PROCEDURE

Corneal transplant

A corneal transplant replaces damaged corneal tissue with healthy donor tissue to improve or protect vision.

PURPOSE
Restore corneal clarity, shape, or strength

PROCEDURE TYPE
Therapeutic surgical procedure using donated corneal tissue

WHERE IT IS DONE
Operating theatre, usually as outpatient surgery

ANAESTHESIA
Local or general anaesthesia

HOW LONG IT TAKES
About one to two hours

PREPARATION
Medication review, fasting if instructed, and transport home

RECOVERY
Same day; no driving until your eye specialist approves

MAIN RISKS
Rejection, infection, glaucoma, and graft failure

RESULTS
Early improvement within weeks; final vision may take months

Overview

The cornea is the clear, curved window at the front of your eye. Disease, injury, infection, or previous surgery can make it cloudy, swollen, scarred, or misshapen.

A corneal transplant, also called keratoplasty or corneal graft surgery, replaces damaged tissue with healthy corneal tissue from a deceased donor.

The type depends on which layer is damaged:

Replacing only affected layers usually allows a smaller wound and faster recovery, but it is not suitable for every condition.

- Penetrating keratoplasty replaces the full thickness.

- Deep anterior lamellar keratoplasty (DALK) replaces the front and middle layers.
- Endothelial keratoplasty , including DMEK and DSAEK, replaces the thin inner layer that controls swelling.

Why the procedure is performed

A transplant may be offered when corneal damage reduces sight, causes ongoing pain, or threatens the eye's structure. Reasons include:

The aim may be to improve sight, relieve pain, repair a dangerously thin cornea, or treat disease that has not responded to other care. Perfect vision cannot be guaranteed.

- Keratoconus
- Fuchs endothelial dystrophy
- Scarring after injury or infection
- Persistent swelling after eye surgery
- Inherited corneal disorders
- A failed previous graft
- Severe ulcers or thinning

Who should and should not have it

A transplant may help if corneal damage is the main cause of sight loss and less invasive treatments are unlikely to be enough. Your specialist will assess your retina, optic nerve, general health, and ability to follow the recovery plan.

Surgery may be delayed if you have an active eye infection, severe inflammation, or poorly controlled eye pressure. These problems may need treatment first because they reduce the chance of success.

Benefit may be limited if most sight loss comes from advanced retinal or optic nerve disease. If using drops or attending follow-up will be difficult, practical support may be needed.

Donor tissue is carefully screened and tested. Screening greatly reduces, but cannot completely remove, the risk of transmitting infection.

How to prepare

Follow your treating facility's instructions, which take priority over this general information.

Tell the team about all medicines, supplements, allergies, health conditions, and previous reactions to anaesthesia. Do not stop a blood thinner like warfarin or apixaban unless both the clinician responsible for it and your surgical team tell you to.

You may need to stop eating and drinking for a set period, especially before general anaesthesia or sedation. Take only medicines you have been instructed to take.

Arrange for someone to take you home. Plan help with childcare, shopping, lifting, or physical work during early recovery.

Do not wear eye makeup on the day. Remove contact lenses in advance if instructed.

What happens during the procedure

Staff confirm which eye is being treated. You may receive eye drops and medicine to help you relax.

With local anaesthesia, the area around your eye is numbed and you are usually awake. With general anaesthesia, you are unconscious. The choice depends on the operation, your health, and whether you can remain still.

The surgeon removes damaged tissue and places donor tissue in the opening or against the cornea's inner surface. Full-thickness and many DALK grafts are secured with fine stitches, which may remain for months or longer.

For DMEK or DSAEK, a thin donor layer is inserted through a small cut. An air or gas bubble holds it in position, so you may need to lie flat or keep your head positioned in a particular way afterward.

A shield is placed over the eye. Most people return home the same day after observation.

Recovery and what to expect afterward

Mild aching, grittiness, watering, light sensitivity, and blurred vision are common at first. Use prescribed eye drops and pain relief as directed. Do not rub or press the eye.

Wear the shield as instructed, especially while sleeping. Avoid swimming, dusty environments, eye makeup, heavy lifting, and strenuous activity until your surgeon says they are safe.

After endothelial surgery, follow positioning instructions carefully. Do not fly or travel to high

altitude while an air or gas bubble remains in your eye.

Do not drive home. Resume driving only when your specialist confirms that your vision meets legal requirements and you can drive safely.

Time off work depends on the transplant and your job. Desk work may be possible before heavy, dusty, or high-risk work. Vision may fluctuate, and glasses or contact lenses may still be needed. Endothelial surgery commonly heals faster than a full-thickness graft.

Risks and possible complications

Possible complications include:

Rejection does not always mean failure; prompt treatment may reverse it. Anti-rejection drops, usually corticosteroids like prednisone or hydrocortisone , may be needed long term. Use them exactly as prescribed and do not stop suddenly unless instructed.

- Graft rejection
- Infection
- Increased eye pressure or glaucoma
- Bleeding or inflammation
- Loose or infected stitches
- An irregular corneal shape
- Detachment of an endothelial graft, requiring another air or gas bubble
- Graft clouding or failure
- Retinal detachment or serious vision loss

Results and follow up

Your surgeon can usually explain how the operation went soon afterward, but visual improvement takes longer as swelling settles and the graft heals.

You will have an early postoperative check followed by regular appointments. These monitor eye pressure, healing, stitches, graft attachment, rejection, and infection.

After a full-thickness transplant, vision may change for many months. Stitches may be adjusted or removed. Once healing is stable, you may be assessed for glasses, contact lenses, or another procedure to improve focus.

A graft can remain clear for many years but may not last for life. Rejection can occur even long after surgery.

Alternatives

Alternatives depend on the cause and treatment goal:

Ask whether a partial-thickness transplant is possible. It preserves healthy layers but cannot treat damage affecting the whole cornea.

- Glasses or contact lenses can improve focus but cannot clear a scarred or swollen cornea. Scleral lenses may help severe irregularity.
- Corneal cross-linking can slow keratoconus but usually cannot restore a severely scarred or very thin cornea.
- Eye drops or ointments may treat swelling, infection, or inflammation but cannot replace permanently damaged tissue.
- Other corneal procedures may remove superficial scars or use ring segments in selected conditions.
- Observation avoids surgical risk, but sight, discomfort, or weakness may worsen.
- Comfort-focused treatment may control pain or irritation when improved sight is unlikely.

When to call your healthcare team

Contact your eye team promptly for increasing redness, worsening pain, new light sensitivity, discharge, or a noticeable drop in vision. These can indicate rejection, infection, raised eye pressure, or another problem requiring examination.

Seek urgent or emergency eye care for sudden major vision loss, severe eye pain, a significant eye injury, or new flashes and a curtain-like shadow across your sight. Follow your transplant centre's emergency instructions.

Discuss ongoing mild grittiness, blurring, or gradual visual changes at follow-up visits.

Common questions

Will I be asleep?

You may be awake with local anaesthesia and medicine to help you relax, or you may have

general anaesthesia. Your team will recommend the safest option.

Can I drive home?

No. Arrange transport home and do not drive again until your specialist confirms it is safe and legal.

How painful is a corneal transplant?

You should not feel the operation. Mild aching or grittiness afterward is common. Report increasing or severe pain promptly.

When will I know if it worked?

Your surgeon can discuss the procedure soon afterward, but the visual result develops over weeks or months. Full-thickness grafts generally take longer to settle than endothelial grafts.

Can my body reject the new cornea?

Yes. Redness, light sensitivity, pain, or worsening vision may be warning signs. Prompt assessment and treatment may save the graft.

Will I still need glasses?

Possibly. Glasses, contact lenses, stitch adjustment, or later vision-correction treatment may be needed.

Sources

- National Eye Institute: Corneal Transplant Surgery
- NHS: Cornea transplant
- American Academy of Ophthalmology: Corneal Transplantation
- NHS Blood and Transplant: Cornea transplantation
- The Royal College of Ophthalmologists: Corneal transplant surgery patient information