

## Lens & Cataract

### → Lens :

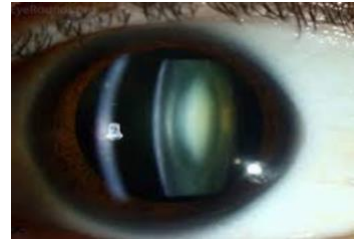
- Derived from ectoderm, avascular, highly elastic; but it hardens with age.
- **Lens Capsule -> Lens Epithelium -> Differentiating Lens Fibers -> Mature Lens Fibers**
  - > Lense capsule : thick, homogeneous external lamina (proteoglycans, collagen 4) -> protection & attachment for zonules.
  - > Lens epithelium : cuboid cells , only in the ant. surface
  - > Differentiating Lens Fibers : greatly elongated, cytoplasm filled with crystalline, have nuclei.
  - > Mature Lens Fibers: No nuclei , densely packed -> **unique Transparent structure.**

### → Cataract :

- MCC of treatable blindness.
- Opacification of the lens -> cloudy lens -> scatters light -> hazy image.
- Types of cataract :

#### 1) **Nuclear Cataract :**

- MC type ... in the central part
- Due to condensation & deposition of brown pigment.
- Present with a shift to near sightedness



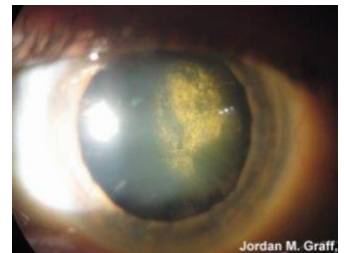
#### 2) **Cortical cataract :**

- In the lens cortex
- Due to changes in the water content of the periphery of the lens causes fissuring.
- Present with glare and light scattering at night.



#### 3) **Posterior subcapsular cataract :**

- At back of the lens adjacent to the capsule
- Present with disproportionate symptoms for their size
- Steroid induced

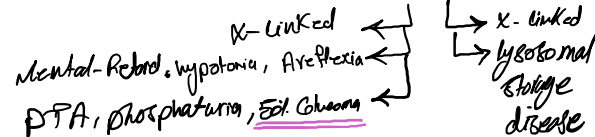


### - Others :

- Immature cataract : Has Some transparent protein content.
- Congenital Cataract: lamellar, polar sutural

### - Causes :

- Age -> MCC , cumulative exposure of environmental Fx , smoking , UV-B , blood sugar
- Ocular causes -> Trauma, Uveitis, High myopia, Topical medications/ steroid, tumors
- Systemic -> DM, steroid, infx , Myotonic dystrophy, A. dermatitis, Down's, Lowe's, Fabry



- Symptoms :
  - loss vision, Glare, Change in refractive error
  - Amlyopia -> failure of maturation
  
- Signs :
  - Decreased visual acuity
  - Black spot -> against the red reflex
  - Leukocoria -> R/O other causes .. congenital or **Retinoblastoma!!** ,
  
- Treatment : surgical ✓ if it's reducing the QOL or bilateral, by topical , LA & GA
  - **Phacoemulsification** -> smaller incision, Sutureless  
 2 Corneal Incision -> Capsulorhexis -> Phacoemulsification : break it up by U/S waves then suck it -> Irrigation and Aspiration -> Lens insertion-> salt water to seal the incision.  
↳ by salt to prevent collapse of Ant. Chamber      ↳ + Abx
  - **Extra Capsular Cataract Extraction (ECCE)** -> remove the lens, but leaving the capsule
    - Manual small incision cataract surgery (MSICS), through a self-sealing scleral tunnel wound in the sclera which, ideally, is watertight and does not require suturing
  - **Intra Capsular Cataract Extraction (ICCE)** -> lens & capsule are removed, high rate of complications
  
- Complications :
  1. **Vitreous loss** -> **vitrectomy** at operation time and delay of IOL
  2. **Iris prolapse**: immediately post-op. -> **surgical repair**
  3. **Endophthalmitis** -> serious but rare infective .. S. Aureus , Pseudomonas sp.
    - ➔ **painful red eye, reduced visual acuity, hypopyon**
    - ➔ Tx: emergency; **intravitreal broad spectrum Abx**
  4. Postoperative corneal astigmatism by tight sutures
  5. Macular **edema** -> topical **NSAIDs** and **steroids**
  6. Retinal detachment
  7. **Opacification** of the posterior capsule / 20% of pt, residual epithelium forms a scar —> Tx: **out-pt; ndYAG laser**