

Patient Information

Corneal Graft or Transplant

Corneal graft or transplant

The cornea is the clear window at the front of the eye. It may be affected by a variety of conditions or abnormalities, which can cause distortion, scarring or water logging, which may affect vision.

These conditions may benefit from a corneal graft. This is a transplant of a circular central area of the cornea by donor tissue, similar to other types of organ transplant.

There are at least three types of corneal transplants. In one, the full thickness of a central disc of the cornea is replaced (penetrating keratoplasty or PK). In the second type, most of the thickness of the cornea is replaced, but the innermost layers are left in place so that it is a partial thickness transplant (deep anterior lamellar keratoplasty or DALK). This second type is not suitable for all people, as the layers which are not replaced must be normal. The third type of transplant involves splitting the corneal graft into two layers and transplanting the inner layer which is held in place in the early stages by an air bubble (descemets stripping endothelial keratoplasty or DSEK). For this procedure, the front layers of the cornea must be normal.

The partial thickness transplant of the front of the cornea (DALK) has the theoretical advantage of a lower rate of rejection of the transplant, and should not fail late on due to failure of the innermost layer of cells, which were not replaced. There may, however, rarely be scarring that occurs between layers.

This type of transplant may have to be converted to the full thickness type of transplant if the inner layer tears or ruptures during surgery, but this should not affect the surgical success. The likelihood of this happening depends on the technical difficulty of each individual case.

Surgery involves removal of some of the affected abnormal tissue from the cornea, and the transplanted replacement tissue is sewn into place.

Penetrating keratoplasty (PK) involves replacing part of the cornea (a circular area of this tissue) with all of the layers replaced. They are similarly sewn into place with stitches which may remain for more than one year.

DSEK involves removing the inner layer of the cornea of the affected eye and replacing this with a circular transplant, in which the corneal transplant is split into inner and outer layers and the inner layer is placed inside the eye and held in place with an air bubble. The transplant rapidly sticks in position after surgery. Topping up the air bubble may be necessary early after the surgery, and dislodging of the transplant requiring repositioning with a further air bubble is the most common problem, but this repositioning would usually be successful.

The advantage of this technique, if it were suitable to use for your eye condition, is that the eye recovers more rapidly and fewer stitches are needed, which are removed at three to four months after surgery. There will also be less change in the eye shape and less astigmatism compared to a penetrating keratoplasty (PK) or DALK. There is less certainty of the long term success rates with this newer type of surgery, though rejection rates may possibly be less. Problems with stitches would be much less likely in this procedure. DSEK is becoming a more common technique for replacing the inner corneal layer compared to PK, provided your other remaining corneal tissue appears normal.

The options for surgery which are suitable to the condition in your eye will be discussed with the doctor when listing for surgery.

After surgery drops are needed for several months and sometimes indefinitely.

After surgery, the vision is usually blurred for several months with very gradual improvement. The stitches are removed at varying times after surgery, but many remain in place for more than one year (except in DSEK, where they will remain in place for three to four months).

The success of surgery is dependent on many factors. These include the type of condition affecting the cornea and problems that may arise following surgery. Therefore, the success rate in eyes without previous surgery may vary from 60 to 90 per cent, but may be lower if there are added risk factors (e.g. a previous transplant). The likelihood of success in an individual case will be discussed with your doctor in the outpatient clinic.

Regular outpatient visits are an essential part of trying to ensure a good result following surgery, and you should be prepared for at least 12 visits during the first two years following surgery. More visits may be necessary if problems or complications arise after surgery. Depending on the sort of work you undertake, it may be necessary to take two to three months off work, or longer if there is a risk of injury to the eye. The chance of this is less in a desk-based job.

Some complications that may arise at or after surgery

Most risks will vary in frequency, depending on the corneal condition and risk factors present. Percentages vary from person to person.

At an early stage, stitches may break or become loose, and could need removing or replacing.

Infection may rarely occur. Those that could lead to poor vision occur approximately 0.75 per cent of the time. Stitches may occasionally loosen and become infected after surgery, however most cases of this respond well to treatment and it may not affect vision.

Problems with the movement of the surface layer of cells onto the transplant are fairly common (PK and DALK), but usually does not cause problems. Occasionally, these can persist until stitches are removed. Rarely, some haziness of the graft may result.

The corneal graft may also be rejected. Most rejection episodes are reversible as long as they are treated early enough and vigorously enough. For this reason, it is important to contact the eye clinic if a sudden change in the eye is experienced following surgery. In conventional grafts, without added risk factors, the rate of rejection episodes is about 10 per cent. The rate is about one quarter of this with the partial thickness (lamellar) transplant of the front layers (DALK).

High eye pressure or glaucoma can occur in a small percentage of people. This may be temporary whilst taking the drops to prevent transplant rejection, but in a few may persist and need longer term drop treatment or, rarely, surgery.

The transplant heals like in any other surgery, by forming a scar where the edge of the tissues join. A difference in the shape of the cornea along different axes (or directions) will always occur, and this is called astigmatism. This may be corrected by using glasses or contact lenses, but about 10 to 15 per cent of transplant surgeries have excess astigmatism that needs correction with surgery once all the stitches have been removed (DALK and PK, less in DSEK).

In some cases, the scarring leads to an irregular surface shape or, if between the layers with the partial thickness transplant, there may be a poor visual result. This may, however, be corrected with the use of a contact lens most of the time. If not, a further corneal transplant may be needed.

A cataract may occur and need removing surgically in a small percentage of people after transplantation. Surgery for this usually has a good result.

Transplants may not last forever, and sometimes may fail years after surgery and require replacing. However, many show good long term success.

Despite all this, and other possible complications, vision is usually improved by surgery in the majority of patients.

Rare complications

This can include severe bleeding at the time of surgery, which can lead to loss of vision. Infections are rare but can lead to poor vision, though many will recover. Rarely, the pupil may remain dilated after surgery. Leaking of fluid from retinal blood vessels can occasionally occur and affect vision. Because the tissue used is a donated tissue, rare infections such as Creutzfeldt-Jakob disease (CJD) could be passed on. With donation protocols in place, this is very unlikely to happen.

If you are offered a transplant, there is usually no other way of dealing with your problem.

You will require a pre-operative assessment and review with your surgeon prior to the surgery, where the procedure will be discussed with you again.

What if I have any problems or questions after reading this leaflet?

If there is anything you do not understand, or you are concerned or worried about any part of the treatment, contact:

The **Urgent Referral Clinic** team at Russells Hall Hospital Eye Clinic on **01384 456111 ext. 3633**.

Eye emergency, out of hours

In case of an eye emergency after the closing hours of the Eye Clinic at Russells Hall Hospital (including weekends and bank holidays), please contact:

Birmingham and Midland Eye Centre on 0121 507 4440

The doctor on call is usually based at the Eye Centre, City Hospital, Dudley Road, Birmingham. They may need to call you back, and if necessary, they will arrange for you to visit them.

Note: The information in this booklet is provided for information only. The information found is **not** a substitute for professional medical advice or care by a qualified doctor or other health care professional.

