



# Boston Keratoprosthesis (KPro)

This leaflet is designed for patients, as well as their relatives, friends and carers, to help explain the Boston Keratoprosthesis (KPro) procedure.

## Introduction

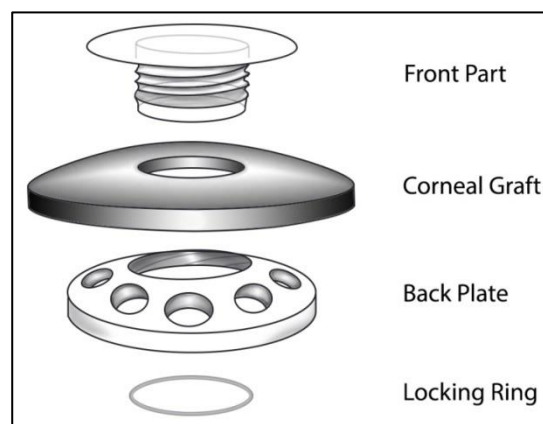
The cornea is the window at the front of the eye and its clarity is essential for good eyesight. Diseases of the cornea can lead to it becoming scarred and opaque causing significantly reduced vision. A common treatment for this is to replace part or all of the cornea with a corneal transplant using corneal tissue from human donors. With some conditions, corneal transplantation is unlikely to improve vision in the long term. In these circumstances an artificial cornea (Boston keratoprosthesis) offers a greater chance of sustained vision improvement and improved quality of life.

## What is a Boston Keratoprosthesis?

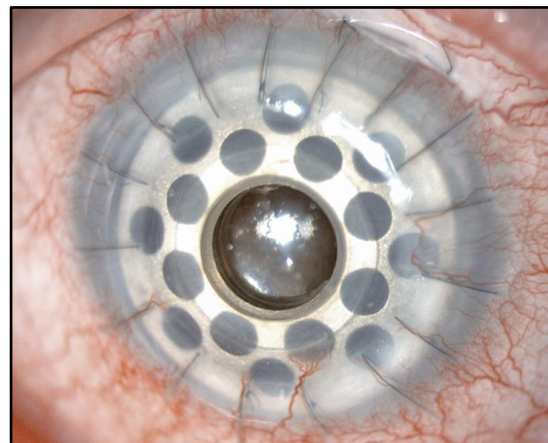
Boston keratoprosthesis (KPro) is an artificial cornea made of acrylic plastic. The KPro is placed in the middle of a human donor cornea which is then secured to the eye with very fine stitches in a process similar to a typical full thickness corneal transplant.

The KPro with its clear central window can restore vision when typical corneal

transplants are not suitable. Figure 1 below shows a diagram demonstrating the assembly of the KPro. Figure 2 is a photograph taken of the KPro in a patient from Moorfields.



**Figure 1**



**Figure 2**

## When is a Boston Keratoprosthesis (KPro) used?

The KPro is offered to people with reduced eyesight due to an opaque cornea who would not benefit from a conventional corneal transplant. In the UK, the NHS funds treatment with a KPro for people with severely reduced vision in their better seeing eye (Snellen 6/60 or worse but still able to perceive light shone into the eye).

## People who are offered a Boston Keratoprosthesis (KPro):

- have had corneal transplants that have failed, with poor chances of success with further corneal transplants.
- have reduced vision in both eyes, or poor vision in their only eye.
- have no severe conditions affecting the function of the back of the eye (including retinal detachments and advanced glaucoma) .
- are able to blink and produce tears.

## What does Boston Keratoprosthesis (KPro) surgery involve?

Before surgery you will be seen in a specialised KPro clinic with input from a corneal doctor, glaucoma doctor and retinal doctor.

You will have an ultrasound of the eye to establish the health of the eye and obtain measurements that may be needed when ordering the correct KPro for your eye. This is completely painless and free of radiation.

You will also undergo assessment by an anaesthetist.

Most keratoprosthesis operations last around three hours and are usually carried out under general anaesthesia, though they sometimes can be done under local anaesthesia if a general anaesthetic is not possible due to medical reasons.

The procedure involves placing the KPro into the middle of a human donor cornea which is secured to the eye with very fine stitches in a process similar to a typical corneal transplant. If the natural lens is still in the eye, then it is removed.

Additional procedures are often performed at the same time as the KPro procedure.

For people who do not already have one, a glaucoma tube (also known as an aqueous shunt) is usually placed. This allows better control of the pressure in the eye if it should become too high after the operation. Please refer to the International Glaucoma Association (IGA) 'Aqueous Shunt Implantation' patient booklet about tube surgery for further information. This can be found at the Health Hub at City Road or online by searching 'Aqueous Shunt Implantation' on the IGA website: [www.glaucoma-association.com](http://www.glaucoma-association.com)

If the eye has not already had one, a retinal surgeon will perform a vitrectomy to remove the vitreous gel at the back of the eye. This is done to reduce the risk of retinal detachment after the KPro procedure. Please see the Macular Society's Vitrectomy leaflet for further information. This can be found online by searching 'Vitrectomy' on the



Macular Society's website:  
[www.macularsociety.org](http://www.macularsociety.org)

### Care after a Boston Keratoprosthesis (KPro) operation

After surgery you will wear a soft contact lens and use steroid and antibiotic drops. These are recommended as lifelong precautions. Some people may also require additional treatment to reduce eye pressure or to control eye inflammation. You will be monitored by a specialist team in the KPro clinic and in a contact lens clinic. The frequency of this monitoring varies but usually involves being seen in the KPro clinic:

- two to three times in the first month after surgery.
- once every two months for the first year after surgery.
- once every three to six months thereafter.

The contact lens will need to be changed every 2 months. This can be done at the same time as a KPro clinic visit. If the gap between Kpro clinic visits is greater than two months then you will need to just attend our contact lens clinic to have the lens changed.

### What to expect and potential risks

There is an ongoing risk of infection following KPro surgery but this risk is minimised with the use of a bandage contact lens and special daily antibiotic drops which will be supplied to you by Moorfields.

Other risks following surgery include:

- elevated eye pressure and damage to the optic nerve (glaucoma).
- retinal detachment.
- the development of a 'membrane' behind the KPro which can limit vision. Laser and/or surgery can be performed to clear this membrane.
- eye inflammation.
- bleeding which may lead to permanently reduced vision.
- low eye pressure.
- if the KPro moves out of position your team may recommend that it is removed.

### When to seek immediate help

If your eye becomes increasingly red or painful, your sight becomes more blurred or you develop very noticeable and spreading redness together with a lot of eyelid swelling, you should call Moorfields Direct for advice on 020 7566 2345 or attend your local A&E department. Alternatively, you can attend Moorfields A&E department in City Road for a further examination (open 24/7 for emergency eye problems only).

### Further information

Your team in the KPro clinic will discuss your options, individual benefits and risks and any proposed treatment in detail. Please feel free to ask for further information at your clinic appointments.

Online information about the KPro is available on the **National Institute of**

## Health and Care Excellence (NICE)

website: [www.nice.org.uk/](http://www.nice.org.uk/)

This can be located by following this pathway online:

NICE guidance > Conditions and diseases > Eye conditions > Published guidance on this topic.

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Phone: 020 7253 3411

[www.moorfields.nhs.uk](http://www.moorfields.nhs.uk)

## Moorfields Direct telephone helpline

Phone: 020 7566 2345

Monday-Friday, 8.30am-9pm

Saturday, 9am-5pm

Information and advice on eye conditions and treatments from experienced ophthalmic-trained nurses.

## Patient advice and liaison service (PALS)

Phone: 020 7566 2324/ 020 7566 2325

Email: [moorfields.pals@nhs.net](mailto:moorfields.pals@nhs.net)

Moorfields' PALS team provides confidential advice and support to help you with any concerns you may have about the care we provide, guiding you through the different services available at Moorfields. The PALS team can also advise you on how to make a complaint.

## Your right to treatment within 18 weeks

Under the NHS constitution, all patients have the right to begin 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 more information about your rights under the NHS constitution, visit [www.nhs.uk/choiceinthenhs](http://www.nhs.uk/choiceinthenhs)

