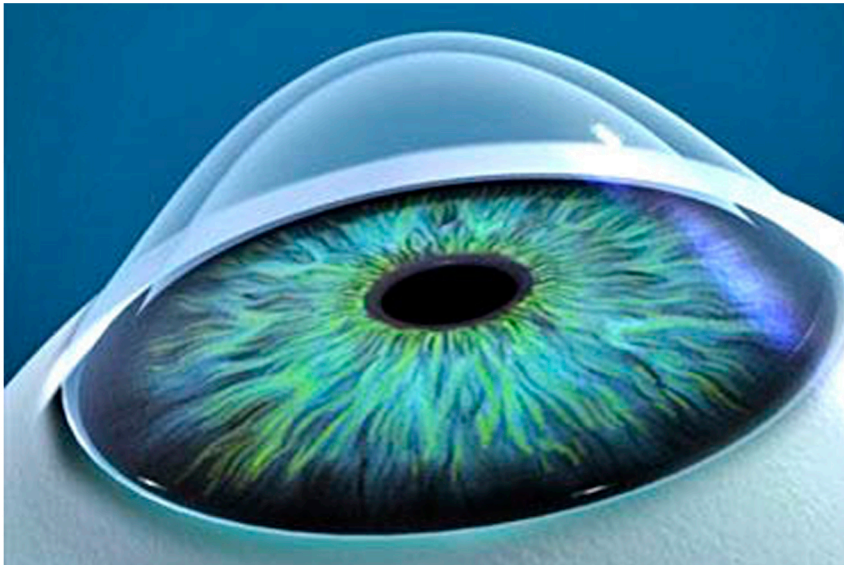


# KERATOCONUS

TRANS EPITHELIAL COLLAGEN CROSS LINKING

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## What is keratoconus?

Keratoconus is a condition of the cornea (front surface of the eye), and affects approximately 1 in 2000 individuals. The cornea acts as a window and allows us to focus light. Usually the cornea is a normal dome shape, however with Keratoconus, the cornea becomes more conical in shape. Over time the cornea stretches, becomes thinner and bulges forward, causing highly irregular astigmatism and myopia (short sightedness).

Keratoconus generally affects both eyes but the time of onset and rate of progression can vary between the two eyes. Most people that are affected by keratoconus experience onset starting as early as teenage years and may progress for decades thereafter.

## Symptoms

- Blurred or distorted vision at all distances
- Near sightedness
- Glare sensitivity to light
- Increasing astigmatism
- Worsening night vision

Nik has a specific interest in conventional and laser assisted cataract surgery, laser vision correction, alternatives to laser surgery, cornea transplantation, pterygium surgery and the management of keratoconus.

Nik graduated in Medicine from the University of Newcastle in 1998, then completed an ophthalmology residency at the Sydney Eye Hospital and undertook subspecialty fellowship training in Cataract, Cornea and Refractive Surgery at the University of Toronto in 2009.

Nik is a Clinical Senior Lecturer in Cataract, Refractive and Cornea Surgery at the Australian School of Advanced Medicine, Macquarie University. 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.



## What causes Keratoconus?

It is suspected that keratoconus has a genetic component and thought to be an inherited condition. Although keratoconus usually develops as an isolated condition, there are some diseases, syndromes and general health problems that may be associated with this corneal disorder. Keratoconus appears to be associated with other conditions such as Down's syndrome, Marfan's syndrome, asthma, hay fever and eczema but this requires further research.

## How is Keratoconus diagnosed?

Keratoconus can be diagnosed by an ophthalmologist or optometrist. Your optometrist may refer you for definitive diagnosis and treatment. Dr Kumar has advanced corneal imaging available at Vision Clinic Sydney to thoroughly assess your cornea steepness, shape, irregularity and any other corneal characteristics indicative of keratoconus.

## How is Keratoconus treated?

Most patients with early to moderate keratoconus usually wear contact lenses to improve vision and minimise distortion. However, some experience intolerance or discomfort from contact lens wear. In any case, contact lenses will not treat the fundamental problem or prevent progression of the disease. In the past, limited options were available, often resulting in progression of the disease and ultimately leading to corneal transplantation. Collagen cross linking has been used on thousands of patients and provides the first proven treatment to help stop the progression of keratoconus.

## What is collagen cross linking and how is it done?

Collagen cross linking is a procedure that aims to increase corneal rigidity and strengthen the collagen links to provide mechanical stability. Usually one eye is treated at a time and it is conducted under sterile conditions. The eye is held open with a device and thoroughly anaesthetised with eye drops. No injections are required. Dr Kumar applies riboflavin (Vitamin B2) drops to the cornea for approximately 10 minutes. After the riboflavin (Vitamin B2) drops have been applied, a UV-A light is applied for another 11 minutes. This will be done with Boost goggles which supply excess oxygen to the area making the process faster and more effective. The UV-A light activates molecules that help to "weld" fibres in the cornea together thereby improving its mechanical stability.

## Recovery from collagen cross linking

After the procedure, a bandage contact lens is placed over the eye to promote comfort and stability of the surface layer of the cornea. During this period, your eye may feel gritty, dry and mildly irritated. You may also experience blurred vision initially, but this will all gradually improve over several weeks. Initially after the procedure, some patients may experience some discomfort but this is managed with appropriate pain medication (if needed) and tends to subside within a week. You will also need to use post-operative eye drops to prevent infection and inflammation for several weeks. **Collagen cross linking is not a vision enhancement procedure, as it aims to strengthen the cornea and will not restore the cornea to a completely normal shape.** Therefore, glasses and contact lenses may still be required and further treatment may be necessary.

## Are there any risks involved?

Very few risks have been reported to date. A detailed explanation of the risks and complications will be discussed with you at your consultation. Overall, collagen cross linking is a very safe and effective development to halt the progression of keratoconus.

