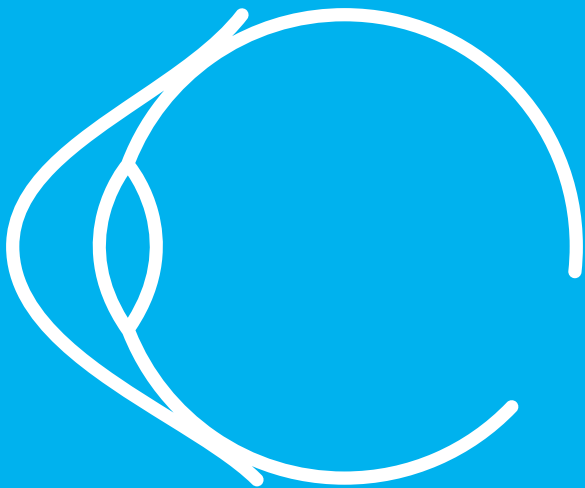


GENERAL INFORMATION

KERATOCONUS



vision
eye institute

WHAT IS KERATOCONUS?

Keratoconus is a progressive, degenerative disorder characterised by thinning of the cornea – its round, dome shape starts to bulge and become cone-like instead. This process of thinning and re-shaping is termed corneal ectasia. Keratoconus is one type of corneal ectasia.

The cornea helps to bend (refract) and focus light rays onto the retina. Any abnormality in its shape leads to visual problems. These include blurred vision and difficulties seeing objects at a distance and close-up. The more advanced the keratoconus, the more severe the visual distortion.

The cause of keratoconus is not completely understood. There may be a genetic component, which is currently under investigation. Avoid continuous or vigorous rubbing of the eyes as this may be a trigger for the condition in susceptible individuals. Keratoconus has also been linked to other medical conditions, such as glaucoma, hay fever and sleep apnoea.

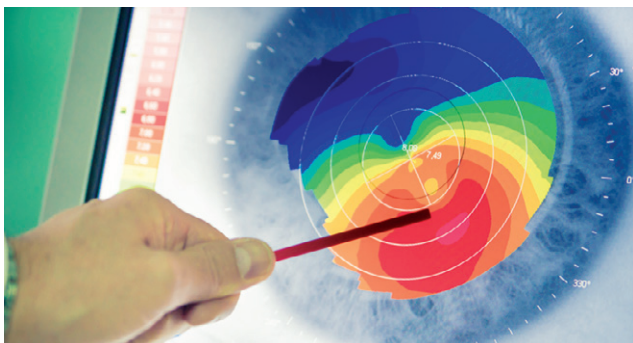
**KERATOCONUS GENERALLY
PROGRESSES FASTER IN YOUNGER
PATIENTS, SO EARLY DETECTION AND
TREATMENT IS VERY IMPORTANT.**





What are the symptoms of keratoconus?

- Sensitivity to light
- Seeing halos or 'ghosting'
- Distorted, blurry vision
- Difficulty driving at night
- Double vision in one eye or noticeably worse vision in one eye
- Eye strain, eye pain
- Headaches



How do you diagnose keratoconus?

Your ophthalmologist may use a number of tools to make a diagnosis of keratoconus, including:

- A **slit lamp**, which combines an intense light source with a microscope to examine your eyes
- A **keratometer** to measure the curvature of the cornea
- **Corneal topography**, which creates a 3D model of the cornea to detect any subtle changes.

HOW DO YOU TREAT KERATOCONUS?

In the early stages of keratoconus, the only treatment required may be prescription glasses to correct your vision.

Unfortunately, this is a progressive condition so your vision will eventually deteriorate, sometimes quite rapidly. As the disease progresses, other treatments may be recommended.

CONTACT LENSES

Rigid (hard) or hybrid contact lenses may be prescribed and are particularly effective in treating keratoconus for a period of time. These are made from a special material that allows the contact lens to mask the abnormal shape of the cornea and improve vision. However, contact lenses do not stop the condition from progressing and will eventually become ineffective.

CORNEAL RING SEGMENTS

This is a surgical option involving the insertion of clear plastic segments into the cornea. These segments are designed to reshape the front surface of the eye, thus correcting refractive errors caused by keratoconus.

Corneal ring segments are reserved for advanced cases of corneal ectasia, where the patient's vision is not correctable with glasses or contact lenses.

CORNEAL ALLOGENIC INTRASTROMAL RING SEGMENTS (CAIRS)

CAIRS is a type of corneal ring segment surgery, where donor corneal tissue is inserted instead of traditional synthetic implants. CAIRS uses biocompatible donor tissue, which minimises risks of rejection, scarring, and implant extrusion and is particularly beneficial for patients who cannot tolerate contact lenses or have experienced limited success with alternatives like corneal cross-linking or synthetic corneal implants.



CORNEAL COLLAGEN CROSS-LINKING

Early treatment with collagen cross-linking can slow or sometimes even stop progression of keratoconus. Collagen and riboflavin (vitamin B2) are used to significantly strengthen the rigidity of the cornea.

First, the top layer of the cornea (known as the epithelium) is gently removed. The cornea is then saturated with a solution of collagen and riboflavin, which is then activated with UV light so the collagen strands bond across the cornea and strengthen it.

The procedure takes approximately 1 hour and is performed as an outpatient procedure in the clinic. Patients may experience some mild discomfort in the immediate post-operative period.

Following treatment, the patient is fitted with a contact lens that stays in place for up to 3 days.

CORNEAL TRANSPLANTATION (KERATOPLASTY)

This will only be suggested if all other treatments options have been exhausted. About 5–10% of patients eventually require corneal transplantation.¹

There are two types of corneal transplants – partial-thickness and full-thickness (also known as penetrating). Full-thickness is usually recommended for patients with keratoconus.

A corneal transplant is a complex procedure and requires admission to a day surgery. It is generally performed under local anaesthetic, with the option of a sedative. During the procedure, your surgeon will remove the abnormal section of cornea and replace it with donor cornea, which will be stitched into place. The stitches will be removed at a later date. Your own corneal cells will gradually grow and fuse to the donor tissue. Full recovery can take up to 1 year.

REFERENCES

1. Keratoconus Australia. Corneal transplantation. Available at: <https://www.keratoconus.org.au/treatments/corneal-transplantation/> (Accessed 13 October 2025)

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MACULAR DEGENERATION



RETINAL CONDITIONS



KERATOCONUS



DRY EYE



PTERYGIUM



CORNEAL TRANSPLANTATION



CORNEAL CONDITIONS



NERVE-RELATED VISION PROBLEMS



RECONSTRUCTIVE EYE SURGERY



CHILDREN'S EYE HEALTH



GENERAL EYE HEALTH



OUR CORNEAL CLINICS

For more information or to find a Vision Eye Institute clinic that treats keratoconus, visit:

visioneyeinstitute.com.au/services/keratoconus/

This information is general in nature. All medical and surgical procedures have potential benefits and risks. Consult your ophthalmologist for specific medical advice.



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