

# Keratoconus

## Clinical features –

- **Early-** asymptomatic, vision not improving with refraction, pain, redness and sudden diminution of vision with hydrops.
- O/E : Mild central or inferocentral thinning , Fleischer's ring, Vogts striae; superficial scarring, visible corneal nerves.
- Distorted window reflex, irregular mires on placido disc, scissor reflex , oil droplet reflex
- **Late stages:** Munson's sign, , Hydrops, dense central scarring with apical thinning.

# Keratoconus

- Bilateral (90%), asymmetric, non inflammatory corneal ectasia, incidence of 1 in 2000,
- Most commonly as isolated disease, 6-8 % have positive family history.
- Starts in the teens and progresses till 30- 40s.

## Pathogenesis-

- Environmental factors – mechanical trauma in genetically predisposed individuals
- Stromal keratocyte apoptosis induced by damaged epithelial cells
- Biochemical – increased proteases and decreased protease inhibitors.

# Keratoconus

**Morphological classification-** according to size and shape

- a. Nipple cone – small < 5mm and steep curvature
- b. Oval cone – Large 5-6mm and ellipsoid shape
- c. Globus – very large >6mm

**Complications-** Accute Hydrops

**Associations**

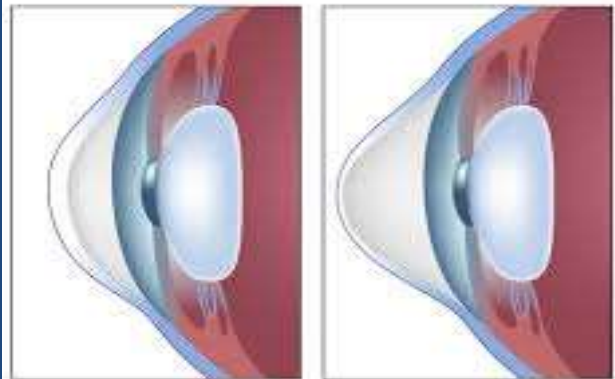
- Ocular like ectopia lentis, cong cataract, aniridia, RP, VKC

# Keratoconus

- Systemic like Marfan, Down's, Ehlers Danlos , Osteogenesis imperfecta, MV prolapse and atopy.

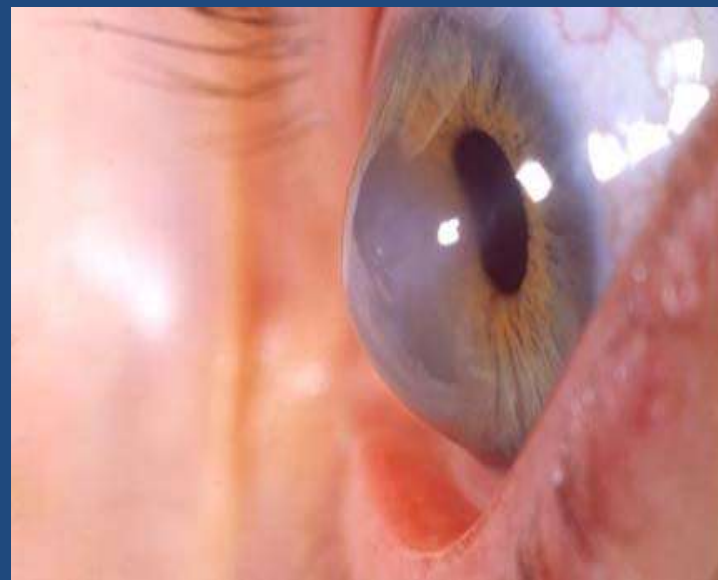
## Diagnosis

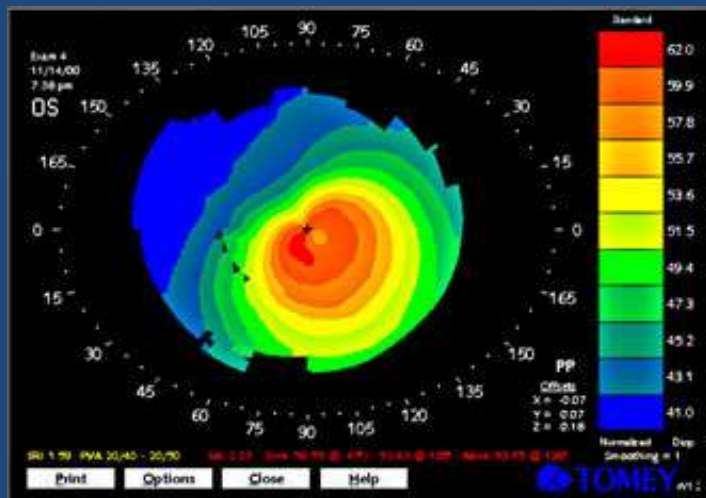
- Keratometry
- Corneal topography with orbscan, VKG or Pentacam



Normal

Keratoconus





# Management options

Early stage – glasses, soft toric CL.

- RGP lenses –large diameter RGP, aspheric , Soper lens, scleral CL, C3R

No central scarring

- Intacs
- Epikeratoplasty
- DALK

Superficial central scarring

- PTK with contact lens or Intacs

Central scarring

- Penetrating keratoplasty

# Corneal Degenerations

## Classification

### A. Depending upon location

#### I. AXIAL

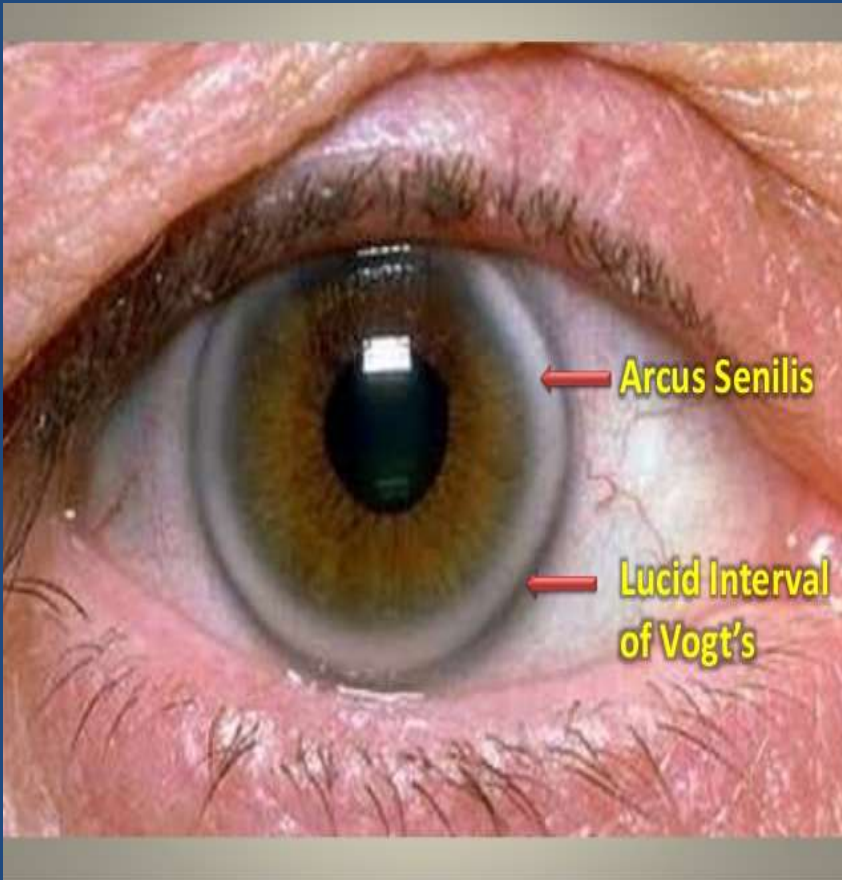
- a) Fatty degeneration
- b) Hyaline degeneration
- c) Amyloidosis
- d) Calcific degeneration  
(Band keratopathy)
- e) Salzmann nodular  
degeneration.

#### II. Peripheral

- a) Arcus senilis
- b) Vogt's white limbal girdle
- c) Hassal- Henle bodies
- d) Terrien's marginal degener
- e) Mooren's ulcer
- f) Pellucid marginal degenera
- g) Furrow degeneration

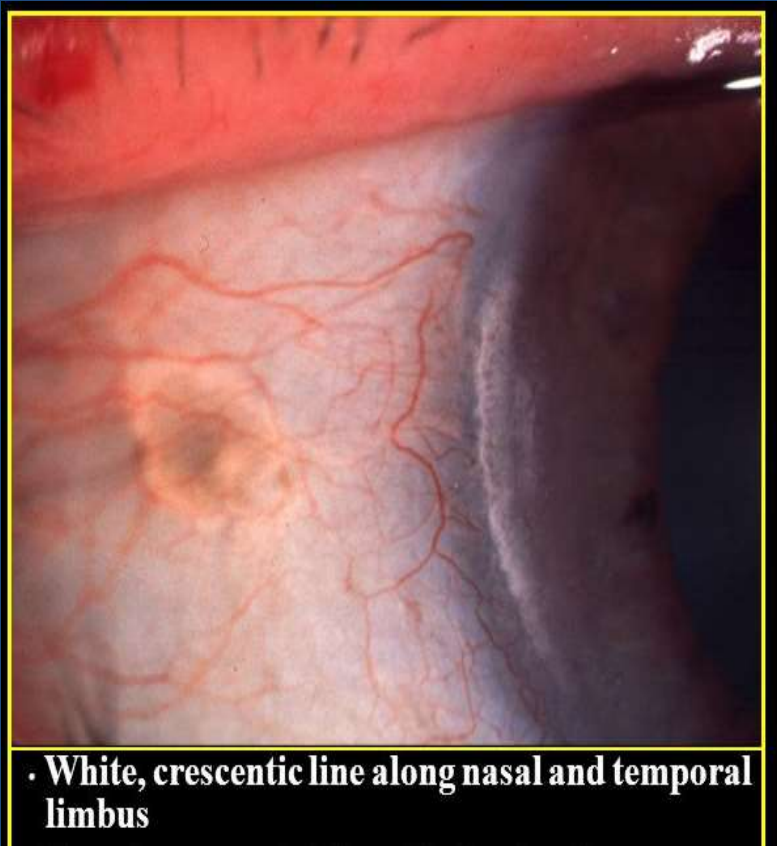


# Arcus senilis



- Age related, 60% patients 40- 60 yrs age
- Starts superior and encircle to form 1mm ring
- Separated from limbus by lucid interval of vogt
- If < 40yrs then juvenilis and req lipid profile

# Vogt's white limbal Girdle

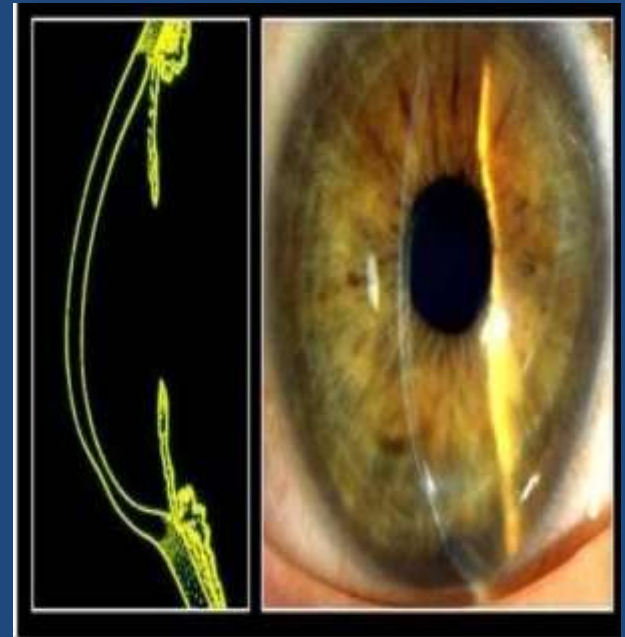


• White, crescentic line along nasal and temporal limbus

- Age related, bilateral chalky white opacity in interpalpebral area both nasally and temporal.
- There may or may not be a lucid interval
- It is at the level of Bowman's membrane

## ● PELLUCID MARGINAL DEGENERATION

- Bilateral disorder of unknown etiology
- Affects both sexes equally and seen in 20-40 yrs age
- Arcuate area of thinning in the inferior peripheral cornea in the absence of inflammation
- The area of thinning is 1-2 mm in width
- Separated from inferior limbus by 1-2 mm of normal thickness cornea.
- Cornea above the thinned area is normal in thickness and protrudes downwards - irregular astigmatism
- Believed to be a variant of Keratoconus



# Band shape keratopathy

- Deposition of calcium salt in Bowman's and supf stroma and deep epithelium
- Chronic uveitis, still's ds, Phthisis bulbi, chronic glaucoma and keratitis and ocular trauma.

## Clinical features

- Band shaped opacity in the interpalpebral area with interval b/w end and limbus
- Starts at periphery toward centre. Located beneath epithelium

# Band shaped keratopathy



## Treatment

- Chelation- 0.01 M sol of EDTA(ethylene diamine tetra acetic acid)
- PTK
- Keratoplasty

EPITHELIAL  
AND  
BOWMANS

STROMAL

ENDOTHELIALIK

MAP-DOT-FINGER PRINT  
DYSTROPHY

GRANULAR DYSTROPHY

CHED

MEESMANS DYSTROPHY

LATTICE DYSTROPHY

FUCHS DYSTROPHY

REIS BUCKLERS DYSTROPHY

GRANULAR DYSTROPHY

POSTERIOR POLYMORPHIC DYS

GELATINOUS DROP DYSTROPHY IRIDOCORNEAL ENDOTHELIAL SYNDROME

CRYSTALLINE DYSTROPHY

KERATOCONUS

# Keratoplasty

- Keratoplasty also called as corneal grafting or transplantation.

## Types –

- Penetrating or full thickness
- Lamellar or partial thickness

## Indications :

- Optical
- Therapeutic
- tectonic
- cosmetic

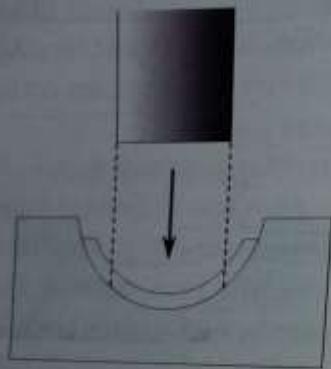
# keratoplasty

- Donor tissue is removed within 6hrs and graded for quality before preservation
- Various methods are moist chamber, MK medium, optiosl and organ culture media for long term storage.

## Surgical technique:

- Excision of donor corneal button with trephine
- Excision of host cornea with trephine
- Suturing of graft with 10/0 nylon sutures





A



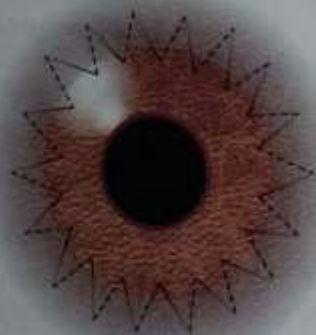
B



C



D



# keratoplasty

## Complications

- Early – flat AC, iris prolapse, infection, second glaucoma, primary graft failure.
- Late- graft rejection and infection, astigmatism

- FOR CLARIFICATIONS CONTACT DR. SANJAY KAI ON 1<sup>ST</sup> DEC. IN SEMINAR ROOM OF EYE DEPTT BETWEEN 1 TO 2 PM.