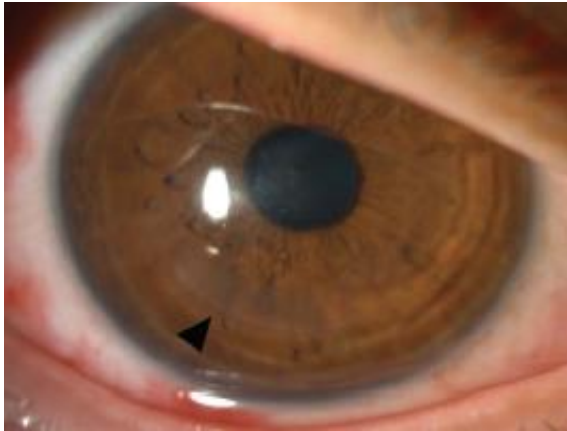


CAIRS

CORNEAL ALLOGENIC INTRASTROMAL RING SEGMENT IMPLANTATION



What is Corneal Allogenic Intrastromal Ring Segment Implantation (CAIRS) and how does the surgery work?

Corneal allogenic intrastromal ring segment (CAIRS) is a novel treatment for keratoconus, post-LASIK ectasia and pellucid marginal degeneration. It is a minimally invasive technique. The procedure aims to improve vision by regularising the shape of the cornea. The procedure is a modification of synthetic intrastromal cornea ring segments (ISCRS). CAIRS does not use synthetic materials and is associated with a much lower risk profile and higher efficacy than ISCRS. CAIRS is an additive and strengthening procedure. CAIRS does not remove the need for glasses or contact lenses. CAIRS may remove the need for hard or scleral contact lenses.

CAIRS is an outpatient day surgery procedure performed within a laser suite. A human cornea donor graft is sterilised and shaped like an arc or a ring. A femtosecond laser is used to create a channel inside the cornea. Once the channel is made, Dr Kumar will implant the cornea graft into the channel, reinforcing the cornea and reducing distortion. Sutures are not required as the wound is self-closing. This procedure is performed under topical anaesthetic. The graft is faintly visible within the naked eye as above.

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Dr Kumar has specific expertise in conventional and laser cataract surgery, laser vision correction, alternatives to laser surgery, cornea transplantation, pterygium surgery and the minimally invasive management of keratoconus and glaucoma.

He graduated in Medicine from the University of Newcastle in 1998, completed ophthalmology residency at the Sydney Eye Hospital and trained in subspecialty Cataract, Refractive and Cornea Surgery at the University of Toronto in 2009. He has been in practice in NSW since 2009 and has performed thousands of cataract, refractive and cornea procedures.

He is a member of the Australian, American and European Societies of Cataract and Refractive Surgery and Cornea Societies. He has published numerous peer-reviewed papers and book chapters involving his specialty interests.

Where does the cornea graft come from?

There are two potential sources: The NSW Lions Eye Bank can provide the allograft, or the KeraNatural Sterile Allografts can be used. The KeraNatural Sterile allograft rings are made by VisionGift, an FDA registered and Eye Bank Association of America (EBAA) accredited eye bank. The biocompatibility of the allograft tissue reduces many of the risks associated with ISCRS, such as extrusion or intrusion.

What are the benefits of CAIRS?

By implanting donor cornea, the following benefits apply over implanted synthetic materials:

1. Biocompatibility

Donor cornea is well tolerated by the recipient cornea. Synthetic materials implanted into the cornea have a long history and higher likelihood of surgical complications.

2. Greater Customisation

The femtosecond laser is used to accurately create the channels within the cornea. No two corneas are alike, and each cornea with keratoconus has its own unique shape, thickness and distribution. The depth and width of the femtosecond channels can be customised according to the shape of your cornea. Additionally, the surgeon can also customise the dimensions of the implanted donor cornea. As such, the outcome is customised to each specific cornea.

3. Greater Efficacy

During CAIRS, the implant can be inserted at a shallower depth of 50% which has the advantage of greater efficacy in improving the shape of the cornea. By contrast, acrylic ring segments are implanted at a depth of 80-85% due to the risk of extrusion. The downside of this deep placement is that they have less effect on the resulting shape on the front surface.

Outcome and risks of CAIRS

Keratoconus can cause blurred vision and ghosting even when wearing glasses. The aim of CAIRS is improvement of corneal shape, improvement of visual quality and reduction of myopia (short-sightedness) and astigmatism. It may take a month post-surgery to appreciate the visual outcome after CAIRS. You may require a second procedure to adjust the graft and positioning. The long-term outcome of this surgery is unknown. Some risks of this surgery are infection, inflammation, rejection, or progression of keratoconus and ectasia. However, if your condition is progressive, it is combined with collagen cross linking to stop progression at a later stage.

What can you expect after surgery?

You may experience varying degrees of discomfort directly after the surgery as the anaesthetic wears off. You may experience a foreign body sensation, burning feeling and watery eyes that may last up to two to three days after surgery. Experiencing a runny nose, light sensitivity, eye redness and visual fluctuation is also normal for a few days to a few weeks post-surgery. Some patients may experience dry eye symptoms, a sandy sensation or eye tenderness for several weeks to months after surgery and preservative free artificial tears will assist with this sensation.

You will leave the surgery with a shield over the operated eye to reduce light sensitivity and as protection. After surgery go straight home and close your eyes to rest for four to six hours. You will need to attend all follow up appointments with Dr Kumar to monitor your progress and the condition of the graft.

If you notice symptoms such as significant loss of vision, increase in pain, redness or discharge it is important to seek urgent medical care. This may be a sign of a complication that needs urgent treatment. If you experience other unusual symptoms not listed call the office on 02 9222 9188.

What activities are suitable after surgery?

After surgery a protective shield will be placed over the eyes and must be worn continuously until your day one post operation appointment. You must not rub your eyes. Only remove the shield to place prescription eye drops and immediately place the shield back on. The use of prescription eye drops will be directed by Dr Kumar. Wait five minutes between drops. Make sure to keep your eyes closed as long as possible for the first day. Do not engage with phones, watch television or look at computers. You may shower after your first post operation appointment but do not wet the eyes with water or soap.

If Dr Kumar feels your vision is adequate, he may discuss driving at your post operative review. Light exercise is suitable two days after surgery but avoid any contact with the eye or activities that risk contamination. Do not engage in contact sports, swimming, diving or other water sports. Do not wear any eye makeup, lotion or perfume around the eyes.