

TO OUR PATIENTS:

Corneal transplants have been performed for many decades; however, recent scientific advances have greatly increased the success rate of these operations and have reduced many discomforts and inconveniences following surgery.

We hope the following information will be helpful to you in understanding corneal transplantation. Most individuals are less apprehensive when they are aware of the details concerning the proposed surgery. In many cases, the success rate is highly dependent upon the total cooperation of an informed patient.

THE CORNEA

The cornea is the transparent front window portion of the eye that permits light to enter and focus on the retina. The cornea is normally clear and protective, like a watch crystal, but can become cloudy or irregular in shape, causing reduced vision or even legal blindness. The average adult cornea is less than 1 millimeter (mm) in thickness and consists of five layers. A diseased or injured cornea can be replaced through transplantation, using only carefully screened human donor corneal tissue.

DISORDERS OF THE CORNEA

CORNEAL CLOUDING

The most common causes of corneal clouding are traumatic injury to the cornea, hereditary disorders, and corneal scars caused by infection from bacteria, fungi or virus.

Another common condition in older people is **corneal edema** or **corneal decompensation**. In this situation, fluid collects in the cornea causing it to cloud. A degeneration of the cornea called Fuchs Endothelial Dystrophy is a common cause. In the event the cornea fails to respond to medical treatment, a corneal transplant may be the only method of treatment available to restore vision.

KERATOCONUS

Keratoconus is a slowly progressive corneal degeneration that can begin in the teens or early twenties. This condition results in warped, cone-shaped corneas causing visual distortion. This corneal weakness can initially be corrected with glasses, but eventually requires contact lenses. As keratoconus advances, contact lenses may no longer be an effective or comfortable method of treatment and the individual could require a corneal transplant.

CORNEAL TRANSPLANTS

Corneal transplants are considered to be the most successful of all organ transplant surgeries. More than 40,000 corneal transplants are performed each year in the United States. The success rate of this procedure has dramatically increased in the past few years as a result of recent advances in research and donor tissue preservation and screening.

A “corneal transplant” is the replacement of the central cornea by donor corneal tissue. The success rate can be as high as ninety percent. It is important to remember, however, that vision may be restored to normal levels only if the remainder of the eye is in good health.

THE PROCEDURE

The central portion of the cornea is removed with a circular blade. It is then replaced with a similar-sized donor cornea which is sutured into place with thread finer than a human hair. In most patients, the diameter of the cornea is approximately 12 mm. Donor tissue is approximately 8 mm in diameter and falls well within the central portion of the cornea.

A corneal transplant is an extremely delicate microsurgical procedure performed with the aid of an operating microscope at magnification of ten to twenty-five times normal size.

THE EYE BANK NETWORK

The Eye Bank Network is a nonprofit service organization that has been processing corneal donor tissue since 1946.

All tissue is carefully screened by the Eye Bank to ensure that it is in excellent condition. The screening checks for infectious diseases such as AIDS and the Hepatitis Virus. The Eye Bank obtains this tissue from individuals who have donated their eyes after death. With few exceptions, tissue donated by individuals ranging in age from two to sixty-five is usually acceptable for corneal transplants. Factors such as sex, race, color of the iris or visual acuity of the donor do not influence the surgical result.

Anyone who would like to be an eye donor should call the Donor Network of Arizona at 602-222-2200 or 1-800-447-9477 to request the necessary information. Another donation method requires completion of the Uniform Organ Donor Card available at the Department of Motor Vehicles. Please be sure to discuss with your next of kin your intentions regarding organ donation.

CORNEAL TRANSPLANT SUPPORT GROUP

The Corneal Transplant Support Group is coordinated by and comprised of patients who have had corneal transplants and those who are awaiting corneal transplants. This group meets periodically (approximately once per month) to share personal experiences, apprehensions and expectations of corneal transplant surgery. The support group welcomes anyone interested in corneal transplantation to attend any of their meetings. It provides a means of obtaining additional information about corneal transplantation from people who have experienced it and provides a forum for questions and answers. If you would like to obtain more information about the Corneal Transplant Support Group, please call the Donor Network of Arizona at 602-222-2200 or 1-800-447-9477.

CORNEAL TRANSPLANT SURGERY - RISKS

As with any operation, there are several risks, complications and side effects. These include, but are not limited to: failure or rejection of the transplant, infection, bleeding in the eye, glaucoma (high pressure within the eye), wound leakage, poor wound healing with high astigmatism, loss of sight, loss of the entire eye, and loss of life due to abnormal reactions to anesthesia. There are no guarantees with corneal transplant surgery as with any other surgical procedure. However, the incidence of complications is relatively low.

PATIENTS AWAITING CORNEAL TRANSPLANTATION

The waiting period for transplantation depends on tissue availability and is not always predictable. There are several factors involved in accepting tissue, including matching donor and recipient age and closely checking the quality of the tissue. Because of this, we are not always able to give more advance notice than one to four days prior to surgery.

Prior to surgery, you must have a complete physical examination by your family doctor. A copy of your examination must be forwarded to our office. If you do not have a family physician, we can recommend one to you. During this waiting period, if you experience a change in your health or must leave town, please contact our surgical coordinator as soon as possible.

Upon confirmation of your scheduled surgery, we will tell you what time to report to the hospital or out patient facility. **DO NOT EAT OR DRINK ANYTHING AFTER MIDNIGHT ON THE NIGHT BEFORE SURGERY UNLESS TOLD OTHERWISE.** The surgical coordinator will give you instructions regarding your medications. ***DO NOT PLAN TO DRIVE YOURSELF HOME FROM THE HOSPITAL or out patient surgical facility.***

WHAT TO EXPECT IN THE HOSPITAL or OUTPATIENT SURGERY CENTER

In addition to the usual admission procedures, a blood count may be performed. An anesthesiologist will discuss with you the type of anesthesia to be administered. This may be either "local," with only your eye anesthetized, or "general," in which case you will be totally asleep. Prior to entering the operating room, you will receive appropriate medications. Drops will be placed in the eye and the eyelashes may be clipped short. The eyelashes will grow back in several weeks.

During surgery, your heartbeat, blood pressure and the oxygen content of your blood will be monitored and you will receive intravenous fluids. Following surgery, a patch will be placed over the operated eye and you will be discharged.

THE RECOVERY PERIOD

Your next office visit will be scheduled one to seven days after surgery with subsequent visits scheduled, depending upon the TYPE OF SURGERY and healing progress of your eye. Sutures may be cut to control the amount of post-surgical astigmatism. Sutures can be removed as early as three to six months, or, if necessary, all sutures can stay in place indefinitely. Eyeglasses or a contact lens will be prescribed, if necessary, after the eye has stabilized (usually ten to twelve months postoperatively).

You can resume most normal daily activities, except for those activities that could cause stress to the eye or subject it to trauma (i.e. bumping, contact sports, etc.). You should not lift anything that weighs more than twenty pounds or perform any function that could cause you to strain. At no time during the first month after surgery should you allow your head to bend lower than your waist. This activity may raise the pressure in the eye. You should protect your eye with regular plastic or polycarbonate eyeglasses or a metal shield during the day. However, it is highly recommended that the metal shield be worn in any high risk situation (i.e. driving, at a public event while in a crowd of people, on a bus, etc.). The metal shield **MUST** be worn while sleeping for a period of time following surgery. You may shower, shampoo or shave, but take special care to avoid getting soap in your eye. If that should occur, immediately flush the eye with artificial tear drops (NOT TAP WATER) to remove the soap. You may read and watch television and return to work as soon as you feel capable, but it is prudent to wait at least three to seven days after surgery.

PLEASE READ POSTOPERATIVE INSTRUCTIONS SUMMARIZED ON PAGE 11 OF THIS BOOKLET CAREFULLY. Your wound will be at its weakest after all sutures are finally removed. **YOU MUST BE ESPECIALLY CAUTIOUS FOR AT LEAST TWO WEEKS AFTER FINAL REMOVAL OF ALL SUTURES.**

MEDICATIONS

You will be given an antibiotic and an anti inflammatory drop to be placed in the operative eye BEFORE surgery. Please fill these prescriptions and follow the instructions carefully. Some medications may not be covered by your insurance.

DO NOT STOP USING ANY MEDICATIONS unless we have specifically instructed you to do so. If you are running out, please call the pharmacy 48 hours in advance or call us during normal business hours.

Eye drops or ointments make your eye comfortable, decrease the amount of inflammation and help prevent infection. Mucus or dried tears accumulating on your eyelashes may be cleaned by gently cleaning with a warm washcloth. Do not put excessive pressure on the eye itself.

USE MEDICATIONS EXACTLY AS INSTRUCTED. Do not skip doses and never use medications more frequently or for a longer period of time than prescribed. Medications should be stored at room temperature unless you are otherwise instructed by your physician or pharmacist. Do not share medications with anyone or transfer medications from one bottle to another.

Avoid touching the tip of the dropper or tube to anything, especially any part of the eye. Drops or ointments can be placed in the eye within an hour of the time scheduled. If you are using more than one drop, use them at least five minutes apart so that one drop does not wash out the other. **Always use drops before ointment.** Keep all medication out of the reach of children.

ADMINISTRATION OF YOUR MEDICATION

You may wish to request a family member or friend to assist you when administering drops or ointment to your eye.

1. Wash your hands thoroughly.
2. If the bottle of medication has been refrigerated, warm it by gently rolling it between the palms of your hands.
3. Shake any bottle containing a suspension (milky appearance) twenty times before each use.
4. Tilt your head slightly back; it may be easier to sit or lie down.
5. Look up and gently pull the lower eyelid down to form a pocket.
6. Instill the medication into the pocket of the lower lid. If you are not certain that the drop of liquid medication went into the pocket, use another drop. When using ointments, squeeze a strip approximately 1/2 inch long into the pocket.
7. Close the eyelids gently for one minute. Do not squeeze the lids.
8. Close the eyelids again and, if necessary, GENTLY wipe the lower lid with a clean tissue to remove any tears or excess medication.

Avoid applying pressure to the eye.

CORNEAL TRANSPLANT REJECTION OR INFECTION

PLEASE READ THIS SECTION WITH EXTREME CARE. HAVE OTHER MEMBERS OF YOUR FAMILY OR FRIENDS READ IT ALSO SO YOU WILL HAVE THE BEST POSSIBLE CHANCE FOR A SUCCESSFUL TRANSPLANT. If at any time you should have any questions with respect to your surgery or conditions you are experiencing, please call our office.

Once the healing process begins, the eye should be white, comfortable (this usually occurs within fourteen to twenty-eight days), and your vision should be slowly improving. Any sudden onset of decreased vision, light sensitivity, pain or redness in the eye may mean infection or rejection. IF THIS SHOULD OCCUR, PLEASE CALL OUR OFFICE AS SOON AS POSSIBLE.

Corneal transplants have a high success rate and excellent chances exist for each patient. Rejection occurs when the body recognizes the new corneal tissue as foreign and attempts to fight it, which may result in a cloudy corneal transplant. Rejection occurs in a small percentage of cases and could happen more than once. A repeat corneal transplant may be performed if a rejection leads to failure.

You would initially notice a rejection reaction as a sudden decrease in vision, often described as a cloudiness. You may also notice an acute change in the character of your discomfort. A rejection episode could occur immediately or as late as ten or more years following surgery. The most common time frame for transplant rejection is from one to six months following surgery. After six months to one year postoperatively, the chances of rejection are less. In most cases, the rejection reaction can be reversed and stabilized with medications if diagnosed and treated early, and the graft then will remain successful and clear. If the rejection episode is not treated in a timely manner when it begins, the chance of eventual transplant failure is much higher. It is extremely important to recognize transplant rejection, immediately report and treat it.

DECREASED VISION

Early corneal rejection is most commonly noticed as a sudden but severe decrease in vision over a period of hours or days. Four weeks following surgery, start testing your vision in the following manner: select an object on the wall and back away until you can see the object with the operated eye, keeping the unoperated eye covered. Note how far away you are from the object so you can be consistent in measuring your vision. If your vision improves, making it easier to see the object from that distance, back farther away to establish a new distance from which you can just see the object. If at any time you find that your vision has SEVERELY worsened compared to the previous day, you should call our office. Daily fluctuation in vision is COMMON. Significant worsening of vision is UNCOMMON.

INCREASED REDNESS OF THE EYE

After surgery, the eye will be red because of blood in the tissue (similar to bruising). As the blood clears, the eye should become whiter. If the eye becomes PROGRESSIVELY more bloodshot weeks after surgery, this should be viewed as a warning signal of either allergy, dryness, infection or rejection.

DISCOMFORT IN AND AROUND THE EYE

After surgery there will be some discomfort around the eye which should disappear in about one week. Because sutures are used, scratchiness, ocular irritation or a sensation of having something in the eye are not uncommon.

A “bandage contact lens” may be inserted following surgery. This provides comfort and protection to the surface of the eye. If you feel a sudden discomfort, the lens has probably dislodged. The sensation is similar to a particle in the eye. Leave the lens out of the eye and if you are uncomfortable, you may patch the eye. Replacing the lens is not an urgent matter!

DISCOMFORT IN AND AROUND THE EYE (Continued)

Most eye drops and ointments are soothing to the eye. Occasionally, a medication may sting temporarily, but medicines should not produce pain or increase the amount of redness or swelling around the eye. Increased pain, redness or itching could result from external irritants such as smoke or smog or could indicate an allergic reaction to one of the medications you are using. If your eye should become INCREASINGLY sore or uncomfortable in any way after it has once become comfortable, this may be a sign of infection, high pressure or corneal transplant rejection.

If you experience any of these danger signals, please call our office immediately. Remember - the success of the corneal transplant operation depends heavily on your awareness of symptoms. No guarantee of success can be given, but we can assure you an increased chance of success if you stay alert to danger signals.

CORRECTION AFTER SURGERY

The use of glasses, contact lenses or intraocular lens implant will depend on your specific case. It may be possible to implant an intraocular lens at the time of corneal transplantation if a cataract operation is needed or if an intraocular lens needs to be removed. This determination will be based on your individual situation and requirements.

FEE FOR CORNEAL TRANSPLANT SURGERY

The fee for corneal transplantation usually includes the charges for the routine surgery, and office visits that are directly related to the surgery which you may require during the first THREE months postoperatively. If you have a cataract extraction and/or an intraocular lens implant at the same time as the corneal transplant, the fee will be increased. Should you require any additional hospitalizations at any time after the surgery, the cost will be in addition to the initial cost and will be billed as a separate admission. ***Examination and fitting for spectacles or contact lenses is an additional charge.***

POSTOPERATIVE INSTRUCTIONS

1. Use eye patch and metal shield while sleeping until you are told otherwise.
2. You must protect the operated eye at all times.
3. Do not bend or stoop lower than your waistline for at least one month following surgery.
4. Do not lift or push anything weighing more than twenty (20) pounds for two weeks.
5. You may take a shower and your hair may be gently shampooed, but your head must be pushed back allowing the water to flow backwards off your head and not over your face. Make certain that your eye patch and shield are in place.
6. Keep your bowels open and do not strain. You may require medication to soften your stool.
7. You may read and watch television.
8. You may take walks or short rides, however, you may NOT run or jog for at least two (2) weeks following your surgery.
9. Do not sleep on your stomach or on the side of your operation until told otherwise.
10. You may not perform sexual intercourse for two (2) weeks following your surgery.
11. You should be prepared and allow for a period of depression or agitation following your surgery, which may be caused by medication. Please inform our office if these symptoms occur. This is not usually an emergency situation.
12. Further instructions with respect to the use of your medications will be given upon discharge from the hospital.

GLOSSARY

Cataract:	A condition in which the crystalline lens of the eye, or its capsule, or both, become opaque with consequent loss of visual acuity.
Cornea:	Clear, transparent portion of the outer coat of the eyeball forming the front of the aqueous chamber.
Corneal transplant:	Operation to restore vision by replacing a section of opaque cornea.
Crystalline lens:	A transparent, colorless body suspended in the front of the eyeball, between the aqueous and the vitreous. Its function is to bring the rays of light to focus on the retina.
Glaucoma:	An ocular disease characterized by increased intraocular pressure resulting in damage to the optic nerve, retinal nerve fibers and visual field (peripheral vision).
Iris:	Colored, circular membrane suspended behind the cornea and immediately in front of the lens. The iris regulates the amount of light entering the eye by changing the size of the pupil.
Keratoplasty:	See Corneal transplant.
Pupil:	The opening at the center of the iris of the eye for the transmission of light.
Retina:	Innermost coat of the eye, formed of sensitive nerve elements and connected with the optic nerve.
Sclera:	The white part of the eye - a tough covering which, with the cornea, forms the external, protective coat of the eye.