University Hospitals Coventry and Warwickshire NHS Trust

Patient Information

## Ophthalmology

# Endothelial keratoplasty
(EK – variations DSAEK vs DMEK)

## Why would I need a corneal transplant?

The cornea is a window of transparent tissue at the front of the eyeball. It allows light to pass into the eye and provides focus so that images can be seen. Various diseases or injury can make the cornea either cloudy or out of shape. This prevents the normal passage of light and affects vision.

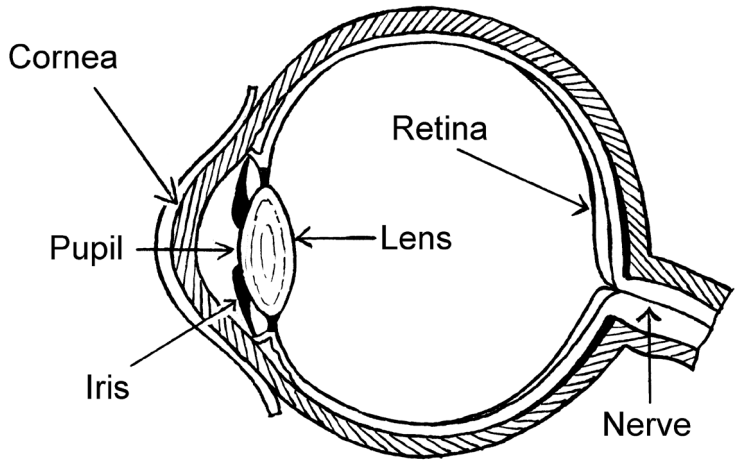


**Diagram of the eye**

## About the procedure

This is a partial thickness corneal transplant. Only the inside layer of your cornea will be replaced. This procedure is appropriate for diseases that involve the corneal endothelium such as:

- Fuch's corneal dystrophy where the rest of the cornea is healthy
- Bullous keratopathy of various cause

First, the tissue to be transplanted is prepared by the surgeon. Only the thin innermost layer is needed. This is cut away from the rest of the donor cornea by a special blade (DSAEK). Or it is peeled away from the rest of the cornea on its very thin basement layer, called Descemet's membrane, (DMEK). It is then put into an instrument ready to insert it into your eye 'rolled up'.

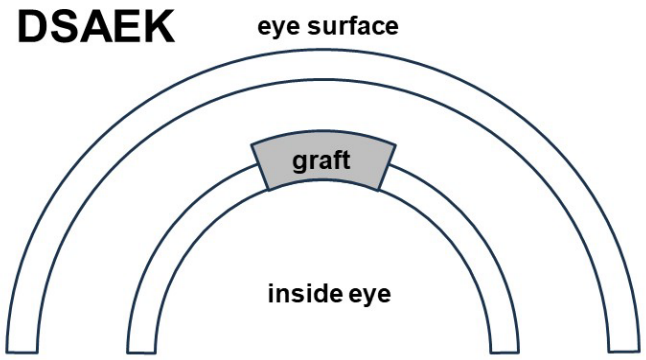


**Diagram of the cornea and the DSAEK graft**

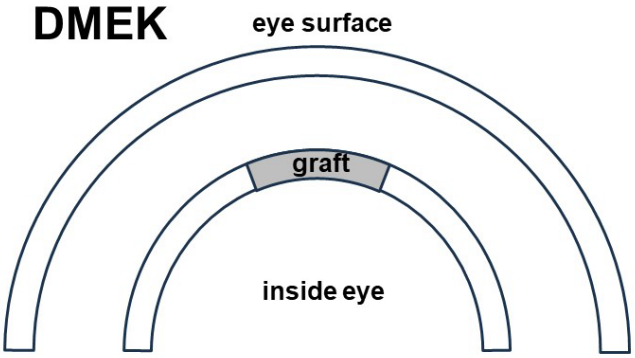


**Diagram of the cornea the DMEK graft**

Your eye is then prepared for the graft. The layer of your cornea that is no longer working well (your endothelial cells on their Descemet's membrane) is peeled away.

The graft is inserted into your eye through a small opening made at the edge of your cornea. It is either pulled into your eye (DSAEK) or injected (DMEK). Air or special non-expansile gas is then used to open it up and push it against the inside of your cornea.

Most of the cornea is left untouched, and sutures are not required to hold the graft in place. So, the complications of full-thickness transplantation that used to be used in this situation are mostly avoided. The operation can be performed safely under local anaesthetic.

There is no large wound to heal, so the eye is not left weakened.

The shape of the cornea is largely unchanged, so high astigmatism that can spoil the clear focusing of the eye is not a concern. A more rapid visual recovery should be expected than with full thickness transplantation. There should be improvement over around three months rather than up to 2 years.

## Anaesthesia

Endothelial corneal transplantation can be performed under local anaesthesia (awake) or general anaesthesia (asleep). Most patients have the operation under local anaesthesia and cope extremely well. The choice is based on:

- the anticipated length and difficulty of the operation
- your suitability for different sorts of anaesthesia
- your own preferences
- your surgeon’s advice

Corneal transplantation can be a long operation. If combined with other surgery such as cataract surgery, it could take more than 1 hour.

## Consenting to your operation

If you have decided that you wish to go ahead with surgery, you will be asked to sign a consent form. You should sign the form only if:

- you are happy with the explanations about the operation
- you understand the expected benefits and risks

In almost all circumstances, a diseased or damaged cornea only needs surgery if:

- it is significantly affecting your quality of life and
- you understand the risks and want to have the operation.

If you are suitable for surgery, the decision to go ahead is yours.

## After the operation

You will be examined by the surgical team after your surgery. Usually, you stay overnight to avoid jerky car journeys or can go home the same day.

You will be seen again within one week in the outpatient clinic. Here, we will assess whether the graft has remained in position. You will have about six visits to the outpatient clinic in the first year.

We recommend that you take two weeks off work. But please discuss your individual circumstances with your doctor. You will need to use antirejection eye drops for at least twelve to twenty-four months and indefinitely in some cases.

## Possible advantages of endothelial keratoplasty over full thickness graft

- Faster recovery. Recovery for DMEK is even faster than DSAEK.
- Fewer stitches. This means that the shape of the cornea is more “normal”. You will be less dependent on glasses/ contact lenses
- Smaller wound. This means fewer wound complications such as leakage or wound rupture after accidental injury

# Risks of endothelial keratoplasty

**Rare but serious complications:**

- **Sight-threatening infection** (1 in 1000)
- **Severe haemorrhage -** causing loss of vision
- **Retinal detachment** - Severe inflammation or other rare causes of vision loss.
- **Corneal transplant rejection -** A corneal transplant may be rejected by your immune system.

  This happens in up to 1 in 10 DSAEK recipients in the first two years after transplantation. Corneal transplant rejection can cause graft failure.

  It can often be reversed if anti-rejection medication is started promptly. But rejection remains a possibility in your lifetime. The rejection rate in DMEK appears to be lower than in DSAEK.
- **Graft failure -** When a graft fails, the cornea becomes cloudy again and vision becomes blurred.
- **Glaucoma –** This can usually be controlled by eye drops. Occasionally this requires surgery and may harm your sight.
- **Graft dislocation -** About 1 in 10 DSAEK and 1 in 5 DMEK grafts dislocate. These need to be repositioned by an air or gas injection in the eye. This can be carried out either in theatre or in clinic.
- **Cataract -** This can be removed surgically.

# What if my transplant fails?

A failed transplant can be replaced in a procedure known as a regraft. However, the risk of further rejection and failure increases each time for second and later regrafts.

Another condition called as Primary graft failure occurs when the graft never works from the time of surgery and corneal clouding never recovers. The cause is not known but it happens in 1 in 10 cases.

Corneal transplant rejection needs urgent treatment. This can lead to failure of the transplant and loss of vision.

**Symptoms of rejection are:**

- Red eye
- increased Sensitivity to light
- Visual loss
- Pain

If you have any of these signs, please contact us. Do not wait until your next appointment. Rejection has a better chance of reversal in the first 72 hours.

## What do I do in case of an emergency relating to endothelial keratoplasty?

Please contact UHCW Eye Emergency Services on 024 7696 4800 (Swiftqueue)

| | |
|---|---|
| Monday to Friday | 8.30am – 4.30pm |
| Saturday | 8.30am – Midday |

Outside these hours attend your nearest A&E Department. You will be assessed and referred on to an ophthalmologist if required.

If you have any further questions, please contact:

Eye Emergency Services: 02476 964800

Medical Secretary (Cornea Services) – 02476 966511

The Trust has access to interpreting and translation services. If you need this information in another language or format, please contact 024 7696 6516 and we will do our best to meet your needs.

The Trust operates a smoke free policy.

Diagram of the Eye: Pearson Scott Foresman, Public Domain, via Wikimedia Commons.

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Have your say. Scan the QR code or visit:
www.uhcw.nhs.uk/feedback

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## Emergency Eye Appointments:
## New Booking System

If you have an urgent eye problem, you can now book an on-the-day telephone consultation via the Eye Emergency Referral Service (EERS).

**Scan the QR code or visit uhcw.nhs.uk and search Eye Emergency Referral Service. The section How to Access our Services will take you to a link to book a telephone consultation.**

You will be spoken to by an expert clinician who will give you specialist advice on the next steps to take.

Please provide a phone number which you can be contacted on for the consultation. Please also be aware that you will be phoned as close to the allotted time as possible, although at busy times unfortunately there may be a delay.

**In the event that you feel you cannot wait to speak to someone or do not have online access then you may call 0247 696 4800.**

**This phone line is open 9am - 1pm; 1.30pm - 5pm (Monday - Friday, excluding bank holidays) and 9am - 12pm (Saturday).**

In the event of an eye emergency out of hours, please attend the Minor Injuries Unit/Emergency Department.

Please only attend the Eye Outpatient department if you have had a telephone consultation in advance and have been advised to attend.