "waterfall". A mature cataract is a clouding of the crystalline lens inside the eye that makes the world look like the inside of a waterfall. Life is viewed as you were looking through a piece of frosted glass or one that is fogged with steam.

Cataracts are a natural part of aging. Most people who develop them are older adults. Almost everyone reaching their mid-sixties has some form of a cataract in one or both eyes. Cataracts do not cause irreversible blindness. They are not dangerous in any way. They do not spread from one eye to the other. A cataract is not a growth or film that covers the surface of the eye, and certainly not a tumor, but simply a change in the clarity of the natural crystalline lens (see diagram below).



Parts Of The Eye

The eye is a two-lens system: the **crystalline lens** is located inside the eye, whereas the **cornea** is the lens at the front of the eye. The crystalline lens sets behind the iris (colored part) and the pupil (dark opening) and is held in place by a tiny sack, called the posterior capsule or capsular bag.

The way your eyes work is very similar to the functioning of a camera. Both the camera and your eyes have an internal lens that projects an image onto a film. In the eye, the lens is focused using incredibly small muscles. The retina at the back of the eye can be compared to camera film, but consisting of a thin layer of photosensitive cells. If the lens in a camera were smudged or scratched, the pictures would turn out blurred. Similarly, as the lens in your eye becomes cloudy with a cataract, your view of the world is blurred. As a cataract becomes denser, it also takes on a brownish hue, resulting in an image that is both blurred and discolored.

An ideal crystalline lens is transparent, absolutely clear. Light bounces off whatever you are looking at, whatever is in your field of vision, and travels through the lens, bending as it does to concentrate itself upon the retina. The retina acts as a collector of information, gathering light transmission and sending electrical impulses to your brain. The brain then translates that into a mental image, allowing you to "see". If your lens has turned into a cataract, and the light rays are unable to pass through as well as they used to, the retina cannot collect information accurately. Whatever is sent to the brain is then difficult to translate, and what you see in your mind appears clouded.

A healthy, youthful lens is also quite elastic and will *accommodate*, or change shape, getting fatter for close objects and thinner for distant objects. This flexibility allows you to see both near and far, simply by shifting your gaze. As you age, lens elasticity lessens; the lens becomes less flexible, and your vision becomes more fixed to a singular distance, thus the need for reading, or multi-focal glasses. Loss of accommodation occurs independent of cataract development and is called presbyopia.

Cataract Development:

Not all cataracts develop the same. The most common type involves an overall evenly distributed clouding of the lens. Others may develop in only one area and then spread out from there making a star shaped pattern. Cataracts may take years to form, or they may occur rapidly within a few months. While cataracts can affect both eyes at the same time, they may develop at different rates.

Anterior cortical cataract looks like a star.

The lens is made of mostly water and protein, with the protein arranged in a very special way that makes the lens clear and allows light to pass through. As we get on in years, the tiny protein molecules begin to clump together, resulting in the gradual clouding of the lens. This cloudiness grows denser and denser until no light can pass through the lens at all. Long ago, this process was referred to as *ripening*, a ripe cataract being one that is completely opaque. Back then, surgeons waited until the cataract was ripe before removing it and no lens was put in its place. People had to wear very thick "cataract eye glasses".

Mature or "ripe" cataract.

The reasons for waiting were primarily due to the methods used at that time for cataract removal. These methods were called IntraCapsular Cataract Extraction (ICCE) and and ExtraCapsular Cataract Extraction (ECCE). Both needed a dense, ripe cataract in order to function, as the cataract was removed intact and had to be firm enough. Also, the stitches, red eyes, and long recovery period persuaded both doctors and patients to wait until the vision was substantially impaired enough to warrant undergoing the relative ordeal of this operation. While ICCE is almost non-existent today, some surgeons still perform the outdated and more risky ECCE on a routine or occasional basis cataract surgery is a sublimely advanced procedure and can now be safely performed whenever the patient's vision and ability to function is impaired enough to interfere with ordinary daily tasks.

Risks: Are cataracts harmful to your eyes?

Leaving a cataract in the eye is not harmful except in very rare situations. In most cases, surgery can be postponed for as long as the patient desires, or not done at all. The only side effect would be the less clarity of vision and maybe eventual blindness. Over time, cataracts do increase in size and hardness, and if the cataract is very advanced, the surgery can be more difficult to perform. However, even then, the result is usually very good.

Causes of Cataracts

As with most things that occur in the human body, the exact cause is unclear. People have been getting cataracts as far back as medical history has been recorded, so this is not a modern phenomenon. If they live long enough, everyone eventually gets them. It is just as much part of aging as getting wrinkles or gray hair. Occasionally, people are born with cataracts, and sometimes a cataract develops in one eye only after significant trauma, usually from an impact of some sort like from a racquetball or golf ball. Exposure to excessive X-rays, intense heat or possibly too much sunlight can also cause cataracts. In addition, smokers tend to have a higher occurrence of cataracts than non-smokers. Other contributing factors may include family history, eye surgery, puncture wounds, medications such as corticosteroids, chronic inflammation known as uveitis, or diabetes. However, aging seems to be the main culprit.

Symptoms of Cataracts

Common cataract symptoms include poor night vision, a bothersome glare produced by bright lights, painless blurring of vision, and a fading or yellowing of colors. If this develops slowly over a period of years, it might not be immediately noticeable. There may be little or even no perceived effects for quite some time. However, eventually, vision becomes a little blurred, like looking through a smudgy piece of glass. You might notice that you are becoming more nearsighted, or experience double vision (even with one eye covered). Light from the sun or a lamp might cause an uncomfortable glare, and when you drive at night, the oncoming headlights may seem overly irritating, causing you to stress over making your way safely. It becomes harder to read and do other normal tasks, and you may go through a series of frequent changes in your eyeglass prescription.

Colors may not appear as brilliant as they once did. People might comment on the fact that you are now wearing brighter clothing, heavier make-up, or your hair is dyed an unfamiliar hue. These are all the natural compensations of viewing your world through cloudy-yellowed cataracts.

You don't have to be a senior citizen before noticing these symptoms. People can have age-related cataracts in their forties and fifties, although those are most often in the beginning stages and rarely affect vision. It is typically during the mid-sixties when vision becomes impaired enough to cause interference.

Diagnosis of Cataracts

Although you may think you have a cataract, there is only one way to know for sure, by having an eye examination. If you are over sixty years old, you should have an eye examination by a qualified eye doctor at least once every two years. Once each year is recommended for complete evaluation including glaucoma screening.

Pupils are the internal openings between the front and back of the eyes, like tiny windows that you look through. Minute muscles make the iris close or open, thus controlling the amount of light coming in. Your eye exam should include dilating your pupils. This means drops are put into your eyes that make your pupils open up, or enlarge temporarily in a fixed position.

A cataract can be detected without dilating the pupils, but doing so allows much better evaluation of both the cataract as well as the eyes internal anatomy. This is essential for finding potential problems. Getting a good view of the retina and optic nerve is used for early detection of eye diseases such as glaucoma and macular degeneration.

Timing of Cataract Surgery

Just having a cataract does not mean that you must undergo surgery. Even if your ophthalmologist finds a cataract, you may not need to have it removed for several years. In fact, you might never need cataract surgery. A change in your eyeglass prescription may satisfactorily improve vision for a while. Magnifying lenses or

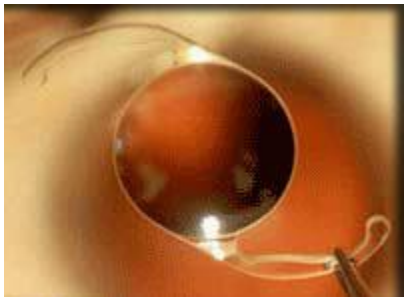
stronger lighting may facilitate daily activities. However, if your cataracts interfere with your everyday activities, such as reading or driving, you do not have to put up with them.

The time to consider cataract surgery is highly individual. As a rule, when your vision falls below 20/40, you will notice a significant impact on daily functioning. To what degree will vary from person to person. A pilot, for example, may require surgery in the earliest stage of cataract development, while someone with considerably lesser demands might not be bothered by a much denser development.

Eventually, safety considerations may be a factor, as a developing cataract steadily limits a person's involvement in a normal, independent lifestyle. Cataracts can be hazardous when they substantially interfere with your ability to see street signs, traffic lights, drive at night, step off curbs or steps, recognize faces, cook, iron, read medicine labels, or write checks, and sign binding documents.

As this is a highly individual matter, it is one you should discuss with your physician. By having your vision tested regularly, you can gather enough information to make an informed decision.

Treatment of Cataracts



Intraocular Lens Implant

Surgery is the only way to remove a cataract. There are no medications, vitamins, eye drops, exercises, or glasses that will cause cataracts to disappear. The clouded lens must be removed and replaced with a clear vision-correcting intraocular lens

Do lasers remove cataracts?

The answer is generally no, however future developments may change that. Today's most refined, advanced, state-of-the-art method of cataract removal involves using ultrasonic sound waves (called phacoemulsification), not laser light.

Although there are now a handful of machines that use laser technology instead of ultrasound for cataract surgery, these machines are presently limited with regard to the types and densities of cataracts that they can effectively remove. Because of this, a surgeon could conceivably have to stop in the middle of an operation, if the laser machine proved ineffective, and have to switch over to the more versatile ultrasonic machine.

The few companies that make laser cataract removal machines are relatively small and new in the field. Perhaps, in the next 5 or 10 years, these companies and their machines may reach the level of development, versatility and support that would allow their recommendation.

Although they are not used for routine removal of cataracts, **LASERS** are typically used for the removal of *capsular haze*, which is a thin film of scar tissue that occasionally forms on the posterior capsule behind the implant lens. This is painless and occurs for a small percentage of patients who have undergone cataract surgery, causing the vision to temporarily be blurred again. Patients sometimes think their cataract has "grown back", but it hasn't. Once a cataract has been removed, it will not reoccur.