

CORNEA AND SCLERA

What is the function of the cornea and sclera?

The cornea and sclera form the protective shell for the delicate structures inside the eye. The sclera is opaque and tough, forms the back part of this shell and is covered by conjunctiva. The muscles that move the eye insert into the sclera. The cornea is the clear transparent window in the front, transmits light into the eye, and with the lens, helps focus the rays on the retina.

What can go wrong with the cornea?

Infections – A variety of microbial agents can infect the exposed corneal surface, especially if there is injury. Contact lens use is a known risk factor for corneal infections. Unless treated promptly, severe vision loss can occur.

Injuries – Despite the protection of the lids, due to its exposed position, the cornea can be injured easily. This can result in corneal tears or if chemicals are involved, extensive burns of the entire ocular surface.

Inflammations – The cornea is affected in a number of conditions affecting the lids, conjunctiva, or other parts of the body. These can result in significant corneal inflammation and damage unless prompt, expert care is provided.

Genetic conditions – A variety of inherited diseases at birth or in later life and can affect the size, shape or clarity of the cornea. Some of these may be a part of a wide syndrome with other eye and systemic changes.

Surgical damage – Although cataract surgery is a safe and effective procedure, it can sometimes produce corneal damage - especially in eyes with inherited corneal pathology. In these eyes, fluid collection in the cornea reduces sight.

Miscellaneous – Tumors can involve the cornea, and damage can result from improper contact lens fit and use. The cornea can be affected in dry eyes, improper lid closure, and if there is damage to the nerves supplying the eye.

What can go wrong with the sclera?

As with the cornea, the sclera can be involved in infections, injuries, inflammations, in some genetic conditions with extreme sclera thinning – resulting in a blue appearance of the eye, and in surgical damage.

How will I know if I have corneal or sclera diseases?

Since the primary function of the cornea is to provide clear sight, most conditions affecting this structure will result in altered visual function. However, small peripheral changes may not initially affect vision, but may produce pain, irritation, redness or discharge. Many sclera conditions can result in severe pain in and around the eye. Persistent eye pain is often a sign of serious eye disease and should not be ignored.

What are the common causes of such diseases?

Injuries at work or play are important causes. If chemicals splash into the eye, often significant damage can result, unless prompt care is provided. Such injuries are often associated with infections as well. Many systemic diseases, especially those affecting connective tissues and joints, can have a corneal component, as can some medications used to treat these conditions. Surgical trauma and genetic conditions also are important causes of corneal disease.

How can these be treated?

Infections and inflammations of the cornea and sclera can often be treated medically in the early stages, although some surgical treatment may be needed if the condition is advanced. While very minor injuries can be carefully observed, most need to be treated. Similarly, early tumors can be treated with medications, while large extensions need surgery. Many of the conditions affecting the clarity of the cornea will need surgical therapy.

Recent advances in the management of these diseases.

Never antibiotics help eradicate most of the infections in these structures. Chemical injury to the cornea can be effectively managed by limbal stem cell transplants, and in end stage disease, by the use of an artificial cornea, (keratoprosthesis). Corneal transplantation for scarring can now be done in a limited, lamellar manner, increasing the safety of the procedure. Similarly, for corneal fluid collection, a limited replacement of the posterior layers of the cornea dramatically improves the sight