Keratoconus (conical cornea)

- A noninflammatory, bilateral (85%), progressive thinning, protrusion of the central cornea with an incidence of 0.5% of population with female = to male ratio and age of onset: 9-21 (puberty), on average it progresses for 7-8 yrs then remains stable, but progression can be rapid, gradual or intermittent
- Associations—Systemic disorders (Down, Turner, Ehlers-Danlos, Marfan syndromes, atopy, osteogenesis imperfecta and mitral valve prolapse: Ocular (vernal, RP, blue sclera, anirida, ectopia lentis- many more syndromes)

Symptoms/Signs

- Decreased V.A., photophobia, glare, monocular diplopia, or ghost images
- Signs– cone can be nipple, sagging, oval, globus cones
- Frequent need for Rx changes, progressive irregular myopic astigmatism, Munson’s sign (bulging of lower lid), Vogt striae (fine, vertical-picket fence), increase visibility of corneal nerves, Fleischer’s ring, thinned apex, anterior scarring, hydrops and decreased corneal sensitivity
- Etiology: Unknown; several theories-dystrophy, allergies, rubbing eyes, developmental, nutritional
- Work-up
  - Refraction, ophthalmoscopy (oil droplet reflex), retinoscopy (scissor reflex), keratometry, Placido’s disc or keratoscopes, corneal maps, Pachometry, improve VAs with RGP-CL
- Management—Spectacles early cases, PMMA, rigid gas permeable lenses (aspheric), soft contact lenses, piggy back lenses, softperm lens, thermokeratoplasty, and keratoplasty (85% success)
- Rule out other corneal thinning disorders –marginal furrow, pellucid, Terrien’s
Acute Hydrops

- Results from ruptured in Descemet membrane and acute leakage of aqueus into the stroma and epithelium
- Sudden drop in VA, discomfort & tearing
- Usually heals in 6-10 weeks with variable amounts of scarring
- Acute treatment: hypertonic saline, bandage soft contact lenses, antibiotic drops
- Keratoplasty deferred until edema clears
**Dellen**
- Shallow, saucer-like depression at corneal periphery, non-wetting area adjacent to corneal or conjunctiva elevation
- Corneal thinning usually at the limbus, often in the shape of an ellipse, accompanied by an adjacent focal conjunctival or corneal elevation
- Poor spread of the tear film over a focal area of cornea (with resultant stromal dehydration) due to an adjacent surface elevation for example: pinguecula, conjunctival chemosis, subconjunctival hemorrhage, CL, nevus, tumor, pterygium, filtering bleb form glaucoma surgery

**Treatment**
- Patching, artificial tears, gels, lubricant ointments, antibiotic

**Superficial Keratitis and Location of Fluorescein and Rose Bengal Stain**
- Punctate Epithelial Erosions (PEE)—tiny, slightly depressed, g/w spots that stain with NaFl
- Punctate or Focal Epithelial Keratitis (PEK)—hallmark of viral, g/w spots, may stain better with rose bengal stain
- Superficial Punctate Keratitis
- Punctate subepithelial infiltrates
- Epithelial filaments or filamentary keratitis—mucous threads attached to the epithelium, comma shaped

**Location**
- **Lower two-thirds-causes**
  - Blepharitis
  - Exposure
  - Acne rosacea
  - K.C.S.
  - Neurotrophic
  - U.V. exposure
  - Erosion
  - Trichiasis/random
**• Upper third-causes**

- Trachoma
- Inclusion conjunctivitis
- Superior limbic keratoconjunctivitis
- Vernal Catarrh
- FB (under eyelid)

**• Central or diffuse-causes**

- EKC/PCF
- Herpes (may be marginal)
- Superficial punctate keratitis
- Drug toxicity or allergy
- Bacterial
- Atopic keratitis

**• Limbal-causes**

- Marginal infiltrates and ulcers
- Phlyctenular keratoconjunctivitis