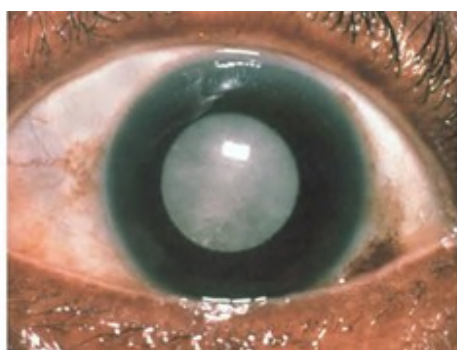


Cataract Surgery And / Or Implantation of an Intraocular Lens

This information is given to you so that you can prepare for the discussion with your eye surgeon. This document will help you understand the risks of cataract surgery. It will also help you decide the type of replacement lens you want. Eyeglasses or contact lenses are usually required for best vision after cataract surgery.



WHAT IS A CATARACT?

The lens in the eye can become cloudy and hard, a condition known as a cataract. Cataracts can develop from normal aging, from an eye injury, or if you have taken medications known as steroids. Cataracts may cause blurred vision, dulled vision, sensitivity to light and glare, and/or ghost images. If the cataract changes vision so much that it interferes with your daily life, the cataract may need to be removed. Surgery is the only way to remove a cataract. You can decide not to have the cataract removed. If you don't have the surgery, your vision loss from the cataract will continue to get worse.

HOW WILL REMOVING THE CATARACT AFFECT MY VISION?

The goal of cataract surgery is to correct the decreased vision that was caused by the cataract. During the surgery, the ophthalmologist (eye surgeon) removes the cataract and puts in a new artificial lens called an intraocular lens or IOL. The IOL will be left in the eye permanently. Cataract surgery will not correct other causes of decreased vision, such as glaucoma, diabetes, or age-related macular degeneration. Most people still need to wear glasses or contact lens after cataract surgery for either near and/or distance vision and astigmatism.

EXAMINATIONS PRIOR TO SURGERY

If you agree to have the surgery, you will undergo a complete eye examination by your surgeon. This may include an examination to determine your eyeglass prescription (refraction), measurement of your vision with and without glasses (visual acuity), measurement of the pressures inside your eye (tonometry), measurement of the curvature of your cornea (keratometry), ultrasonic measurement of the

length of your eye (axial length), intraocular lens calculation (biometry) to determine the best estimate of the proper power of the implanted IOL, microscopic examination of the front part of your eye (slit-lamp examination), and examination of the retina of your eye with your pupils dilated.

NEED TO STOP WEARING CONTACT LENSES PRIOR TO SURGERY

If you wear contact lenses, you must leave them out of your eyes for a period of time before your preoperative eye examination and before your surgery. This is done because the contact lens rests on the cornea and distorts its shape, which can affect the accuracy of the doctor's measurements of the IOL power. When you stop wearing your contact lenses, the corneas can return to their natural shape. Stop wearing both and rigid (including gas permeable and standard hard) contacts for at least three weeks. If you wear rigid contacts, your vision will usually vary for a while as your corneas change shape. Although the cornea usually returns to its natural state within three weeks, this process may take longer, and you will need to remain contact lens free until your vision and cornea stabilize.

MORE INFORMATION ABOUT MEASURING YOUR IOL

While the method used to calculate the power of the IOL is very accurate in most patients, the final result may be different from what you and your surgeon planned. As the eye heals, the IOL can shift very slightly toward the front or the back of the eye. The amount of this shift is not the same in everyone, and it may cause different vision than predicted. If the eye's visual power after surgery is considerably different than what was planned, surgical replacement of the IOL might be considered. It is usually possible to replace the IOL and improve the situation. Patients who are highly nearsighted or highly farsighted have the greatest risk of differences between planned and actual outcomes. Patients who have had LASIK or other refractive surgeries are especially difficult to measure precisely.

PRESBYOPIA AND ALTERNATIVES FOR NEAR VISION AFTER SURGERY

Patients who have cataracts have, or will eventually develop presbyopia, which is a condition caused by aging that develops when your eye loses its ability to shift from distance to near vision. Presbyopia is the reason that reading glasses become necessary, typically after age 40, even for people who have excellent distance and near vision without glasses. Presbyopic individuals require bifocals or separate (different prescription) reading glasses in order to see clearly at close range. There are several options available to you to achieve distance and near vision after cataract surgery. This is probably the most important decision you need to make about your cataract surgery, so please take the time to review your options and ask questions.

- **GLASSES.** You can choose to have a monofocal (single focus) IOL implanted for distance vision and wear separate reading glasses, or have the IOL implanted for near vision and wear separate glasses for distance.
- **MONOVISION.** The ophthalmologist could implant IOLs with two different powers, one for near vision in one eye, and one for distance vision in the other eye. This combination of a distance eye and a reading eye is called monovision. It can allow you to read without glasses. Many patients who wear contacts or who have had refractive surgery have monovision and are happy with it. Your surgeon will discuss and demonstrate this option to see if it might work for you.

- **MULTIFOCAL IOL.** The ophthalmologist could implant a “multifocal” IOL. This is a newer, “deluxe” type of IOL that provides distance vision AND restores some or all of your eye’s ability to focus. It corrects for both distance vision and other ranges, such as near or intermediate. Choosing this option will usually lead to higher out-of-pocket expenses since most insurance companies only pay for a monofocal (single focus) lens.
- **NEARVISION CK (conductive keratoplasty).** This is a refractive procedure that uses radiofrequency energy to reshape the cornea in order to improve near vision. This procedure is typically performed in one eye, while the other eye remains corrected for distance. It is, therefore, another form of monovision correction.

MORE INFORMATION ABOUT MONOVISION

In order to have good depth perception, your eyes need to be corrected for any refractive problems such as nearsightedness or farsightedness, and “balanced” for distance. Eye care professionals refer to this as binocular vision. Monovision or “blended” vision can impair depth perception to some extent, because the eyes are not focused together at the same distance. It is important to choose which eye you will use for distance vision. Eye surgeons generally believe that one eye is the dominant one, preferred for viewing. This is similar to people being right- or left-handed. Several tests can be performed to determine which eye is dominant in a particular person. With monovision, the dominant eye is usually corrected for distance, and the non-dominant eye corrected for near. However, a very small percentage of persons may be co-dominant (this is similar to being ambidextrous). In rare circumstances, a person may actually prefer using the dominant eye for near viewing. Your doctor will discuss and try to demonstrate monovision with glasses or even contact lenses to simulate the type of vision you will have after cataract surgery. Because your vision is decreased by the cataract, it is not possible to show you exactly what your postoperative vision will be like. If you would prefer not to have to wear glasses for quick tasks like looking at your cell phone, a menu, a computer, or an invoice, then you might be interested in monovision. Most monovision patients will often be more comfortable wearing glasses to balance their vision for prolonged reading tasks or for driving (especially at night), or for sports like tennis or golf, so you will most likely still need to wear glasses even with monovision. If you have been wearing contacts for monovision, you will most likely be happy with this option after cataract surgery. Although many patients will adjust well to monovision, some may find it uncomfortable. For those patients, the monovision can usually be reversed by elective laser vision correction, but this surgery will not be covered by your medical insurance.

INFORMATION ABOUT TREATING ASTIGMATISM

Patients with nearsightedness and farsightedness often also have astigmatism. An astigmatism is caused by an irregularly shaped cornea; instead of being round like a basketball, the cornea is shaped like a football. This change in shape can make your vision blurry. There are several treatment options for astigmatism: 1) you can have an IOL for near or distance vision and continue to wear glasses or contact lens for the astigmatism; 2) you can have a toric IOL placed in your eye, 3) you can have refractive surgery called LASIK or PRK, or 4) your surgeon can perform a procedure before, during, or after cataract surgery called a limbal relaxing incision. A limbal relaxing incision (LRI) is a small cut or incision

the ophthalmologist makes into your cornea to make its shape rounder. More than one incision may be required.

ANESTHESIA, PROCEDURE, AND POSTOPERATIVE CARE

The ophthalmologist or the anesthesiologist/nurse anesthetist will make your eye numb with either drops or an injection (local anesthesia). You may also undergo light sedation administered by an anesthesiologist or nurse anesthetist, or elect to have the surgery with only local anesthesia. There are risks associated with anesthesia and sedation. These include injury to the eye, heart and breathing problems, and in very rare cases, death.

An incision, or opening, is then made in the eye. This is at times self-sealing but it may require closure with very fine stitches (sutures) which will gradually dissolve over time. The natural lens in your eye will then be removed. There are several ways to remove the lens; the most common technique is called phacoemulsification, which uses a vibrating probe to break the lens up into small pieces. These pieces are gently suctioned out of your eye through a small, hollow tube inserted through a small incision into your eye. After your natural lens is removed, the IOL is placed inside your eye. In rare cases, it may not be possible to implant the IOL you have chosen, or any IOL at all.

Your eye will be examined the day after surgery by your surgeon or an eye doctor chosen by your surgeon, and then at intervals determined by your surgeon. During the immediate recovery period, you will place drops in your eyes for about 2 to 4 weeks, depending on your individual rate of healing. If you have chosen monovision or a multifocal IOL to reduce your dependency on glasses or contacts, they may still be required either for further improvement in your distance vision, reading vision, or both. You should be able to resume your normal activities within 2 or 3 days, and your eye will usually be stable within 3 to 6 weeks, at which time glasses or contact lenses could be prescribed.

RISKS OF CATARACT SURGERY

All operations and procedures are risky and can result in unsuccessful results, complications, injury, or even death, from both known and unknown causes. The major risks of cataract surgery with implantation of an IOL include, but are not limited to:

1. Mild discomfort. Cataract surgery is usually quite comfortable. Mild discomfort for the first 24 hours is typical, but severe pain is extremely unusual and should be reported immediately to the surgeon.
2. Complications of removing the natural lens may include bleeding (hemorrhage); rupture of the capsule that supports the IOL; perforation of the eye; clouding of the normally clear outer layer of the eye called the cornea (a condition known as corneal edema), which can be corrected with a corneal transplant; swelling in the central area of the retina (called cystoid macular edema), which usually improves with time; retained pieces of lens in the eye, which may need to be removed surgically; infection; detachment of the retina, which is definitely an increased risk for highly nearsighted patients, but which can usually be repaired; uncomfortable or painful eye; droopy eyelid; increased astigmatism; glaucoma; and double vision. These and other complications may occur whether or not an IOL is implanted and may result in poor vision, total loss of vision, or even loss of the eye in rare

situations. Additional surgery may be required to treat these complications. The cost for this additional surgery is not included in the price you pay for the cataract surgery.

3. Complications associated with the IOL may include increased night glare and/or halos, double or ghost images, and dislocation of the IOL. Multifocal IOLs may increase the likelihood of these problems, so you should think carefully about how these problems might effect your job, your hobbies, and your daily life. In some instances, corrective lenses or surgical replacement of the IOL may be necessary for adequate visual function following cataract surgery.

4. Complications associated with limbal relaxing incisions include damage to the cornea, infection, and fluctuating vision while the incision heals. They can also lead to under- and over-correction; if this occurs, another procedure and/or glasses or contact lenses may be required.

5. Complications associated with local anesthesia injections around the eye include a hole (perforation) of the eye, injury to the optic nerve, interference with the circulation of the retina, droopy eyelid, breathing problems, low blood pressure (hypotension), heart (cardiac) problems, and in rare situations, brain damage or death.

6. If a monofocal (single focus) IOL is implanted, either distance or reading glasses or contacts will be needed after cataract surgery for adequate vision.

7. Monovision may result in problems with impaired depth perception. Choosing the wrong eye for distance correction may result in feeling that things are the “wrong way around.” Once surgery is performed, it is not always possible to undo what has done, or to reverse the distance and near eye without some loss of visual quality.

8. Multifocal (multiple focus) IOLs may reduce dependency on glasses but might also result in less sharp vision, which may become worse in dim light or fog. They may also cause some visual side effects such as rings or circles around lights at night. It may be difficult to distinguish an object from a dark background, which will be more noticeable in areas with less light. Driving at night may be affected. If you drive a lot at night, or perform delicate, detailed, “up-close” work requiring closer focus than just reading, a monofocal lens in conjunction with eyeglasses may be a better choice for you. If complications occur at the time of surgery, a monofocal IOL may need to be implanted instead of a multifocal IOL. If you chose a multifocal IOL, it is possible that not all of the near (and intermediate) focusing ability of your eye will be restored. Additional treatment and/or surgery may be necessary.

9. If complications occur at the time of surgery, the doctor may decide not to implant an IOL in your eye even though you may have given prior permission to do so.

10. Other factors may affect the visual outcome of cataract surgery, including other eye diseases such as glaucoma, diabetic retinopathy, age-related macular degeneration; the power of the IOL; your individual healing ability; and, if certain IOLs are implanted, the function of the ciliary (focusing) muscles in your eyes.

11. Your doctor will use special equipment and computer formulas to select the best IOL for you, but the result may be different than what was planned. You may need to wear glasses or contact lenses after surgery to obtain your best vision. Additional surgeries such as IOL exchange, placement of an additional IOL, or refractive laser surgery may be needed if you are not satisfied with your vision after cataract surgery.

12. Regardless of the IOL chosen, you may need laser surgery (a YAG capsulotomy) to correct clouding of vision. At some future time, the IOL implanted in your eye may have to be repositioned,

removed surgically, or exchanged for another IOL.

13. If your ophthalmologist has informed you that you have a high degree of farsightedness (hyperopia >5.0 diopters) and/or that the axial length of your eye is short (, 18.0mm), your risk for a complication known as nanophthalmic choroidal effusion is increased. This complication could result in difficulties completing the surgery and implanting a lens, or even loss of the eye.

14. If your ophthalmologist has informed you that you have a high degree of nearsightedness (myopia > -7.0 diopters) and/or that the axial length of your eye is long (> 25.00 mm), your risk for a complication called a retinal detachment is increased. Retinal detachments can usually be repaired but may lead to vision loss or blindness.

15. Since only one eye will undergo surgery at a time, you may experience a period of imbalance between the two eyes (anisometropia). This usually cannot be corrected with eyeglasses because of the marked difference in the prescriptions, so you will either temporarily have to wear a contact lens in the non-operated eye or will function with only one clear eye for distance vision. In the absence of complications, surgery in the second eye can usually be accomplished within 2 to 4 weeks, once the first eye has stabilized.

16. There is no guarantee that cataract surgery will improve your vision. As a result of the surgery and/or anesthesia, it is possible that your vision could be made worse. In some cases, complications may occur weeks, months or even years later. These and other complications may result in poor vision, total loss of vision, or even loss of the eye in rare situations. You may need additional treatment or surgery to treat these complications. This additional treatment is not included in the fee for this procedure.

GLAUCOMA

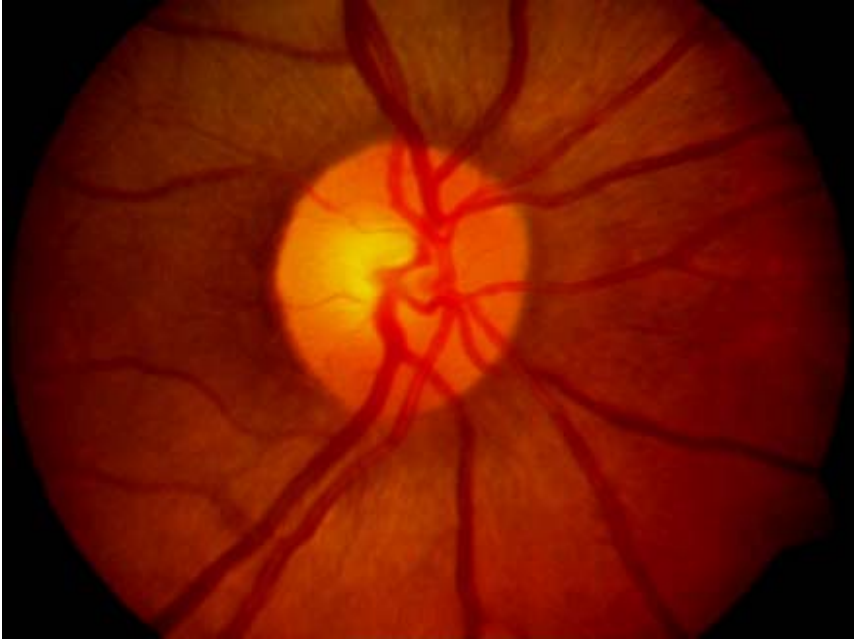


Fig.1 Normal Optic Nerve



Fig. 2 Glaucomatous optic nerve. Observe the large central difference.

Glaucoma refers to a group of diseases that cause damage to the optic nerve. Containing more than a million nerve fibers, the optic nerve connects the eye to the brain. This important nerve is responsible for carrying images to the brain. The optic nerve fibers make up a part of the retina that gives us sight. This nerve fiber layer can be damaged when the pressure of the eye (intraocular pressure) becomes too high. Over time, high pressure causes the nerve fibers to die, resulting in decreased vision.

Glaucoma has been nicknamed the "sneak thief of sight" because it often goes undetected and causes irreversible damage to the eye. There are usually no symptoms in the early stages of the disease. Many people have glaucoma but are not aware of it. As the disease progresses, vision seems to fluctuate and peripheral vision fails. If left untreated, vision can be reduced to tunnel vision and eventually, total blindness.

Glaucoma usually occurs when fluid in the eye builds up, causing higher pressure than the eye can withstand. The canal responsible for draining this fluid becomes plugged, preventing proper drainage. In other cases, the eye may produce more fluid than normal and simply cannot be drained fast enough, producing higher intraocular pressure. Researchers do not know exactly what makes some people more prone to this problem. Other causes may include trauma, genetic disorders and low blood flow to the optic nerve.

Risk Factors: Having high intraocular pressure increases the risk of developing glaucoma. Those who are over forty years of age and who are African-American also have an increased risk. Anyone sixty years of age is more at risk, especially Mexican-Americans. Furthermore, those with a family history of glaucoma are at higher risk of developing glaucoma. Having systemic diseases such as diabetes, high blood pressure and heart problems also increases your risk. Other risk factors include nearsightedness and direct trauma to the eye.

There are two major types of glaucoma: chronic, or primary open-angle glaucoma (POAG), and acute closed-angle glaucoma.

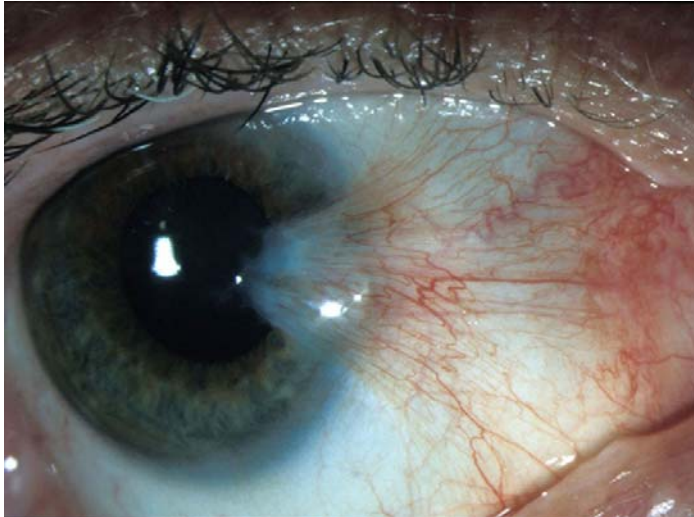
- **Chronic:** Open-angle glaucoma damages the eye with no warning signs. It is the most common type of glaucoma and is often referred to as the "silent type." Damage occurs over time, usually without notice.
- **Acute closed-angle glaucoma:** Closed-angle glaucoma happens quickly. An "attack" may produce a red, painful eye and symptoms such as facial pain, headache, blurry

vision, rainbow-colored haloes around lights, nausea and vomiting. It is a severe medical emergency.

Treatment:

The goal of glaucoma treatment is to reduce eye pressure to a level at which no more damage occurs. Treatment is given in the form of prescription eye drops and occasionally, oral systemic drugs. Laser treatment has been shown to work just as well as medicines to prevent more damage from occurring. In certain cases in which medication or laser procedures do not achieve this goal, surgery is helpful. Many times therapy includes a combination of these treatments. It is important to understand that glaucoma cannot be cured, but can be controlled. Unfortunately, vision loss caused by glaucoma cannot be reversed.

Pterygium (Carnosidad, Surfer's eye)



Pterygium (“Carnosidad”) (Surfer’s eye) most often refers to a benign growth of the conjunctiva. A pterygium commonly grows from the nasal side of the sclera (the white wall of the eye). It is usually present in the palpebral fissure, the exposed part of the eye. It is associated with and thought to be caused by ultraviolet-light exposure (e.g., sunlight), low humidity, and dust. The predominance of pterygia on the nasal side is possibly a result of the sun's rays passing laterally through the cornea (Transparent front of the eye). Sunlight passes unobstructed from the lateral side of the eye, focusing on the medial limbus (junction between the cornea and sclera) after passing through the cornea. On the contralateral (medial) side, however, the shadow of the nose reduces the intensity of sunlight focused on the lateral/temporal limbus.

Pterygium is characterized by elastotic degeneration of collagen (actinic elastosis) and fibrovascular proliferation. It has an advancing portion called the head of the pterygium, which is connected to the main body of the pterygium by the neck.

The exact cause is unknown, but it is associated with excessive exposure to wind, sunlight, or sand. Therefore, it is more likely to occur in populations that inhabit the areas near the equator, as well as windy locations. In addition, pterygia are twice more likely to occur in men than women. Some research also suggests a genetic predisposition, with cellular migration by the keratoblasts, which are the cells that give rise to the layers of the cornea.

Conjunctival auto-grafting is a surgical technique that is effective and safe for pterygium removal. When the pterygium is removed, the tissue that covers the sclera known as the conjunctiva is also extracted. Auto-grafting replaces the bare sclera with conjunctival tissue that

is surgically removed from a healthy conjunctiva. That “self-tissue” is then transplanted to the bare sclera and is fixated using sutures, tissue adhesive, or glue adhesive.

Amniotic membrane transplantation is an effective and safe procedure for pterygium removal. Amniotic membrane transplantation offers practical alternative to conjunctival auto graft transplantation for extensive pterygium removal. Amniotic membrane transplantation is tissue that is acquired from the innermost layer of the human placenta and has been used to replace and heal damaged mucosal surfaces including successful reconstruction of the ocular surface. Using an amniotic graft facilitates epithelialization, and has anti-inflammatory as well as surface rejuvenation properties. Amniotic membrane transplantation can also be fixated to the sclera using sutures, or glue adhesive.— Amniotic membrane transplantation with Tisseel glue application and Mitomycin-C has shown excellent cosmetic outcomes with a surface free of redness, stitching, or patches, which makes the ocular surface suitable for vision correction surgery sooner.