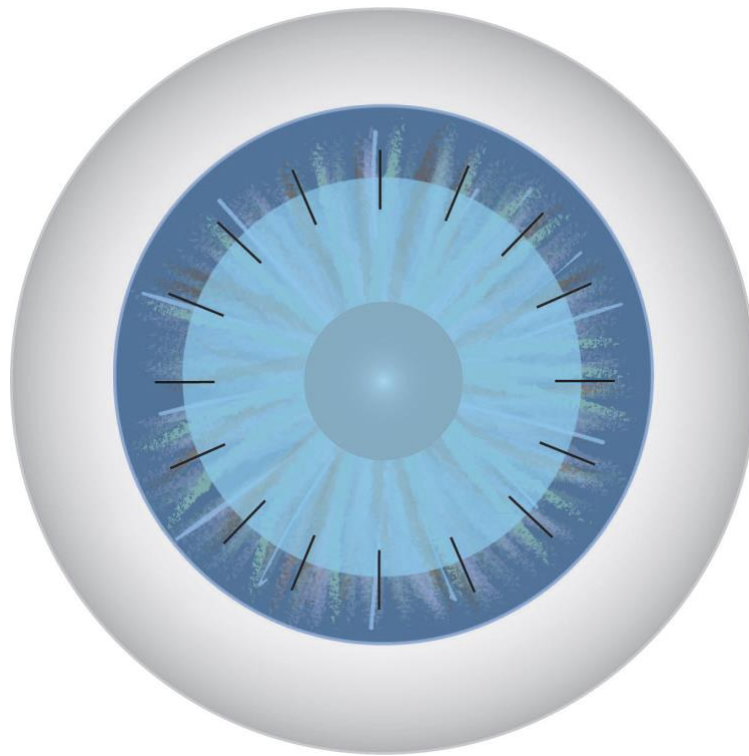


# Corneal Graft or Transplantation: Penetrating Keratoplasty (PK)

## Patient Information

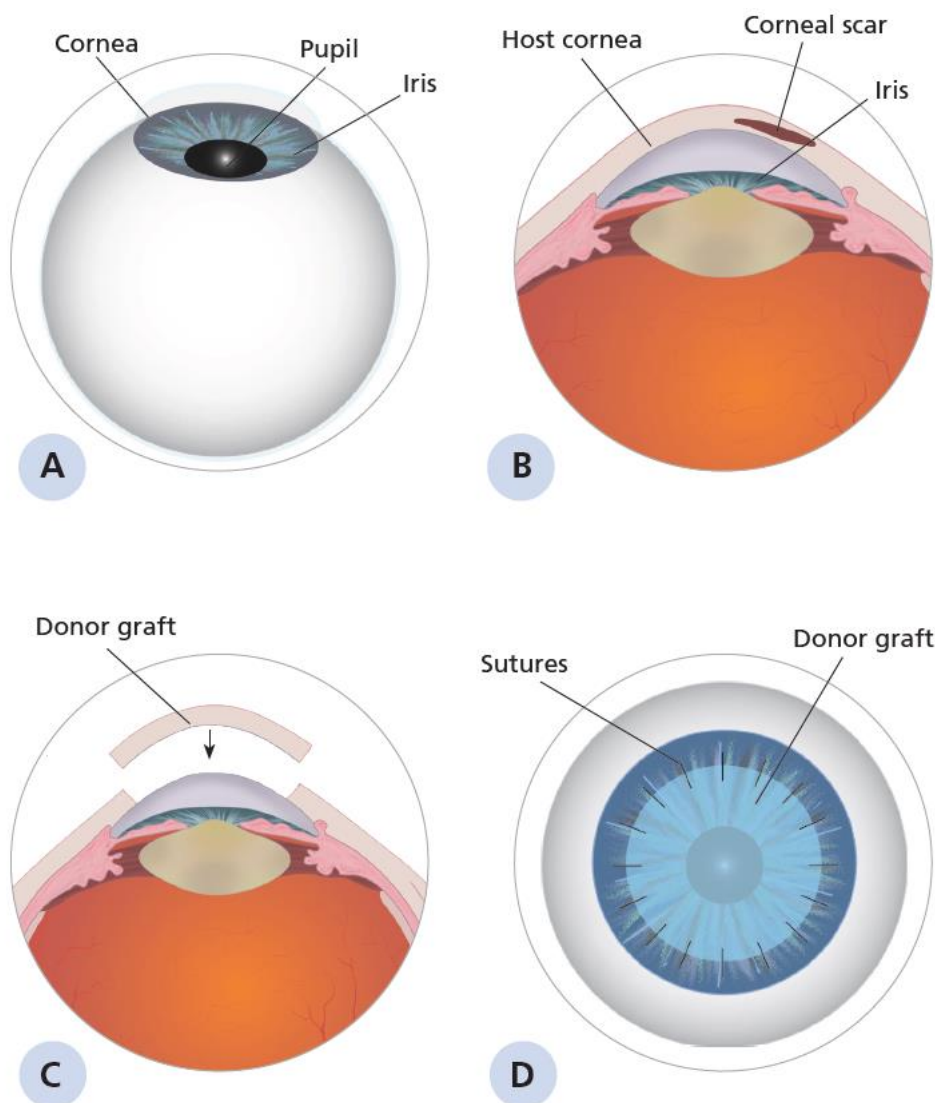


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Illustrations courtesy of Medical Illustration, Countess of Chester Hospital

The information herein should help supplement the consultation with your eye surgeon in clinic. Should you have further or specific questions these should be discussed with your eye specialist.

The cornea is the clear window at the front of the eye that allows light to enter for you to see (Figure 1A). The cornea consists of several layers and your vision can deteriorate due to a failure of any, or all, of these layers.



**Figure 1.** The cornea (light blue) is the window that allows light to enter the eye (A). It becomes cloudy or scarred in disease (B). A circular opening in your cornea will be cut, and the diseased cornea removed. The clear donor cornea will be placed in the defect (C) and secured to the remaining rim of your cornea using several sutures (stitches) (D).

Penetrating keratoplasty (PK) is an operation to replace the entire cornea (i.e. all layers), to improve your vision. Other forms of corneal transplant are available to selectively replace the different layers of the cornea, however these are not thought to be suitable for you, and are not discussed here.

Some reasons for patients to require PK include:

- ❖ Keratoconus – progressive thinning and bulging of the cornea
- ❖ Trauma resulting in corneal scarring (Figure 1B)
- ❖ Corneal dystrophies – a group of genetic and often progressive disorders causing clouding of the cornea
- ❖ Corneal perforation – progressive thinning of the cornea, resulting in a breach in the cornea, causing the eye to leak (e.g. after trauma, severe infection or inflammation)

### **What are the other names for this operation?**

Penetrating keratoplasty is sometimes called a 'full-thickness' corneal transplant.

### **How is this operation performed?**

The operation is usually performed under general anaesthesia as a day case procedure, in an operating theatre.

A circular opening in your (host) cornea will be cut, the cornea removed and replaced by a donor corneal graft, which will be cut to a similar size (Figure 1C). The donor corneal graft (the transplant tissue) has been generously donated by a patient that has died.

Sutures (stitches) will be used to secure the graft (Figure 1D). The sutures are non-dissolvable, and remain in place, unless removed by your eye specialist. Sutures do not always have to be removed, and usually stay in place for many months after surgery.

### **What are the risks of PK?**

This is generally a safe operation, with a good success rate, however it is important that you understand the risks below.

#### *Rare but serious complications*

- ❖ Sight-threatening infection (1 in 1,000)
- ❖ Severe haemorrhage causing loss of vision
- ❖ Retinal detachment
- ❖ Loss of the eye

### *Corneal transplant rejection*

Your body (it's immune system) may try to "reject" the graft, as it recognises that it has come from another person. Early treatment with steroid drops can often reverse the rejection. Steroids may occasionally need to be given as tablets or as an injection.

### *Inflammation*

This sometimes occurs after the surgery. The steroid drops given to you will help to control this and should be used as directed by your eye specialist. Occasionally inflammation can be difficult to control with eye drops and may require steroid tablets.

### *Graft failure*

With time, or following a severe rejection episode, your graft may fail. If the graft fails then your vision will become cloudy / blurry. If your graft fails, it may be possible to repeat the corneal transplantation surgery.

### *Suture-related complications*

Sutures may loosen or break, causing an irritable or gritty sensation in the eye, and may cause the cornea to become infected. Loose and broken sutures need to be promptly removed in the clinic.

### *Astigmatism*

A normal cornea is round like a football or slightly rugby ball-shaped (astigmatism). One of the main issues after PK is that the cornea can have an irregular shape and this can affect vision. There are a number of ways of overcoming this including spectacles, contact lenses, removing or placing more stitches, or making cuts into the cornea.

### *Transmission of disease*

Whilst it is impossible to exclude the possibility of certain communicable disease, the donor cornea and donor blood has been rigorously tested, and the chances of contracting a communicable disease are exceedingly low.

### *Recurrence of original condition*

Some eye conditions such as corneal dystrophies are known to sometimes recur in the donor graft.

### *Graft dehiscence*

After a full-thickness corneal transplant, the eyeball is inherently weaker. Direct trauma to the eyeball can cause the interface (the boundary between the graft and what remains of your cornea) to open up or “dehisce”. If this occurs it will be necessary to return to the operating theatre urgently to repair the opening with sutures.

### *Raised intraocular pressure*

This can usually be managed with drops, and if required, surgery.

### *Cataract*

You may develop an early cataract. This can be removed if necessary

## **What can I expect after the operation**

Your vision will be blurry initially, and will take several months to around a year to improve and stabilise. Even then, you will still need glasses or contact lenses to achieve the best vision possible.

It is usual for the eye to feel uncomfortable for the first one to two weeks after surgery, however this should improve with time and usually responds well to regular painkillers.

You will be sent home with a shield over the eye. It is recommended that you keep this shield on overnight, and remove it the next morning, when you should start using your eye drops. You should continue to use the shield at night for the first 2 weeks, unless otherwise indicated.

NEVER stop your drops without consulting your eye specialist. You will be prescribed both antibiotic and steroid drops after the surgery. Your steroid drops are your anti-rejection medication and need to be used regularly for several months. They will be reduced gradually as instructed by your eye specialist, but often continued indefinitely.

After about 12 months, individual sutures may be selectively removed from your eye in clinic. This is to adjust the shape of the cornea to make it as round and regular as possible, in order to give you the best possible vision. Sometimes all sutures are removed in one sitting.

### **What about driving immediately after the operation?**

You will require some rest after the operation. You may be able to resume driving after surgery if you meet the minimum driving standards (being able to read a number plate at 20m, with no other reasons for not being able to drive) and you feel comfortable to do so. If you are unsure whether you meet the standards, please check the DVLA guidance or check with your eye specialist at your next visit.

### **When can I return to playing sports?**

Avoid strenuous exercise for at least 1 month. Beyond this, your eye specialist will guide you, depending on your progress. Contact sports are best avoided altogether following full-thickness corneal transplant surgery, as they will always pose a risk to the eye.

### **What should I avoid after the operation?**

Do not rub or poke your eye. Avoid any heavy lifting or bending forward strenuously. Avoid wetting the eye for the first 2 weeks after surgery. Eye make-up should also be avoided for at least 4 weeks.

### **What are the symptoms of graft rejection?**

- ❖ Red eye
- ❖ Sensitivity to light
- ❖ Loss of Vision
- ❖ Pain

These can be remembered using the acronym **RSVP**