Corneal transplantation: penetrating keratoplasty (PK)

Why do you 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.

A cloudy cornea can be replaced by a healthy one from a donor to restore vision.
If the full thickness of the cornea is affected by disease, then a full thickness transplant is performed. This is known as a penetrating keratoplasty.

**Benefits of penetrating keratoplasty**

**Improved vision**
- Approximately 75% of transplant recipients have vision sufficient to drive legally but may need glasses or contact lenses or sometimes further surgery for best results
- It may take up to 18 months until the full improvement in vision is appreciated

**Risks of penetrating keratoplasty**

**Rare but serious complications**
- Sight-threatening infection (1 in 1,000)
- Severe haemorrhage causing loss of vision
- Retinal detachment
- Severe inflammation or other rare causes of loss of vision

**Corneal transplant rejection**
A corneal transplant can be identified and attacked by your immune system. This happens in one in six patients in the first two years after transplantation and can cause graft failure. It can often be reversed if anti-rejection medication is started promptly. Rejection remains a possibility for your lifetime.

**Graft failure**
When a graft fails, your cornea becomes cloudy again and your vision becomes blurred. This happens in one in 10 transplants for keratoconus in the first 10 years.

**Glaucoma**
This can usually be controlled by eye drops, but occasionally requires surgery and can damage the sight.

**Cataract**
This can be removed surgically.
About the operation

The operation
The operation is performed under general or local anaesthetic. The operation takes about one hour. A central 8mm button of your cornea is removed and a similar-sized button of the donor cornea is stitched in with tiny stitches (see front cover). These cannot be felt or seen. The abnormal cornea, which is removed, is sent to our pathology laboratory for examination under a microscope.

After the operation
You will usually be examined by the surgical team after the surgery and can generally go home the same day. You will be seen again within one week in the outpatient clinic and regularly thereafter (approximately six visits in the first year). We generally recommend that you take two weeks off work – discuss your individual circumstances with your doctor. You will need to use anti-rejection eye drops for at least six months and in some cases indefinitely. Individual stitches may be removed from three months after the operation, but complete stitch removal is not performed until at least one year after the procedure.

What if my transplant fails?
A failed transplant can be replaced in a procedure known as a regraft, but the risk of subsequent rejection and failure increases each time for regrafts.

The percentages of full-thickness corneal grafts that are still functioning well five years after the operation under various conditions are:

<table>
<thead>
<tr>
<th>Condition</th>
<th>%</th>
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<tbody>
<tr>
<td>Keratoconus</td>
<td>95</td>
</tr>
<tr>
<td>Fuchs’ dystrophy</td>
<td>80-90</td>
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<tr>
<td>Stromal scar</td>
<td>80-90</td>
</tr>
<tr>
<td>Stromal dystrophies</td>
<td>80-90</td>
</tr>
<tr>
<td>Bullous keratopathy</td>
<td>50-80</td>
</tr>
<tr>
<td>Bacterial infections</td>
<td>50-80</td>
</tr>
<tr>
<td>Herpetic keratitis</td>
<td>50-80</td>
</tr>
<tr>
<td>Fungal infection</td>
<td>0-50</td>
</tr>
<tr>
<td>3rd or higher number regraft</td>
<td>0-50</td>
</tr>
<tr>
<td>4 quadrants of blood vessels</td>
<td>0-50</td>
</tr>
<tr>
<td>Inflammation at time of surgery</td>
<td>0-50</td>
</tr>
<tr>
<td>Severe ocular surface disease</td>
<td>0-50</td>
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<tr>
<td>Grafts greater than 10mm</td>
<td>0-50</td>
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</tbody>
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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, to comply with the law and to ensure high quality transplant material. However, to share this information, we require your consent. If you do not give consent for your information to be shared with or held by the NHSBT, this may affect availability of donor tissue for the transplant or create problems with contacting you should any
problems be identified later on with the tissue you received. For more details please read the leaflet “NHS Blood and Transplant: Giving consent for use of your information” which can be found here: https://www.organdonation.nhs.uk/newsroom/publications/living_donor_consent.pdf

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

Symptoms of rejection are:
- Red eye
- Sensitivity to light
- Visual loss
- Pain

If you experience any of these symptoms you should come immediately to our 24-hour emergency department. If in doubt, call 020 7253 3411 and ask to speak with the doctor on duty in the emergency department.

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Moorefields Direct advice line
Phone: 020 7566 2345
Monday to Friday, 9am to 4.30pm, for information and advice on eye conditions and treatments from experienced ophthalmic-trained nurses.

Patient advice and liaison service (PALS)
Phone: 020 7566 2324 or 020 7566 2325
Your right to treatment within 18 weeks

Under the NHS constitution, all patients have the right to start their consultant-led treatment within 18 weeks of being referred by their GP. Moorfields is committed to fulfilling this right, but if you feel that we have failed to do so, please contact our patient advice and liaison service (PALS) who will be able to advise you further – see above for contact details. For more information about your rights under the NHS constitution, please visit www.nhs.uk/choiceinthenhs.