

Cornea and Eye Bank

“Life after Death”

What is cornea?

The cornea is like the “Window of the eye”. It is the clear, curved structure that provides a protective shell for the delicate inner structures of the eye. Apart from protection, the transparent cornea also transmits and focuses the incoming rays of light, to enable them to achieve a precise focus on the light sensitive retina in the back of the eye.

How cornea can be affected?

Situated as it is, in the exposed front of the eye, the cornea is also subjected to a variety of insults from the environment and is prone to damage from injuries and infections. These tend to result in opacities in the cornea, which prevent light transmission and thereby reduce vision. Apart from these problems, other developmental and genetic conditions can also cause alterations in corneal shape and clarity.



Fig. (3.a) Opacified Cornea

Conditions causing corneal blindness

- Corneal infections
- Injuries
- Vitamin A deficiency (Keratomalacia)
- Bullous Keratopathy (corneal oedema with haziness)

What is keratoconus?

'Kerato' means cornea and 'conus' means cone hence adding up to mean cone shaped cornea. This condition forms due to thinning of the cornea leading to irregular astigmatism disturbing the normal vision. Spectacles and semi- soft (gas permeable) contact lenses are used to treat this condition. In severe cases, corneal transplantation may be required. Newer techniques like collagen cross-linking using Riboflavin have been performed recently.

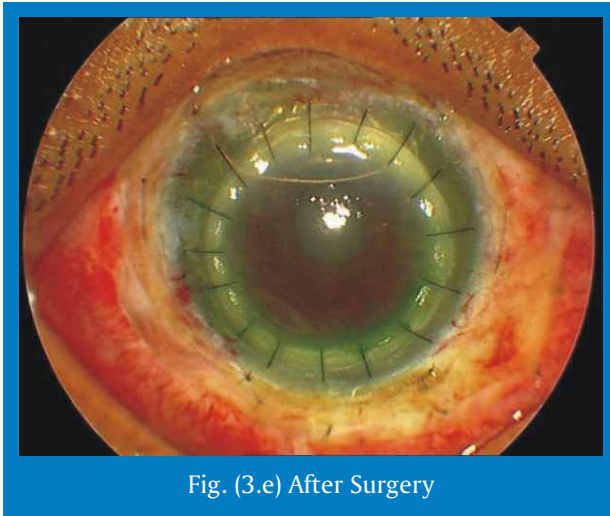
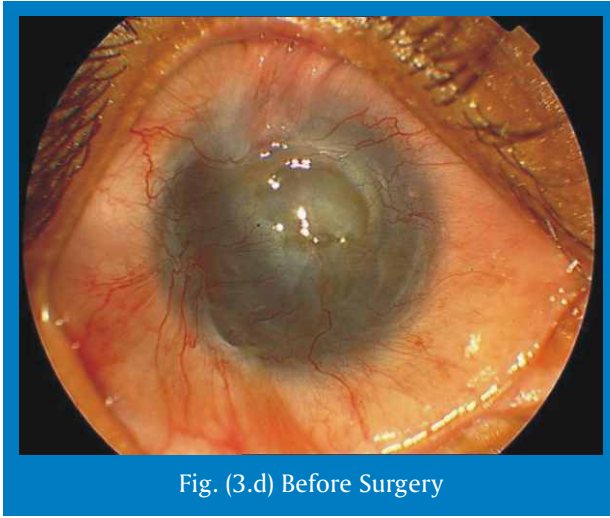


Fig. (3.b) Corneal Topography



Fig. (3.c) Specular Microscopy

When certain conditions affect the function of the cornea, medical treatment can sometimes help restore function, as in infections. In disorders of corneal shape, the use of glasses or contact lenses, can help improve vision. If these fail, then surgical replacement of the affected cornea may be required. The procedure corneal transplantation is performed using a healthy cornea from a deceased person's eye. The defective cornea in the affected eye is removed and is replaced with the clear cornea, which is held in place using sutures.



The approach to corneal surgery has been revolutionized by recent advances in surgical technique, which now permit the selective replacement of the diseased corneal layers. Such procedures – termed **DALK** - Deep Anterior Lamellar Keratoplasty for the replacement of the anterior corneal layers, offer tremendous advantages to the patient, as the major problem of corneal graft

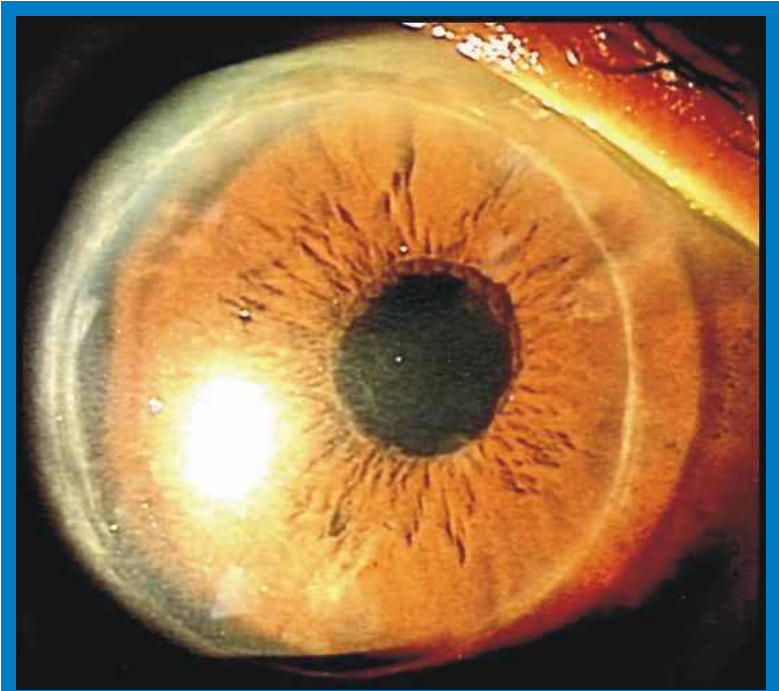


Fig. (3.f) Sutureless Corneal Surgery (DSEK)

rejection is minimal with this approach. Similarly for patients with disease in the posterior corneal layers, **DSEK** - Descemets Stripping Endothelial Keratoplasty can be performed.

Both the above mentioned methods allows superior quality of vision and freedom from suture related complications.

What is OOKP?

In addition to these advances, the new technique of limbal corneal replacement permits the visual rehabilitation of eyes previously considered beyond help. As an extension of this approach, the use of the technique of Modified **Osteo-Odonto Keratoprosthesis (OOKP)**, using an artificial cornea, offers hope to those with severe blinding corneal disease.

OOKP - Procedure

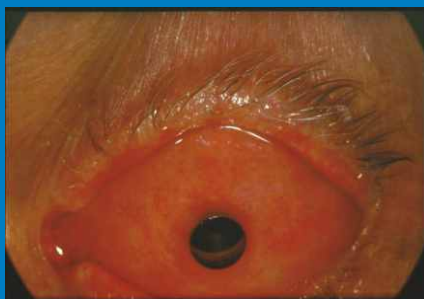
Fig. (3.g) Cylinder glued to lamina



Fig. (3.h) Mucosa sutured to ocular surface



Fig. (3.i) Appearance of eye after 1 month



What is an eye bank?

An Eye Bank is an organization that procures, evaluates, preserves and distributes donated corneal tissue for transplant surgeries.

How do you donate an eye?

The nearest kith and kin of the deceased person should inform the eye bank at least within 4 hours of the demise, as the eyes usually have to be removed within 6 hours.

Caveats

- Cornea is like a watch glass. It is a transparent structure that does not have blood supply.
- An insult to the cornea makes it lose transparency and becomes opaque (corneal blindness due to opacity).
- Injury and corneal infections are common causes of corneal opacity.
- Corneal transplant surgery (Keratoplasty) can cure corneal blindness.