Corneal transplant for keratoconus

Keratoconus is a condition where the cornea thins and bulges into a cone shape, disrupting its ability to focus light properly. This irregular shape causes blurred vision, distortion, and light sensitivity. In severe cases, scarring can develop in the central cornea.

Photo of an unaffected cornea: The cornea is smooth and close to the centre of the eye.

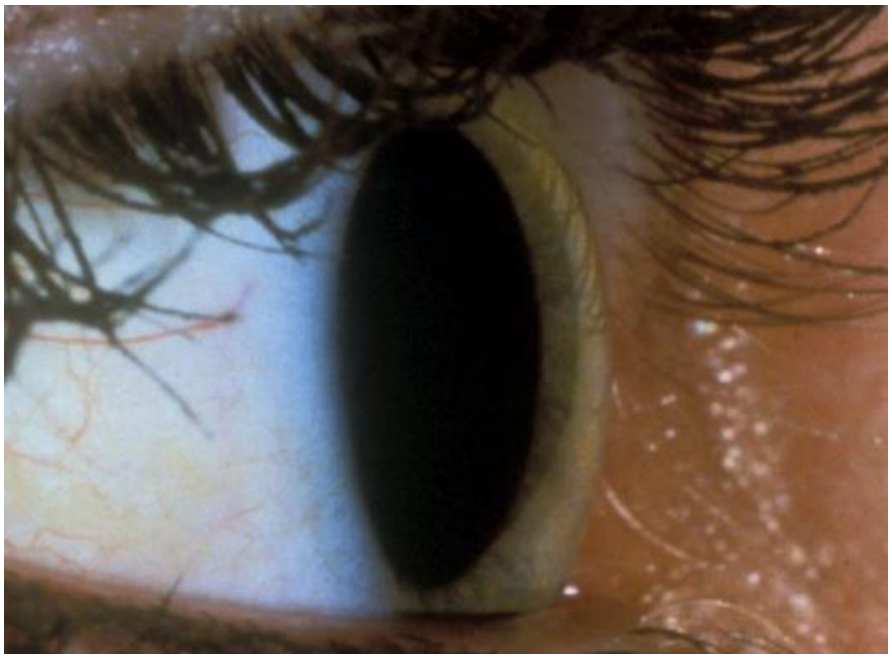
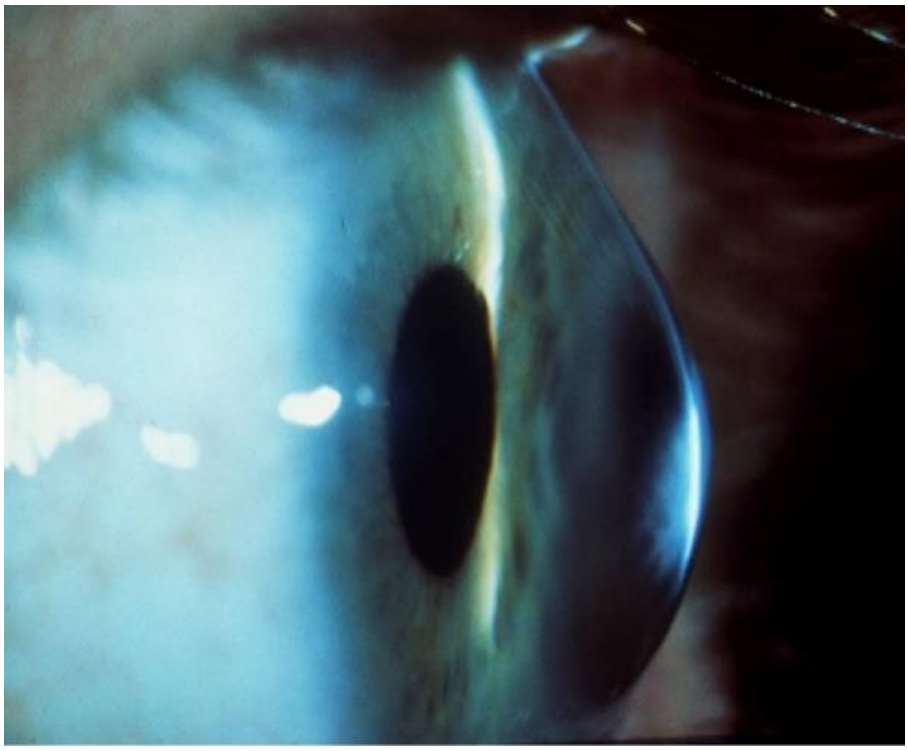


Photo of a cornea affected by keratoconus: The cornea bulges into a cone shape and is further from the centre of the eye.



Keratoconus statistics

- Affects up to 1% of young adults in Australia
- Age of onset typically in late teens or early 20s
- Typically affecting both eyes, but often unequally
- Usually progressive in young people, stabilising by middle age
- Cause is multifactorial with genetic and environmental factors

Corneal Transplant

Treatment required for keratoconus depends on the severity of the disease. In mild to moderate cases, vision may be improved with glasses or contact lenses. In advanced keratoconus, the significant bulging of the cornea makes it difficult to fit and wear contact lenses or glasses. For these individuals, a corneal transplant (also known as a corneal graft) may be recommended to improve vision.

Corneal Transplant statistics

As reported by the Australian Corneal Graft Registry:

- 98% of grafts for keratoconus are likely to survive the first year
- ¾ of grafts surviving between 5 and 15 years retain 6/12 vision
- The majority of recipients still wear glasses or contact lenses

What is a corneal transplant?

- A safe and very successful type of transplant surgery
- No requirement to find a blood group matching donor

A corneal transplant is an operation where the abnormal cornea is replaced with a donor cornea; a procedure called keratoplasty.

Your ophthalmologist will assess your condition to determine which operation is required, either:

- **Deep Anterior Lamellar Keratoplasty (DALK)** removes only the front (epithelium) and middle layers (stroma) of the cornea, leaving the inner layer (endothelium) intact.

  The removed portion is then replaced with a donor cornea. This method preserves the patient's own corneal endothelium, reducing the risk of rejection compared to full-thickness transplants.

- **Full thickness Penetrating Keratoplasty (PK)** removes the central corneal disc (including endothelium) and replaces it with a similar-sized donor cornea.

  It replaces all the layers of the cornea and is commonly

used for advanced keratoconus when the cornea is very thin or scarred.

Corneal Transplant success

A corneal transplant for keratoconus is described as successful and surviving when the cornea is transparent (no scarring), has a near-normal shape, and pain relief (if applicable) occurs.

When this is no longer the case, the graft is described as failed. A second transplant may be attempted if the procedure was unsuccessful.

Recovery of vision is highly dependent on the individual and may vary from a few months to more than a year (after suture removal). To achieve 6/12 vision, the standard required for driving vision, patients may still be required to wear glasses or contact lens.

Keratoconus often affects both eyes. However, operations may be performed months or even years apart, depending on disease progression in each eye.

Recovery process after your transplant

The initial recovery period after a corneal transplant is between one and three weeks, and you will require regular follow-up appointments for the first few months.

Some patients will require suture removal and adjustment at 12 months.

Your ophthalmologist will advise you of medication requirements, how to care for your eye and symptoms of complications.

Due to the nature of the surgery, there is a high likelihood that you will require annual eye examinations.

You may need to abstain from work, driving, lifting or certain exercises for a period. Please discuss return times with your surgeon.

Long term, being mindful of your transplant is important to ensure the health of your eye and the vision you have achieved.

Potential risks

Whilst a corneal transplant is a safe operation, it does carry a small risk of complications, including:

- Rejection of the donor cornea
- Eye infection
- Glaucoma
- Suture issues
- Bleeding
- Cataracts
- Retinal problems
- Graft failure

It is important to discuss these risks with your eye specialist to aid in decision making.

Australian Corneal Graft Registry

Since 1985, the Australian Corneal Graft Registry (ACGR) has collected information about corneal transplant procedures to improve clinical practice and identify risks for poor patient outcomes. With patient consent, the ACGR has data on more than 48,000 procedures performed across Australia.

The ACGR collates data on the donor (including how the cornea was collected and stored) and data on the recipient of the transplant (including the type of surgery and success, patient vision, complications and additional treatments).

Surgeons provide annual updates to the ACGR on their patients until the graft fails or the patient passes away. This information supports ophthalmologists' work and guides patient decisions.

The importance of donors

Corneal transplants are not possible without donors. It is encouraged that transplant recipients provide an anonymous thank you note to the donor's family in recognition of the wonderful gift of sight.

For more information on organ donation visit donatelife.gov.au.