

Introduction

A cornea transplant is an operation used to remove all or part of a damaged cornea and replace it with healthy cornea tissue from the eye of a suitable donor.

A cornea transplant is often referred to as keratoplasty or a corneal graft. It can be used to improve sight, relieve pain and treat severe infection or damage.

One of the most common reasons for a cornea transplant is a condition called keratoconus, which causes the cornea to change shape.

What is the cornea and what does it do?

The cornea is the clear outer layer at the front of the eyeball. It acts as a window to the eye. The coloured iris and the pupil (the black dot in the centre of the iris) can be seen through the cornea. It's made up of six delicate layers:

- the outer layer (the epithelium)
- the basement membrane
- Bowman's layer
- the thick middle layer (the stroma)
- Descemet's membrane
- the inner lining, which removes fluid from the cornea to keep vision clear (the endothelium)

The cornea acts like the lens on the front of a camera. Light rays are bent into the eye at an angle, enabling a picture to be projected onto the retina (the light sensitive film at the back of the eye). This "picture" is then transmitted to the brain.

When the cornea is damaged, it can become less transparent or its shape can change. This can prevent light from reaching the retina and causes the picture transmitted to the brain to be distorted or unclear.

How is a transplant carried out?

There are several different ways to perform a cornea transplant, depending on which part of the cornea is damaged or how much of the cornea needs replacing. These include:

- **penetrating keratoplasty (PK)** – a full-thickness transplant
- **deep anterior lamellar keratoplasty (DALK)** – replacing or reshaping the outer and middle cornea
- **endothelial keratoplasty (EK)** – replacing deeper parts of the cornea

A cornea transplant can be carried out under general anesthesia (where you are unconscious) or local anesthesia (where the area is numbed).

Around half of transplants are performed as day surgery. The other half require an overnight stay in hospital.

If the procedure involves the transplantation of the outer cornea, the new cornea is held in place with stitches, which usually stay in for at least 12 months.

A transplant of the deeper layers of the cornea uses an air bubble instead of stitches to hold the transplant in place.

In most cases, a cornea transplant procedure lasts one to two hours.

Are there any risks?

As with all types of surgery, there is a risk of complications resulting from a cornea transplant. These can include the new cornea being rejected by the body, infection and further vision problems.

However, around 75% of cornea transplants last at least five years and around 65% may last up to 10 years.

After a cornea transplant

The recovery time for a cornea transplant depends on the type of transplant you have. It can take up to two years for your normal vision to return after a full-thickness corneal transplant or transplant of the front portion of the cornea (DALK). Partial transplants of the inner part of the cornea (EK) tend to have a faster recovery time of months – or even days – with the latest type of transplants.

It's important to take good care of your eye to improve your chances of a good recovery. This includes things such as not rubbing your eye and avoiding activities such as contact sports and swimming until you're told it's safe.