

Oxford Eye Hospital

Corneal Graft (Keratoplasty)

Information for patients



What is a corneal graft?

The cornea or 'window' of the eye is a clear (transparent) layer on the front surface of the eyeball. It must be clear and the correct shape to allow light to enter the eye and be focussed, and so enable us to see. If the cornea is damaged or diseased, it can become cloudy or misshapen, leading to blurred vision.

A corneal graft (transplant) may be carried out to improve your sight. This operation is also known as a keratoplasty, and involves the replacement of part or all of your cornea with human donor tissue.

Healthy tissue from donors

The tissue used in the operation is obtained from donated corneas. The tissue is carefully screened before it is used to make sure it does not contain any infectious diseases.

Why is a corneal graft needed?

The cornea can be damaged by:

- Corneal dystrophy (genetically determined abnormality of the corneal tissue).
- Trauma (accidental damage)
- Corneal disease or degeneration affecting the clarity of the cornea.

The aim of the surgery is to replace the damaged cornea with healthy tissue.

There are three types of corneal graft:

- Full thickness (**Penetrating**) grafts – when the whole of the cornea needs replacing.
- Partial thickness grafts replacing the front of the cornea (**Deep Lamellar**) – to treat superficial damage to the cornea (damage to the surface only).
- Partial thickness grafts replacing the back of the cornea (**Endothelial Lamellar**) – used to treat conditions affecting only the innermost cornea or endothelium.

Penetrating Keratoplasty

A circular piece is removed from the centre of your cornea and replaced with a similar piece of cornea taken from a donor eye. This is then stitched into place with very fine stitches. These stitches are gradually removed over the following months.

Deep Lamellar Keratoplasty

In DLK, the cornea is split, leaving the deepest 5% or 0.025mm (including the healthy endothelium) in place, whilst removing the top 95%. A donor cornea with the endothelium removed is then stitched into position in the same way as penetrating keratoplasty.

In approximately 10% of cases the tissues tear, and conversion to penetrating keratoplasty is required.

Endothelial Keratoplasty

Where the cornea is healthy except for a damaged innermost layer, or endothelium, a fine sheet of replacement tissue approximately 0.025mm thick is removed from a donor cornea. The unhealthy endothelium is then stripped from the patient's eye. The donor endothelium is gently folded and posted into the eye, unrolled and floated into position. It sits in place without stitches because its fluid pumping action sucks it into position.

The operation is only possible where cataract surgery has been performed so that there is more free space within the eye. If this has not already been done, it can be performed before or as part of the DSEK procedure.

Anaesthesia

These operations are normally performed with the patient asleep under general anaesthetic. In some cases this may not be appropriate and the eye may just be numbed with local anaesthetic. The anaesthetist will discuss with you the best anaesthetic in your case.

How will my vision be after the operation?

Each person varies in their response. Some notice a big improvement early on, whereas in others vision will improve gradually over a few months. Much more rapid visual recovery is the main advantage of endothelial lamellar grafts when compared with penetrating grafts.

What are the risks of corneal grafting?

Corneal grafting is complex surgery and there are many possible risks which will vary between patients. Loss of sight is always a possibility. Some of the major risks include:

- Intraoperative bleeding (during the operation) (1 in 200 people)
- Infection. Severe early post-operative infection is rare (1 in 500 people) but can lead to loss of sight or loss of the eye. Infections arising later are common (1 in 20) and often related to stitch problems. They are usually treatable with antibiotic eye drops.
- Corneal graft rejection – occurs in up to 20% of low risk grafts and up to 80% of high risk grafts (replacement grafts after previous rejection, corneas with blood vessels or those that are inflamed at the time of surgery). Rejection requires prompt therapy and patients need to contact the A&E Department at the Oxford Eye Hospital or their local eye unit within 24 hours. Most rejection episodes can be treated with steroid drops alone. In a few cases oral steroids may be needed.
- Graft failure – corneal clouding due to graft failure within the first year is only seen in 5% of routine penetrating keratoplasty cases but up to 20% of Endothelial Lamellar cases because of the increased tissue manipulation required. Lower risk of early graft failure is the main advantage of penetrating keratoplasty as compared to endothelial lamellar keratoplasty.

- High astigmatism – astigmatism occurs where the donor cornea resting on the patient’s eye has a different curvature in one direction (axis) than another, and is normal after graft surgery. In about 10% of cases astigmatism surgery is required to permit useful spectacle vision and this is usually carried out between 15 – 24 months after the initial operation. Sometimes graft astigmatism can only be corrected with a contact lens.
- Interface opacity (cloudiness) – the join between the patient’s remaining tissue and the donor cornea heals by scarring, which creates an opacity across the vision in both types of lamellar graft. In most cases this is very mild, but in some case can significantly reduce vision or cause glare.

Pre-operative assessment and preparing for your operation

We will ask you to come to the pre-operative assessment clinic 2-4 weeks before your surgery. At this appointment we will give you instructions on how to prepare for your operation. (Consent will be taken by the surgical team on the ward on the day of surgery.)

What to bring with you

- All your medications in labelled containers
- Overnight bag

What happens when you are admitted to hospital?

You will be admitted on the morning of your operation. The nurse will carry out various

pre-operative checks and an eye examination. The surgeon will see you and ask for your written consent for the operation to go ahead. If you are having a general anaesthetic, the anaesthetist will also visit you and take your consent.

How long does the surgery take?

The operation usually takes about 1-2 hours.

After the operation

You should expect to stay in hospital for the night after your operation. The next day you will need someone to collect you and escort you home.

Your eye may be covered with an eye pad which the nurse will remove the day after your surgery. Your eye may feel irritated, uncomfortable and scratchy, but severe pain is unusual and should be reported to your nurse or doctor. We will give you pain relief if you need it.

Post-operative care

We will give you eye drops to use after the operation. You may need to use these every hour (whilst you are awake) for the first 1-2 weeks.

Important instructions for after the operation

1. Do not rub or touch the eye.
2. Avoid smoky and dusty rooms which can irritate your eye.
3. Wear sunglasses if your eye is sensitive to the light (and/or your normal glasses if you wear them).
4. Avoid contact sports and swimming in particular. Ask your nurse or doctor if you are unsure about which sports you should avoid.
5. You will need at least 2-4 weeks off work, depending on the kind of work you do – e.g. a longer period if your work requires heavy lifting.
6. You must not drive a car until your eye doctor tells you that you can do so.
7. You will have an out patient appointment 1 week after surgery.

Signs to look out for after your operation

- Increasing pain, redness of the eye, light sensitivity
- Worsening of in the vision

If you experience any of these please contact the Eye Emergency department on:

Tel: Oxford **(01865) 234800**

Otherwise, if you have any questions or concerns about your eye, please telephone and ask to speak to one of the nurses:

Tel: Oxford **(01865) 231117** (for further information)

Further information

You can find further information on the following website:

<http://www.nhs.uk/conditions/corneatransplant/Pages/Introduction.aspx>

If you need an interpreter or need a document in another language, large print, Braille or audio version, please call **01865 221473**.

When we receive your call we may transfer you to an interpreter. This can take some time, so please be patient.

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Version 1, September 2009
Review, September 2012
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