

Consenting for information sharing

We are required to share your information with the NHS Blood and Transplant Special Health Authority (NHSBT), who supply donor corneas. This is to comply with the law and to ensure high quality transplant material. However, we require your consent to share this information. Not consenting to share your information with NHSBT could affect the availability of donor tissue for the transplant. There could also be problems with contacting you should any issues be identified later on with the tissue you received. Further details can be found on the organ donation and transplantation NHS website at: www.odt.nhs.uk/information-for-patients/how-we-use-your-information

Remember




- Always wash your hands before and after touching your eyes
- Always finish the course of any treatment you have been prescribed, even if your symptoms have improved.
- Have regular eye checks with your optometrist.
- Always protect your eyes with goggles or glasses when carrying out DIY or using any power equipment.
- If you splash anything into your eye immediately remove your contact lens, rinse with plenty of saline or tap water and seek medical advice.
- Never use anyone else's medication or contact lenses (this includes eye drops).

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Corneal transplant surgery

The Eye Unit

Information and advice for patients
about corneal transplant surgery

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What is the cornea?

The cornea is the clear window at the front of the eye that helps to focus light as it enters the eye. It needs to be clear and have a round and regular shape for us to see well.

The cornea has several layers that all play their role in keeping it clear and in a regular shape. Starting from the outside, the names of these layers are: the epithelium, Bowman's membrane, the stroma, Decemet's membrane and the endothelium (see figure 1).

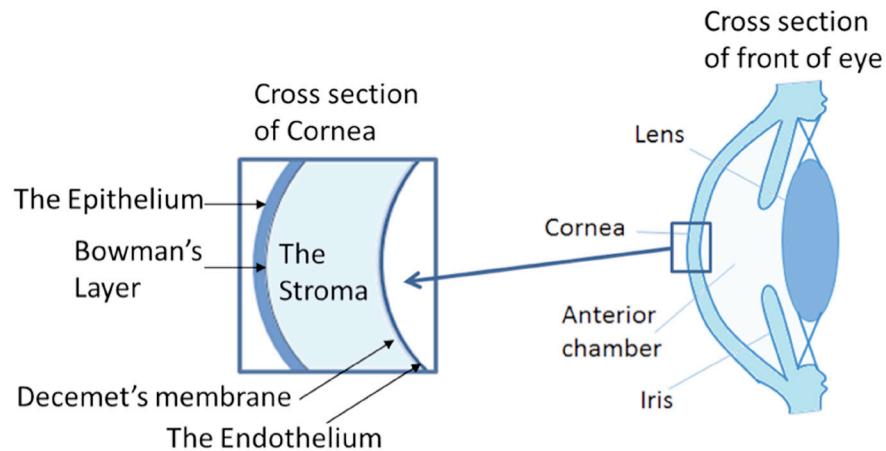


Figure 1: Diagram of the layers of the Cornea

What is corneal transplant surgery?

Corneal transplant surgery (or corneal graft surgery) replaces part of your cornea with a healthy donor cornea. The type of corneal transplant you need will depend on your eye condition and which layers of your cornea are affected.

What is a 'rejection' reaction?

A rejection reaction is where the body's white blood cells (immune system) attack the donor cornea. This causes inflammation that can lead to clouding, failure of the corneal transplant, reduced vision and pain. This process may be reversible if treated quickly.

A rejection reaction can happen in 5-20% of corneal transplants. It is possible to have a rejection episode at any time, even years after your surgery. It is more common in an eye that has had more than one corneal transplant operations.

Symptoms of a rejection reaction include:

- increased redness
- sensitivity to light
- worsening of your vision
- pain

Call the [Eye Emergency Department](#) on **0300 019 4181** if you experience any of these symptoms.

Monday to Friday: 8am to 6pm

Saturdays (and bank holidays): 8.30am to 6pm

Sunday: 8.30am to 2pm

Useful websites

The **RNIB** (Royal National Institute for the Blind) is a charity offering information on many different eye conditions. The RNIB can also provide information in large print or in audio formats.

www.rnib.org.uk/eye-health/eye-conditions/corneal-transplant

- Ultra-Thin Decemet's Stripping Automated Endothelial Keratoplasty (**UT-DSAEK**)

A **PKP** is a full thickness transplant while **DALK** and **UT-DSAEK** are partial thickness transplants (see figure 2). Your surgeon will discuss which type will be needed for your eye condition. In some conditions you may have the choice of a **DALK** or a **PKP**. If only your endothelium (inner most layer) is affected, you may have the choice between **UT-DSAEK** or a **PKP**.

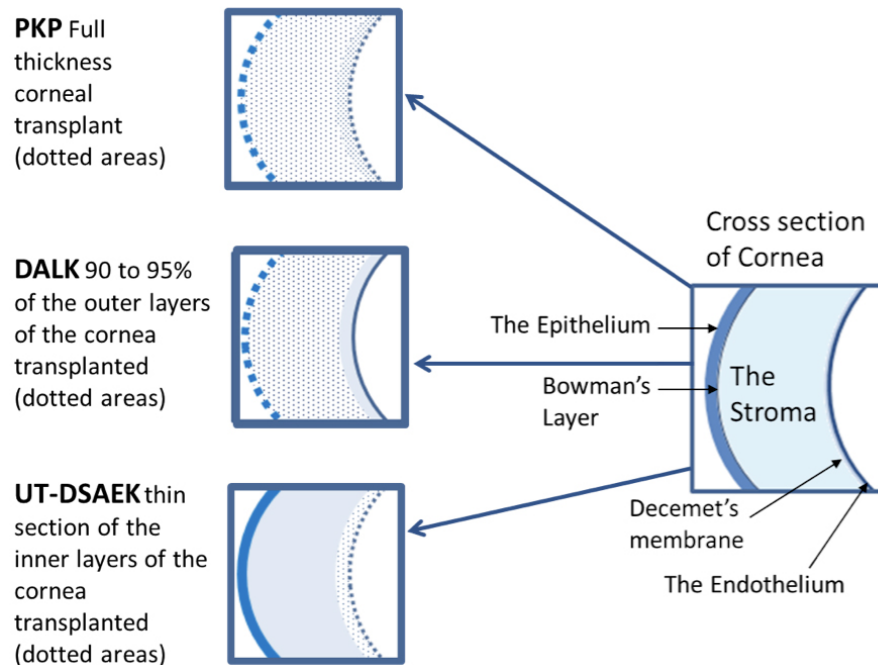


Figure 2: Diagram of the layers of the Cornea replaced in the three types of corneal transplant surgery (donor corneas represented by dotted areas)

For all types of corneal transplant surgery the risks include:

- Serious infection or bleeding in the eye (1 in 1000)
- Anaesthetic risks
- High pressure in the eye (secondary glaucoma)
- A 'rejection' reaction, (see: [What is a 'rejection' reaction?](#))
- Corneal transplant 'failure', when the donated cornea becomes cloudy
- Transmitted infection from the donor cornea (the risk of this is considered to be extremely low)
- Problems elsewhere in the eyeball. Including, swelling at the retina (back of the eye) and cataract formation (clouding of the lens)
- Rupturing (splitting) of a corneal transplant after injury

Specific risks for PKP and DALK:

- Suture related problems including: distortion of vision, infection, and blood vessel growth into the cornea. Blood vessel growth can increase the chance of a rejection reaction.
- Nerve damage occurs as the corneal nerve layer is cut. This can cause problems with the future health of the surface of your eyes

Specific risks for UT-DSAEK:

- The donor cornea can detach (5 to 15% of cases)
- Cloudiness at the join between the donor cornea and your own cornea
- Endothelial cell loss can make your cornea become waterlogged and cloudy

What are the advantages of DALK over PKP?

- Reduced chance of corneal transplant rejection
- Reduced risk of cloudy waterlogged cornea from endothelial cell loss
- Reduced risk of intraocular (inside the eye) problems such as serious infection or bleeding.
- Reduced chance of full thickness rupture after injury

BUT a partial thickness transplant can detach or become cloudy. Your surgeon will advise you if a **PKP** is the best or only option for your eye.

What are the advantages of UT-DSAEK over PKP?

- Reduced chance of corneal transplant rejection
- Faster recovery: sutures removed at 3 months rather than 12 to 18 months.
- Vision can be better as the normal shape of your cornea is kept
- Less chance of rupture after injury
- Distortion and glare is less likely
- No nerve damage problems at the cornea surface as the nerve layer is not cut

BUT a partial thickness transplant can detach or become cloudy. Your surgeon will advise you if a **PKP** is the best or only option for your eye.

Why might I need corneal transplant surgery?

A number of conditions or injury can make the cornea cloudy or out of shape. This can cause your vision to become blurred or distorted. It might be possible to manage your symptoms with eye drops, spectacles or contact lenses. If your corneal condition cannot be managed in these ways, you might benefit from corneal transplant surgery. In rare cases (e.g. severe infection or injury) a corneal transplant may be required as an emergency to save your eyeball.

Your surgeon will help you to understand the specific reasons why surgery is recommended in your case. It is important that you understand the reasons for surgery and what your surgeon expects to achieve.

Where will the donor cornea come from?

The donor cornea will come from the National Eye Bank which processes corneas from organ donation. The donor will have chosen for their corneas to be used after their death to help another person to see. All donor corneas are carefully screened by the NHS Blood and Transplant Special Health Authority to check they are healthy. They will ensure they are free from diseases that could be passed on. The hospital receives these donor corneas once all the checks have been carried out.

What are the different types of corneal transplant?

There are three main types of corneal transplant offered at University Hospitals Dorset in the Royal Bournemouth Hospital. These are:

- Penetrating Keratoplasty (**PKP**)
- Deep Anterior Lamellar Keratoplasty (**DALK**)

Corneal transplant surgery could take longer if cataract surgery (to remove a cloudy lens) is done at the same time.

What happens after corneal transplant surgery?

You will be taken from the operating theatre with a patch on your eye to recover in the inpatient ward. You will be examined one to two hours after surgery. If you have had **DALK** or **UT-DSAEK** surgery, there will be an air bubble in your eye. The air bubble helps to keep the donor cornea attached in the correct position. You must lie flat on your back facing the ceiling for 24 hours after surgery to help this to happen. The air bubble will last in the eye for 24 to 48 hours.

Immediately after surgery, your eye will be red and irritated and your eyelids may become swollen. These symptoms will settle over the next few weeks. You may feel some mild to moderate pain in your eye for the first few days after surgery. This is usually controlled with paracetamol and stronger painkillers are rarely needed.

You will be examined the next day before you are discharged from hospital. You will be given antibiotic eye drops and steroid eye drops to help with healing and prevent infection. It is important that you follow the instructions carefully. You will need to use some of the eye drops for a few years after surgery to keep your corneal transplant healthy. You may be asked to use some types of eye drops for the rest of your life. **Do not stop using your eye drops without asking your doctor first.**

What appointments will I need after surgery?

You will be seen by your consultant one week after surgery. Your consultant will then schedule regular appointments for you to attend. If you have concerns or problems with your eye outside of these scheduled appointments you must contact us:

Eye Emergency Department: 0300 019 4181

When can I return to my normal activities after surgery?

You should avoid certain activities for the first month, including: heavy lifting, bending over and exercise (beyond a brisk walk). We recommend that you take two weeks off work but this might need to be longer depending on your individual circumstances. This will be discussed with you before surgery.

If you drive, your consultant will advise you when you might be able to start driving again after surgery.

Your corneal transplant will attach more strongly to your own cornea in time. Be aware that it will never be as strong as a healthy eye. The transplant can rupture (split) if injured and this could lead to blindness. You should wear eye protection for many activities especially non-contact sport, DIY and gardening. You are strongly advised to stop certain contact sporting activities such as rugby, boxing and martial arts.

When are the sutures (stitches) removed?

Your consultant will begin to remove the sutures for a **DALK** or a **PKP** 6 to 18 months after surgery. The sutures for **UT-DSAEK** are removed 3 months after surgery. This might be carried out in the operating theatre or at the slit lamp (microscope) during a clinic appointment. Removing the sutures can change the shape of your cornea and alter your vision. You may need to

wait for the sutures to be removed and your eye to settle before getting new spectacles. Some sutures may be left in place permanently.

What will my vision be like after a corneal transplant?

Any improvement in vision will depend on the reasons for carrying out surgery in the first place. In some cases (for example an emergency transplant to save the eyeball), the vision is not expected to improve. The corneal transplant will need time to settle and your vision can change while this is happening.

Your vision will not be perfect after any corneal transplant. You may experience glare and distortion of images even if the transplant is completely clear.

It is important to know that you are highly likely to still need spectacles after surgery. You will be advised when it is suitable to obtain new spectacles. Sometimes vision can only be corrected with high powered spectacles and you will need time to adapt to these. If your vision cannot be corrected with spectacles, you may need rigid gas permeable (hard) contact lenses or further surgery.

What are the risks of corneal transplant surgery?

The risks of corneal transplant surgery can depend on the type of surgery performed. Your surgeon will explain these risks before getting your consent for surgery, including risks specific to your eyes. Complications from surgery can cause reduced vision, loss of vision or the need for further surgery. It is important you take time to discuss the risks with your surgeon before you agree to surgery.

What happens during corneal transplant surgery?

Your eye will be examined on the day of your surgery to check there is no change in your condition. This examination will make sure it is safe to proceed with the surgery. In rare cases, there may need to be a change to the planned operation. This will be discussed with you in detail before your surgeon confirms your consent to proceed with surgery.

The surgery procedure will depend on the type of corneal transplant surgery needed for your condition.

PKP or **DALK** surgery is usually performed under general anaesthetic (while you are asleep). **UT-DSAEK** surgery is usually performed under local anaesthetic (while you are awake with your eye numbed). For all types of corneal transplant surgery, you will need to stay overnight at the hospital after your operation.

For **PKP** or **DALK** surgery, an 8mm diameter 'button' is removed from the centre of your cornea. A 'button' of similar size from the donor cornea is then sutured (stitched) in its place (using 16 or more sutures). These sutures will be too small for you to see or feel. The cornea button removed from your eye will be sent to our pathology laboratory to be examined under a microscope. The surgery will take about 90 minutes to perform.

UT-DSAEK is performed by key-hole surgery. A small cut is made in your sclera (white of your eye). The inner most layers (endothelium and Decemet's membrane layers) of your cornea are removed through this cut. This is then replaced with the healthy endothelium and Decemet's membrane layers from the donor cornea. Two to four small sutures (stitches) will close the cut in your sclera. The surgery will take about one hour to perform.