

DEPARTMENT OF  
**OPHTHALMOLOGY**

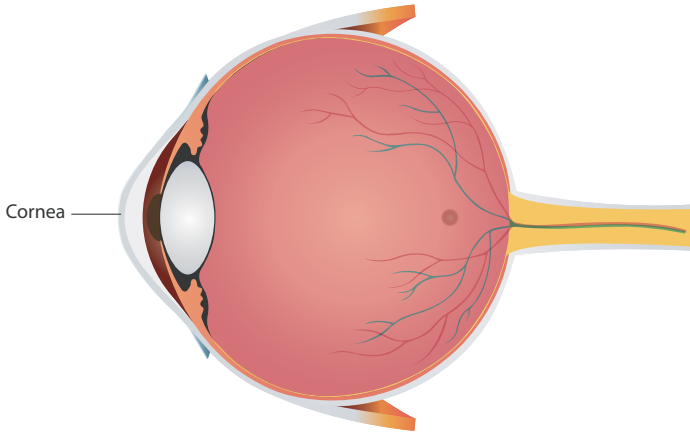
Corneal Transplant



## CORNEAL TRANSPLANT INFORMATION SHEET

### Where is the cornea?

The cornea is the clear transparent part at the front of the eyeball. The dark iris and pupil can be seen behind the clear cornea. It helps to focus light from outside onto the retina to allow you to see well.



**Cross-section diagram of the eye.**

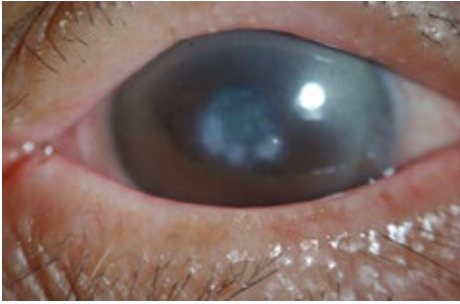
### What is a Corneal Transplant surgery?

A corneal transplant, or called a “keratoplasty”, is a surgery where the diseased cornea is removed (in part or in whole) and replaced with a clear, healthy donor cornea.

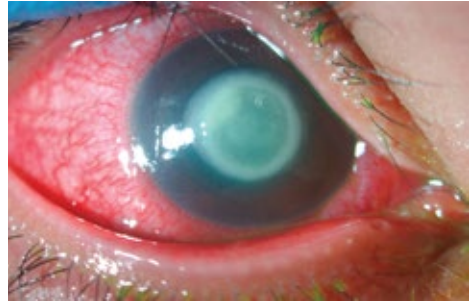
When the cornea is diseased, it may become hazy. That prevents light from focusing properly onto the retina, and hence resulting in poor vision.

### Why may I need a Corneal Transplant?

It is often performed to improve vision in patients with poor vision from corneal opacities, such as corneal scars or corneal swelling. It may also be performed for cases of keratoconus, where the cornea progressively assumes a more conical shape instead of a rounded shape, thereby causing astigmatism and poor vision. Sometimes it may be performed for a non-healing severe corneal infection, or for a severe trauma that requires a corneal tissue to close up.



**Central corneal scar obstructing vision.**



**Large central corneal infection.**

### **How is the Corneal Transplant surgery performed?**

It is usually performed under general anaesthesia (where you are totally unconscious), or under regional anaesthesia (where an injection is given around the eyeball to numb that area).

The surgeon will remove either the entire thickness of the cornea (Penetrating Keratoplasty; PK), or partial thickness of the cornea, depending on the disease. If only the front portion of the cornea is replaced, it is called Anterior Lamellar Keratoplasty (ALK). If only the back portion of the cornea is replaced, it can be Descemet Stripping Automated Endothelial Keratoplasty (DSAEK) or Descemet Membrane Endothelial Keratoplasty (DMEK). In PK and ALK, the donor cornea is held onto the patient's remaining cornea by sutures, whereas in DSAEK or DMEK, no sutures (stitches) are required.

### **What are the risks of Corneal Transplant?**

As with all surgeries, there are risks involved.

During the surgery, risks to the eye include bleeding, damage to the lens or other intraocular structures, or high pressure in the eye. There is a very small risk of massive bleeding in the eye during the surgery, and this massive bleeding may result in permanent blindness. However, such occurrences are very rare.

After the surgery, we also watch out for issues such as wound leakage, high pressure in the eye (glaucoma), retinal detachment, inflammation or infection.

A very severe infection involving the entire inside of the eye (endophthalmitis), though rare, will require further treatment and may also result in permanent blindness.

As with all transplant surgeries, there is a risk of rejection of the corneal graft by your own body. Patients with rejection may present with eye redness, pain and decreased vision. Rejection can occur few weeks after the surgery, or even many years later. Hence, you will need to be on long term eyedrops to prevent rejection.

PK and ALK require sutures, and sutures induce astigmatism. In astigmatism, the cornea is not perfectly round, and your vision will appear slanted, blur, or double vision. Your surgeon may have to remove sutures months after the surgery to improve your vision. You may also be fitted with contact lenses or glasses after the surgery to improve your vision.

In DSAEK and DMEK, there is a possibility that the corneal donor graft may not stick well onto the patient's recipient cornea. In such cases, you may be required to return to the operating theatre to reattach the graft.

### **Risks related to anaesthesia**

#### **• Strokes and heart attacks**

Anaesthesia risks include stroke, heart attack, or even death. These risks are increased if you have uncontrolled medical conditions. However, depending on your general health, these risks are usually low. The pre-operative tests will assess your suitability for surgery, and reduce the risk of such complications. The anaesthetist will advise you again before the surgery.

#### **• Post-operative nausea and vomiting**

You may experience this after the surgery, especially if you have a previous history of nausea and vomiting after anaesthesia. In general, this is reduced with the use of anti-vomiting medications given during surgery.

## What do I need to do before the surgery?

**Test before the surgery:** Pre-operative tests may include blood pressure check, blood tests, electrocardiogram (ECG) and chest X-Ray to assess your suitability and fitness for surgery.

**Medication and fasting:** If you are taking blood thinning and/or anti-clotting medications such as aspirin or warfarin, you may be asked to stop these medications prior to surgery. Specific instructions on what and when to eat or drink on the day of the surgery will be given to you. It is IMPORTANT to follow these instructions STRICTLY, as surgery may be cancelled if these instructions are disregarded.

**Illness:** If you become sick before the day of the surgery, your surgery may need to be rescheduled. It is usually safe to proceed with surgery 2 weeks after the symptoms of an illness have subsided, although each patient's condition will be assessed individually.

## What can I expect on the day of surgery?

**Before surgery:** Do remember to follow specific fasting and reporting instructions given to you.

In the operating theatre, monitors and leads will be attached to your chest, arm and fingertip. The surgery is performed under regional or general anaesthesia. The anaesthetist will give you some medications to either sedate you for regional anaesthesia, or make you sleep fully for general anaesthesia.

In regional anaesthesia, after sedation, the anaesthetic mixture is injected around the eye to make the whole eye numb for several hours.

Your skin around the eye will then be cleaned with antiseptic solution and you will be covered by a sterile sheet of cloth.

**Surgery:** Most corneal transplant surgeries take about 2 hours, but the operating time can vary depending on the complexity of the procedure.

**After surgery:** You will be transferred to the recovery area. You will be monitored by the nurses, and you may be given specific instructions on positioning (see below).

For day surgery cases, after a period of observation and detailed discharge advice from the nurses on eye care, you will be ready to go home.

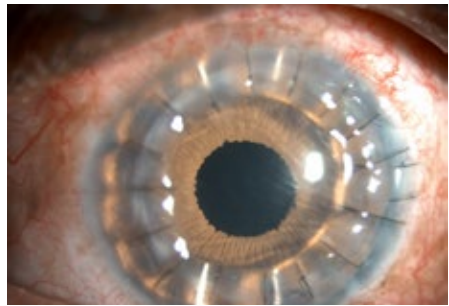
Some patients may be monitored overnight.

You will be given eye drops or eye ointment to use in the operated eye after surgery. Specific instructions on how to care for your eyes after surgery will be provided. Follow up appointment will be arranged before you leave the hospital.

You will need someone to accompany you home upon discharge. Do not drive yourself on that day.



**Corneal scarring after trauma.**



**The scarred cornea is removed and replaced by a clear donor cornea.**

## **CORNEAL TRANSPLANT SURGERY POST-OPERATIVE INSTRUCTIONS**

This section provides key information for after-care in patients who have undergone corneal transplant surgery. Taking these precautions may help to reduce risks and complications.

The time frames stated are rough guides, and may differ from patient to patient. Always clarify any doubts with your doctor.

### **Immediately after the surgery:**

#### **Positioning**

If DSAEK or DMEK was performed, you will be asked to lie flat on your back for about a day. You will be given specific instructions upon discharge. Avoid any pressure on the eye.

#### **Care after Surgery**

There may be some eye discomfort, eye redness and mild eye swelling after the surgery. The nurse will clean the eye and instill eye drops or eye ointment. The nurse will also show you and your care-givers how to instill the eye medications and advise you on eye care.

### **The first few days after surgery:**

#### **What to Expect**

- Effects from the local anaesthesia will wear off over 1-2 days, including:
- Numbness over the injected side of the face
- Light headaches
- Double vision
- If the surgery is performed under general anaesthesia, you may experience nausea, vomiting and giddiness after the surgery.
- The operated eye may have slight redness or swelling (1-2 days).
- The operated eye will be mildly to moderately irritated and uncomfortable (usually for 2-4 weeks but recovering steadily).
- Vision will be blurred after surgery:
  - If a full thickness corneal transplant (PK) or ALK was performed, vision will blur for many months (usually for 6-12 months) but recovering steadily, until sutures were removed to improve astigmatism.
  - If a DSAEK or DMEK was performed, vision will take 1-3 months to recover.
- The eyelid may be drooping, swollen or bruised (usually for 1-3 days).

- Clinic visits: One visit the very next day, then another visit within a week, and subsequently, depending on recovery, may need to be followed up every 1-3 months till about 6 months after the surgery. Thereafter, the frequency of visits may be reduced. You will need to be followed-up for life after a corneal transplan

### **What I Must Do/What is Safe to Do**

- Apply the eye drops as instructed.
- Clean your eyes as instructed twice daily with sterile/clean cotton balls - slightly wet with sterile saline or cool boiled water, and do not allow water to enter the eye.
- Wear the plastic eye shield when sleeping (for 2 weeks).
- Protective sunglasses can be worn interchangeably with the eye shield to protect your eye when outdoors.
- The following activities are safe: watching TV, computer work, leaving the house to visit clean and uncrowded areas.
- Take plenty of fruits and vegetables to avoid constipation.

### **What to Avoid**

- Rubbing the eye.
- Water/soap entering the eyes (for 2 weeks). (If it does get in, wash it out by instilling the eye drops prescribed)
- Driving (for 1-3 months, or even refrain from driving totally, depending on your condition).
- Work (hospitalisation leave is given).
- Light physical activities, e.g. tai-chi, slow jogging (for 4 weeks).
- Strenuous physical activities, e.g. soccer, basketball, kick-boxing (not recommended in long term).
- Swimming (not recommended in long term).
- Coughing or sneezing too hard (4 weeks).
- Carrying children who may accidentally poke your eye (3 months).
- Carrying heavy objects (3 months).
- Bending down to pick up things (6 weeks); if necessary to do so, do it with a straight back and be careful of not knocking the head when standing up.



## About 1-2 weeks after surgery

### What to Expect

- Eye irritation should be less.
- Vision should become more stable/partially clearer.
- Your corneal specialist will gradually tail down your eye drops in the first 1-2 weeks.

### What I Must Do/What is Safe to Do

- As above.

### What to Avoid

- As above.

## About 4-6 weeks after surgery

### What to Expect

- Your eye should feel more comfortable.
- Your corneal specialist will gradually tail down your eye drops (over weeks to months).
- There may be removal of sutures (stitches) in some cases.

### What I Must Do/What is Safe to Do

- Light exercise like walking is allowed.

### What to Avoid

- As above.

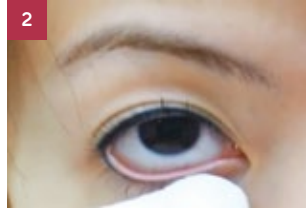
## Medications

- Eye drops and all medications to be taken as prescribed.
- Most other oral medications can be continued upon returning home.
- However, please note that aspirin, anticoagulants and other antiplatelets can be continued only after consulting your surgeon.

- Apply eye drops using the following technique:



***It is very important to wash your hands before applying eye drops/ touching the eye.***



Use cool, boiled water or sterile saline to gently clean the eyelids whenever the eye feels sticky with a sterile cotton ball.



Shake the bottle and remove the cap.



Hold the bottle close to the eye without touching the eyelid or eyelashes.

Tilt your head back, look upwards and pull the lower eyelid down.

Instill one drop into the eye.



Close the eye.

Do not rub the eye.

Gently dab off any excess eye drops.

## Eye Ointment Application



Remove the cap from the tube of ointment.



Hold the tube close to the eye without touching the eyelid or eyelashes.

Tilt your head back, look upwards and pull the lower eyelid down.

Squeeze a 1 cm ribbon of ointment into the eye and close the eye.

Do not rub the eye.

Gently dab off any excess ointment.

## IN ALL CASES

- Keep eye drops in a cool place.
- Discard the eye drops one month after opening or upon their expiry date.
- If more than one type of eye drops are to be applied to the same eye, wait **3 – 5 minutes** before instilling the next eye drop.
- Always instill eye drops before eye ointment.

## WHAT TO DO IN AN EMERGENCY?

Please call us at Tel: 8126 3632 during office hours if you experience the following:

- **Significant pain, redness or blurring of vision**
- **Severe swelling or excessive discharge** from the eye

Office hours:

- Monday – Friday: 8am – 5pm
- Saturday: 8am – 12noon

\*Closed on Sundays and Public Holidays.

After office hours, you are advised to seek treatment at the Emergency Department (A&E), Basement 1, Tan Tock Seng Hospital.

### **Clinic Appointments**

Tel: (65) 6357 7000  
Email: [contact@ttsh.com.sg](mailto:contact@ttsh.com.sg)  
Website: [www.ttsh.com.sg](http://www.ttsh.com.sg)

### **LASIK Enquiries**

Tel: (65) 6357 2255  
Email: [lasik@ttsh.com.sg](mailto:lasik@ttsh.com.sg)  
Website: [www.ttshlasik.com.sg](http://www.ttshlasik.com.sg)



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