

Keratoconus is a disorder of the cornea, the clear, dome-like structure on the front part of the eye. In keratoconus, the cornea thins and bulges outward like a cone, resulting in distorted vision. As the shape of the cornea changes, nearsightedness and astigmatism may develop. The corneal changes of keratoconus usually occur very slowly. Although keratoconus does not cause blindness, it can reduce the ability to focus without eyeglasses or contact lenses. Keratoconus is most commonly detected during the late teens to early twenties, generally affecting about 1 in 2,000 people in the general population.

### **Causes:**

The cause of keratoconus is unknown. Recent research suggests that a corneal enzyme imbalance may cause the corneal tissue to weaken. This enzyme imbalance may cause the cornea to be more susceptible to oxidative damage from free radicals. Ultraviolet light, allergic conditions, continually rubbing the eyes, and poorly fitted contact lenses have all been associated with the disorder.

### **Symptoms:**

Keratoconus typically develops slowly, so it is usually difficult to detect. Early symptoms include blurred vision and an increase in nearsightedness and astigmatism. As the disease progresses, irregular or oblique astigmatism may develop, causing distorted vision that is difficult to correct with glasses. Although it usually affects one eye more than the other, keratoconus almost always affects both eyes. A person with keratoconus is often very sensitive to light and glare. Vision can become so distorted that normal daily activities such as watching TV, reading or driving can be extremely difficult.

### **Diagnosis:**

Early diagnosis of keratoconus is rare because changes in the cornea occur very slowly. If keratoconus is suspected, an eye doctor may order a test called corneal topography. A corneal topography can produce color maps showing the relative shape, power and elevation of the surface of the cornea. These color maps create identifiable patterns that are helpful in diagnosing the disease. Doctors may also use a biomicroscope to examine the front part of eye to look for signs of the condition.

### **Treatment:**

- **Glasses and Soft Contact Lenses:** They may be helpful in early stages.
- **Rigid Gas Permeable (RGP) Lenses:** These lenses work well in moderate stages of keratoconus by providing a smooth surface for light refraction.
- **Hybrid Contact Lenses:** These lenses provide the effects of RGP's but the comfort of soft lenses.
- **Corneal Inserts:** These are placed into the cornea to flatten and stabilize its shape.

- **C3R:** An ultraviolet light is used to activate enzymes in the cornea in an effort to strengthen corneal fibers.
- **Surgery:** A corneal transplant may become necessary to replace the diseased cornea with a healthy one.

**What You Need to Know:**

It is important to know that half of keratoconus patients have no negative lifestyle effects beyond corrective lenses. The cornea sometimes stabilizes after a few years without ever causing severe vision problems. The other half of the patient population face continued corneal changes that could affect vision, sometimes resulting in a necessary corneal transplant.