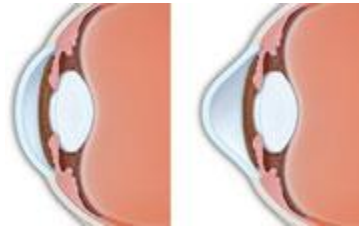


KERATOCONUS

What Is Keratoconus?

Keratoconus is an uncommon condition in which the normally round, dome-like cornea (the clear front window of the eye) becomes thin and develops a cone-like bulge. Keratoconus literally means “cone-shaped cornea.”

The cornea is a very important part of your eye. Light enters the eye through the cornea, which refracts, or focuses, the light rays so that you can see clearly.



Left: normal cornea; right: cornea with keratoconus.

With keratoconus, the shape of the cornea is altered, distorting your vision. Keratoconus can make some activities difficult, such as driving, typing on a computer, watching television or reading.

What Causes Keratoconus?

The cause of keratoconus is still not known. Some researchers believe that genetics play a role, since an estimated 10 percent of people with keratoconus also have a family member with the condition.

In addition, keratoconus is associated with:

- An eye injury, i.e., excessive eye rubbing or wearing hard contact lenses for many years.
- Certain eye diseases, such as retinitis pigmentosa, retinopathy of prematurity and vernal keratoconjunctivitis.
- Systemic diseases, such as Leber's congenital amaurosis, Ehlers-Danlos syndrome, Down syndrome and osteogenesis imperfecta.

Keratoconus Symptoms

Keratoconus usually affects both eyes, though symptoms in each eye may differ. Symptoms usually start to occur in people who are in their late teens and early 20s and may include:

- Blurring of vision

- Distortion of vision
- Increased sensitivity to light
- Glare
- Mild eye irritation

The rate of progression varies. Keratoconus will often progress slowly for 10 to 20 years and then suddenly stop. As the condition progresses, the most common symptoms include:

- Increased blurring and distortion of your vision
- Increased nearsightedness or astigmatism
- Frequent eyeglass prescription changes
- Inability to wear contact lenses

Occasionally, keratoconus can advance rapidly, with sudden swelling of the cornea and development of corneal scarring. Scar tissue on the cornea causes the cornea to lose its smoothness and clarity. As a result, even more distortion and blurring of vision can occur.

Keratoconus Diagnosis

Your ophthalmologist will be able to diagnose keratoconus during a routine eye exam. A slit lamp can be used to diagnose severe cases of keratoconus, but sometimes corneal topography is needed to diagnose the more subtle cases of keratoconus.

Additional tests may be appropriate to determine the shape of your cornea. These include:

- **Keratometry.** In this procedure, a circle of light is focused on your cornea, and the reflection is used to determine the curve of your cornea.
- **Computerized corneal mapping.** This procedure is used to take a picture of your cornea and generate a topographical map of your eye's surface.

Keratoconus Treatment

Keratoconus treatment often depends on the severity of the keratoconus symptoms. During early stages, vision can be corrected with eyeglasses. As the condition progresses, rigid contacts may need to be worn so that light entering the eye is refracted evenly and vision is not distorted. You should also refrain from rubbing your eyes, as this can aggravate the thin corneal tissue and make symptoms worse.

Keratoconus can also be treated with Intacs, which are small curved implantable corneal devices that can reshape the cornea. Intacs are FDA approved and can help flatten the steep cornea found in keratoconus.

Another treatment option for keratoconus that is not FDA approved is collagen cross-linking. Collagen cross-linking is a new treatment that uses a special laser and eye drops to promote “cross-linking” or strengthening of the collagen fibers that make up the cornea. This treatment may flatten or stiffen the cornea, preventing further protrusion.

When good vision is no longer possible with other treatments, a corneal transplant may be recommended. This surgery is only necessary in about 10 percent to 20 percent of patients with keratoconus. In a corneal transplant, your ophthalmologist removes the diseased cornea from your eye and replaces it with a healthy donor cornea.

A transplanted cornea heals slowly. It can take up to a year or more to recover good vision after corneal transplantation.

While a corneal transplant will relieve the symptoms of keratoconus, it may not provide you with flawless vision; however, of all conditions requiring corneal transplants, keratoconus has a lower rejection rate and the best prognosis for clear vision.

Another type of cornea transplant that is becoming more popular as a treatment for keratoconus is called DALK, or Deep Anterior Lamellar Keratoplasty. With this procedure, only the front and middle layers of the cornea are transplanted. The benefits of this transplant over the “full” cornea transplant is a much faster healing period and less risk of rejection.