

Corneal collagen cross-linking (CXL) treatment for keratoconus of the eye

Ophthalmology Department

Information for Patients

Last reviewed: January 2024

Next review: January 2027

Leaflet number: 906 Version:3

What is keratoconus?

Keratoconus (pronounced keh-rah- toe-cone-us) affects the cornea (the window at the front of the eye). The condition causes the cornea to thin. This causes bulging of the eye, or rugby shaped eye. This change of the corneal shape reduces vision as it changes the shape of images that come into the eye. It makes you more short-sighted as the condition becomes worse.

It is normally found when you are a teenager. It is a condition that can get worse over time. You will have been to clinic and had scans to measure any change. This change can be different for each eye.

Treatment depends on the amount of bulging (degree of ectasia) and the shape of the eye (irregular astigmatism). Different contact lenses can be used to help manage the condition and give good vision.

If your vision is poor and contact lenses are not helping, you may need surgery. Surgical treatment options include:

- corneal collagen cross-linking (CXL) - this leaflet is about this procedure.
- intra-corneal ring segments inserts (INTACS).
- a corneal transplant.

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What is corneal collagen cross-linking (CXL) treatment?

This procedure strengthens the cornea to stop keratoconus getting worse. In more than 90% of cases CXL treatment stops keratoconus from getting worse.

It will not change your vision, although some people feel their vision has improved.

The aim is to stop keratoconus progressing, not to improve vision.

CXL uses ultraviolet light and vitamin B2 (riboflavin) drops to stiffen the cornea. This treatment copies the normal age-related stiffening of the cornea. This is known as natural cross-linking. Collagen cross-linking is the only treatment available now that appears to stop keratoconus from getting worse.

How is CXL done?

- You will have local anaesthetic eye drops put into your eye to numb the area.
- The CXL takes around 30 minutes to work. It is carried out by nurses and doctors.
- We remove the top layer of the cornea (epithelium) using a blunt spatula.
- Riboflavin is then applied to the eye in drops for 8 minutes.
- The ultraviolet (UV) light is shone at the eye for 10 minutes.
- We apply eye drops to numb the eye before, during and at the end of the procedure. This is to make sure you have no pain during treatment.
- We use a clip to hold the eyelids open. This may feel a little uncomfortable at first. It is important not to squeeze the eye while we are putting the clip in. You will need to lie still for about 30 minutes.
- Once treatment has finished the numbness can wear off within 30 minutes. It is important to get home as soon as possible.

You will be given your medication to take home.

- If you have your CXL done in the minor operations room you will be given your medication after the surgery.
- If the surgery is in theatre you will need to collect your medication from the pharmacy. We advise that you bring someone with you to take you home. They can collect these while you are having treatment, so you can leave sooner when finished.
- You will be given some steroid eye drops, antibiotic eye drops, and drops for pain.

Please make sure you know how often to use each type of eye drop. The ones that numb the pain can stop the eye healing. If you are not sure please ask the pharmacist or the nurse.

You are having this procedure to stop keratoconus from getting worse. If we do not treat the eye, 10 to 25% of eyes will need different management to help their vision.

About 20% of keratoconus patients will need a corneal graft at some point if the procedure is not done. Furthermore, the risk of needing a corneal graft for keratoconus that is progressing is higher than in patients who had CXL treatment.

What are the risks?

CXL has been used to treat keratoconus for many years. There are some risks mentioned below:

- The light from the UV can damage cells in the back of the eye needed for vision. CXL is only done if the cornea is a certain thickness, to prevent damage to the back of the eye.
- 3 in 100 patients might have some loss of vision (due to infection, scars, haze, surface irregularities).
- Risk of infection/ inflammation - 1 to 3 patients out of every 100 have reduction of vision. Rarely an infection in the eye could cause total loss of vision. Any risk must be compared to the risk of not having CXL treatment. This would mean keratoconus becomes worse and vision is lost.
- CXL treatment may need repeating - Moorfields Eye Hospital own results since 2013 when they began treating patients with CXL show less than 1% needing a repeat CXL treatment. Up to date results can be found on the hospital website www.moorfields.nhs.uk/condition/keratoconus

After your CXL treatment

- You must not get tap water in the eye for 1 week. No showers, swimming or hot tubs. Use cool boiled water if you need to clean the face.
- Do not rub the eye as this stops the surface from healing.
- You will have some pain for 2 to 3 days after CXL. This is different for everybody.
- Most people say it is a burning feeling. They have to avoid light. The eye waters a lot. They have reduced vision. This is normal. When the eye is watering, close it and dab underneath the lashes, do not rub the eye.
- You may need help to put drops in for the first 2 days.



- Your vision will be poor until the top layer grows back. Vision comes back for a few days, then sometimes you can have a haze for up to 6 months, although you may not notice this. This haze is the cornea stiffening.
- You will need to be off work or any study for at least 1 week. We will see you 1 week after treatment where you can talk to us about returning to work or study if you are worried.
- You will need to have your vision checked 3 months after the procedure. You may need another prescription.
- You cannot wear contact lens for at least 3 months or until we advise you. It can cause scarring if they are used before healing has finished.
- You must take your drops as advised.

You must come to hospital if any of the following happens:

- If the pain continues after 3 days, or pain suddenly gets worse
- Sudden loss of vision
- The eye gets redder
- The eyelid swells, mild swelling on the eye lid is normally if you have found the clip uncomfortable during the surgery

You will need to come to Eye Casualty as you could have an infection which could affect your long term vision. For any other queries please contact the corneal specialist nurses.

Contact details

If you have any concerns following your procedure you can contact the specialist nurse team on 07970 940125, Monday to Friday - 9am to 5pm.

If out of the above hours, please contact Eye Casualty on 0116 258 6273: Monday to Friday 8.30am to 4.30pm Saturday, Sunday and Bank Holidays - 8.30am to 12.30pm

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