EYE DONATION AND EYE BANKING

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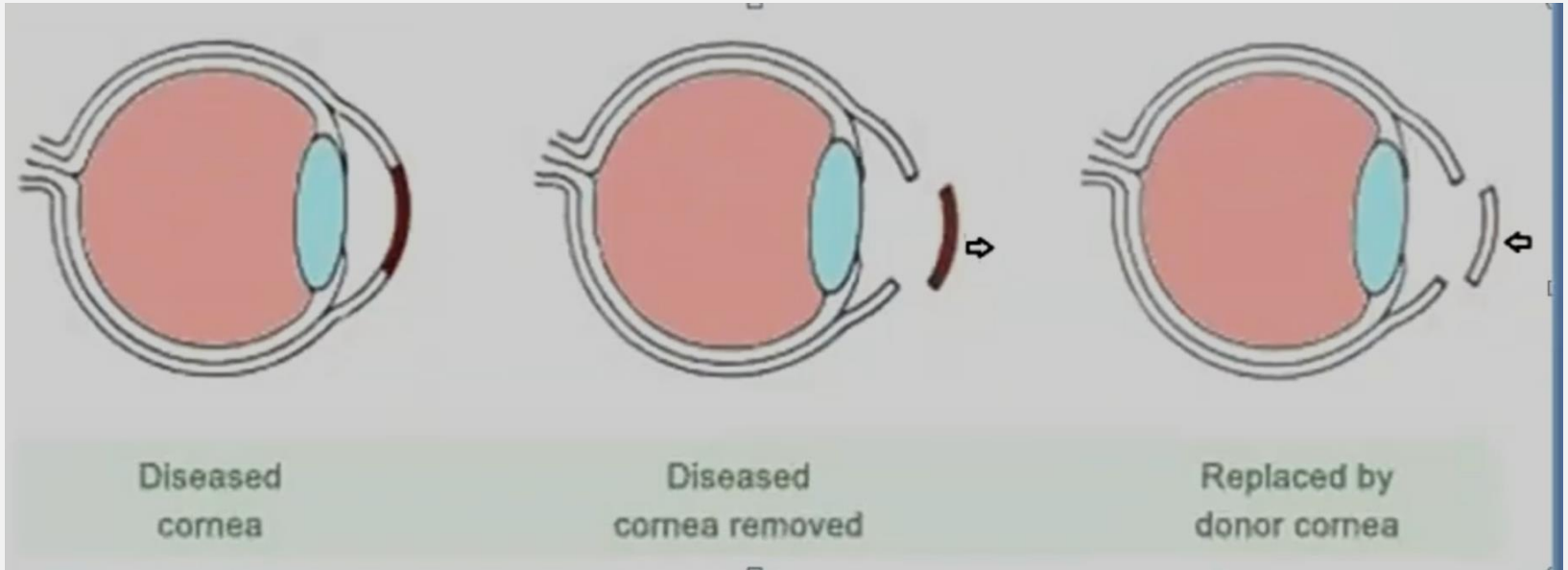
WHAT IS KERATOPLASTY?

- Corneal transplantation
- Keratoplasty also called corneal grafting or corneal transplantation, is an operation in which the patient's diseased cornea is replaced by a healthy clear cornea.



TYPES OF KERATOPLASTY

- Autokeratoplasty
- Allokeratoplasty

AUTOKERATOPLASTY

- Rotational keratoplasty, in which the patients own cornea is rotated to transfer the pupillary area having a small corneal opacity to the periphery.
- Contralateral keratoplasty, it is indicated when cornea of one eye of a patient is opaque and the other eye is blind due to any optic nerve defects or retinal detachments with clear cornea.

ALLOKERATOPLASTY

- A defect in cornea is replaced by the donors healthy cornea
- There are 3 types:
    1. Lamellar keratoplasty (partial thickness grafting)
        a. Deep anterior lamellar keratoplasty (DALK)
        b. Decemet's stripping endothelial keratoplasty
    2. Penetrating keratoplasty (PK): Full thickness grafting
    3. Small pass graft (for small defects) which maybe full or partial thickness

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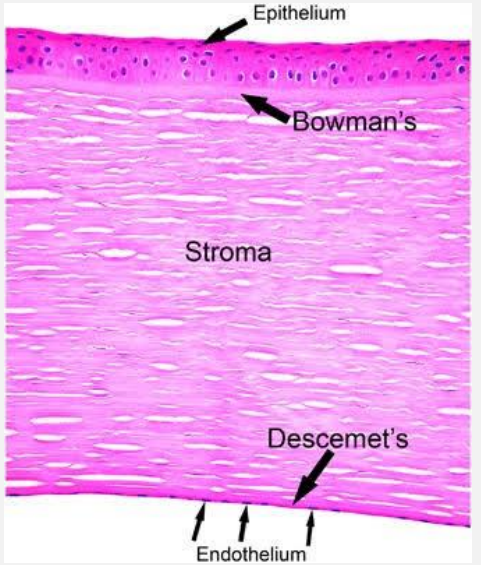

INDICATIONS

- Optical: to improve vision, important indications are:
    a. Corneal opacity
    b. Bullous keratopathy
    c. Corneal dystrophies
    d. Advanced keratoconus
- Therapeutic: To replace inflamed cornea, not responding to treatment(indolent deep ulcer)
- Tectonic Graft: To restore the integrity of eyeball in corneal perforation and marked corneal thinning
- Cosmetic: To improve the appearance of eye.

DONOR TISSUE

- Donor eye should be removed as early as possible within 6 hours of death.
- It should be stored under sterile conditions
- Almost anyone at any age can donate eyes after death. All that is needed is a cleat heathy cornea.

CONTRAINDICATION

- Infectious diseases like AIDS, TB, Rabies, Leprosy
- Septicemia
- Ocular Malignancy
- Any eye infection.

EVALUATION OF DONOR CORNEA

- Bio-microscopic examination of the whole globe before processing the tissue for storage is important.

Table 6.1 *Grading of donor cornea on slit-lamp biomicroscopic examination*

	Grade of donor corneal tissue				
Parameter	*Grade I (Excellent)*	*Grade II (Very good)*	*Grade III (Good)*	*Grade IV (Fair)*	*Grade V (Poor)*
Epithelial defects and haze	None	Slight epithelial haze or defects	Obvious moderate epithelial defects		
Corneal stromal clarity	Crystal clear	Clear	Slight cloudiness	Moderate cloudiness	Marked cloudiness
Arcus senilis	None	Slight	Moderate (<2.5 mm)	Heavy (>2.5 mm – 4 mm)	Very heavy (>4 mm)
Descemet's membrane	No folds	Few shallow folds	Numerous shallow folds	Numerous deep folds	Marked deep folds
Endothelium	No defect	No defect	Few vacuolated cells	Moderate guttate	Marked guttate

METHODS OF CORNEAL PRESERVATION

1. Short-term storage: upto 48 hours
   - The whole globe is preserved at 4 degrees Celsius
2. Intermediate storage: upto 2 weeks
   - Stored McCarey Kaufmann medium and various Chondroitin Sulphate enriched media.
3. Long term storage: upto 35 days
   - By organ culture method or cryopreservation at -70 degree Celsius.

SURGICAL TECHNIQUE OF PENETRATING KERATOPLASTY

1. Enucleation
2. Excision of donor corneal button
3. Excision of recipient corneal button
4. Suturing of corneal graft into host's bed

SURGICAL TECHNIQUE OF PENETRATING KERATOPLASTY

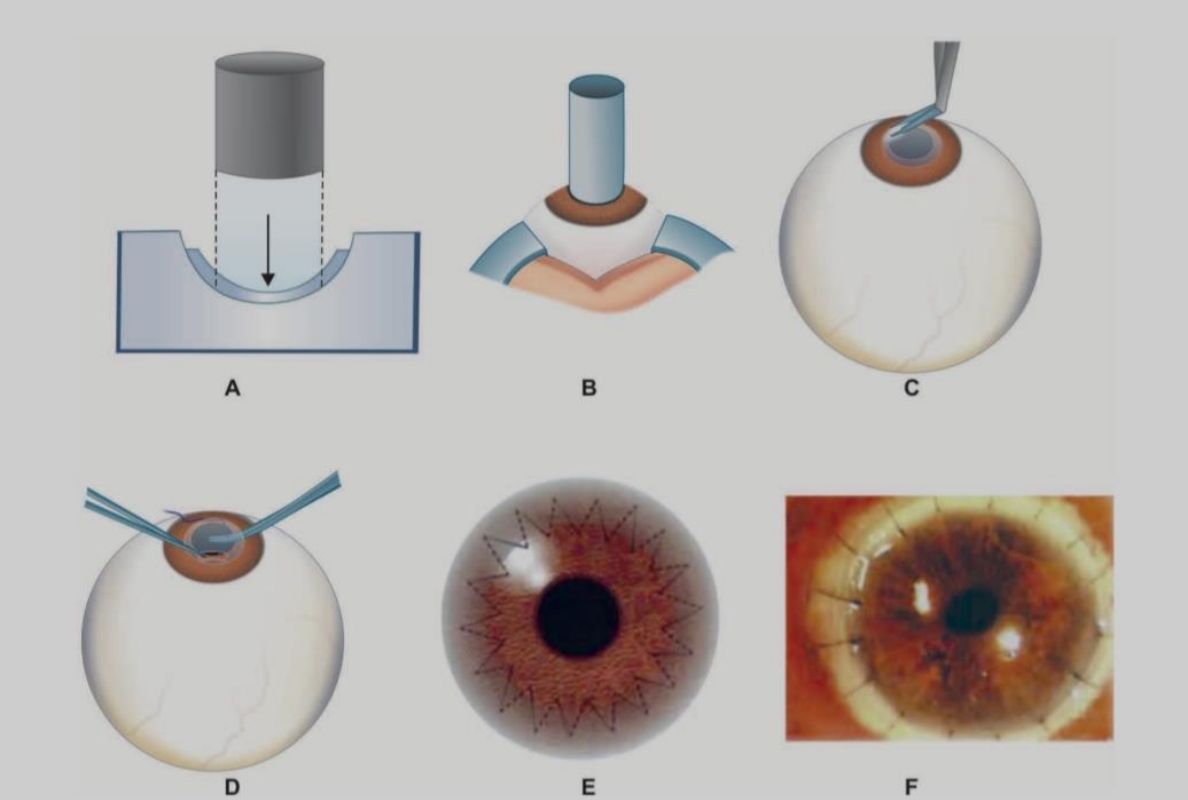

Fig. 6.35 *Technique of keratoplasty: A, Excision of donor corneal button; B & C, Excision of recipient corneal button; D, Suturing of donor button into recipient's bed; E, Showing pattern of continuous sutures in keratoplasty; F, Clinical photograph of a patient with interrupted sutures in keratoplasty*

COMPLICATIONS

- Early complications
  - Infection
  - Secondary glaucoma
  - Flat anterior chamber
  - Epithelial defects
  - Primary graft failure
- Late complications
  - Graft rejection
  - Recurrence of disease
  - Macular edema
  - Astigmatism

RISK FACTORS

- Younger age of recipient
- Previous graft failure
- Corneal vascularization
- Larger graft size

EYE BANKING

- EYE BANK IS AN ORGANISATION WHICH DEALS WITH THE COLLECTION,STORAGE AND DISTRIBUTION OF CORNEA FOR PURPOSE OF CORNEAL GRAFTING,RESEARCH AND SUPPLY OF THE EYE TISSUE FOR OTHER OPHTHALMIC PURPOSES.

FUNCTIONS OF AN EYE BANK

- PROMOTION OF EYE DONATION BY INCREASING AWARENESS TO THE GENERAL PUBLIC.
- REGISTRATION OF THE PLEDGER FOR EYE DONATION.
- COLLECTION OF THE DONATED EYES FROM THE DECEASED
- RECEIVING AND PROCESSING THE DONOR EYES

FUNCTIONS OF AN EYE BANK

- PRESERVATION OF THE TISSUE FOR SHORT,INTERMEDIATE,LONG OR VERY LONG TERM
- DISTIBUTION OF DONOR TISSUE TO CORNEAL SURGEONS
- RESEARCH ACTIVITIES FOR IMPROVEMENT OF THE PRESERVATION METHODOLOGY,CORNEAL SUBSTITE AND UTILISATION OF THE OTHER COMPONENTS OF THE EYE

EYE BANK PERSONNEL

1)EYE BANK INCHARGE

HE SHOULD BE A QUALIFIED OPHTHALMOLOGIST TO EVALUATE, PROCESS AND DISTRIBUTE THE DONOR TISSUE

EYE BANK PERSONNEL

2)EYE BANK TECHNICIAN

- TO KEEP THE EYE COLLECTION KITS READY
- TO ASSIST IN ENUCLEATION OF DONOR EYES
- TO RECORD DATA PERTAINING TO DONOR MATERIAL
- TO PROCESS AND TREAT THE DONOR EYES WITH ANTIBIOTICS
- TO ASSIST IN CORNEAL PRESERVATION AND STORAGE
- TO MAINTAIN ASEPSIS IN THE EYE BANK

EYE BANK PERSONNEL

3)CLERK-CUM- STOREKEEPER

- TO MAINTAIN THE METICULOUS RECORDS
- TO COORDINATE WITH OTHER EYE BANKS
- TO DISTRIBUTE CORNEA TO EYE SURGEONS/EYE BANKS

EYE BANK PERSONNEL

5)DRIVER-CUM-PROJECTIONIST

- TO MAINTAIN THE VEHICLE OF THE EYE BANK
- TO SCREEN FILMS OF EYE DONATION PROMOTION IN THE COMMUNITY

EYE COLLECTION CENTRES

- PERIPHERAL SATELLITES OF AN EYE BANK
- 4-5 COLLECTION CENTERS ARE ATTACHED WITH EACH EYE BANK

FUNCTIONS OF EYE COLLECTION CENTRE

- LOCAL PUBLICITY FOR EYE DONATION
- REGISTRATION OF VOLUNTARY DONORS
- ARRANGEMENT FOR COLLECTION OF EYES AFTER DEATH
- INITIAL PROCESSING,PACKING AND TRANSPORTATION OF COLLECTED EYE TO THE EYE BANK


THANK YOU