Advanced Anterior Segment Problems: From Familiar to Foreign

CATHERINE REPPA, MD
CORNEA SPECIALIST, ASSISTANT PROFESSOR
TTUHSC DEPARTMENT OF OPHTHALMOLOGY AND VISUAL SCIENCES CENTER

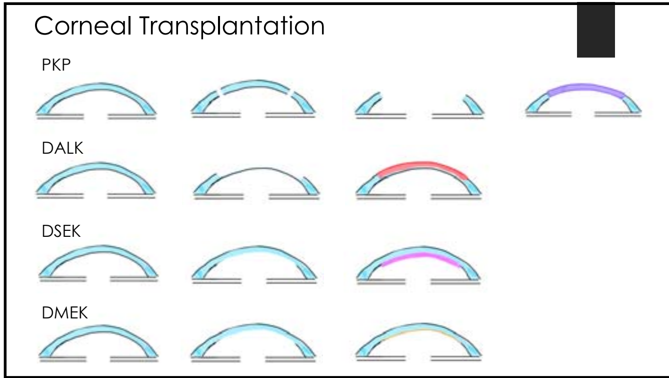
- I developed the course material and information and information independently
- I have no relevant financial disclosures
- I will be discussing off label use of some medications and devices.

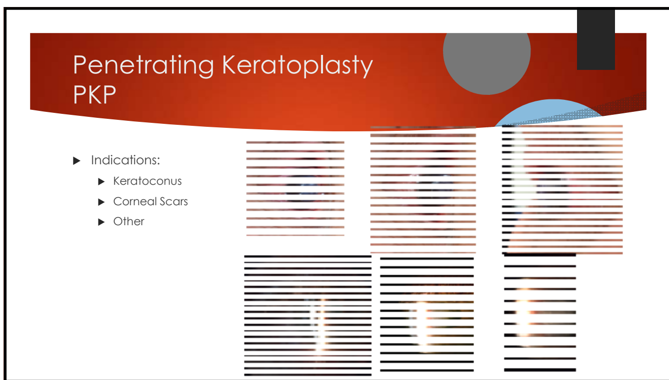
Structure of the Anterior Segment

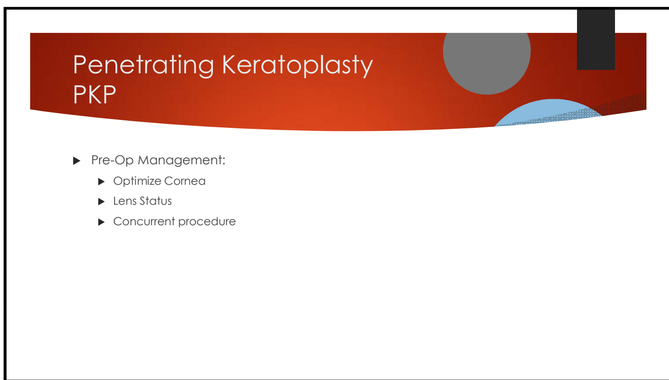
- Cornea
- Iris
- Ciliary Body
- Lens
- Anterior Chamber
- Posterior Chamber

The Anterior Segment

rectus muscle
posterior chamber
anterior chamber
ciliary body
suspensory ligament
cornea
lens
aqueous humour
iris

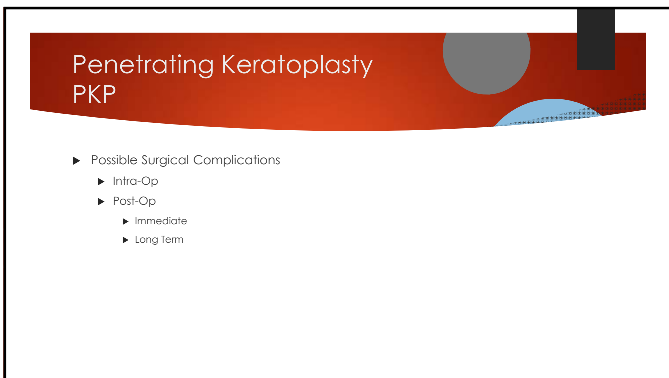

Corneal Transplantation
PKP
DALK
DSEK
DMEK


Penetrating Keratoplasty
PKP
Indications:
Keratoconus
Corneal Scars
Other


Penetrating Keratoplasty
PKP
Pre-Op Management:
Optimize Cornea
Lens Status
Concurrent procedure

Surgical steps and techniques: PKP

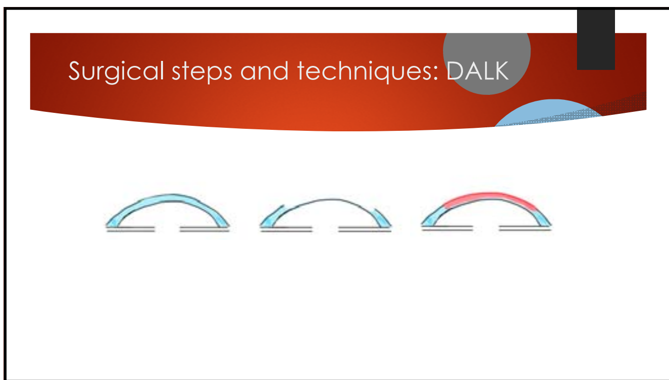
Penetrating Keratoplasty
PKP
Post-Op Management
Medications
Suture Removal
Refraction
Glasses
Contact Lens


Penetrating Keratoplasty
PKP
Possible Surgical Complications
Intra-Op
Post-Op
Immediate
Long Term

Deep Anterior Lamellar Keratoplasty DALK

- Indications:
  - Similar to PKP, except no endothelial compromise
  - Scars (not full thickness)
  - Keratoconus (without hydrops or full thickness scar)
- Pre-Op Management:
  - Similar to PKP
  - Consideration for concurrent procedure

Surgical steps and techniques: DALK



Deep Anterior Lamellar Keratoplasty DALK

- Post-Op Management:
  - Similar to PKP
- Possible Surgical Complications
  - Similar to PKP
  - No endothelial rejection

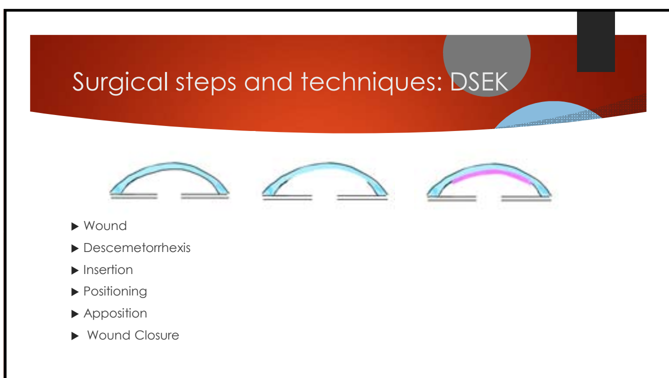
Descemet's Stripping Endothelial Keratoplasty DSEK

- Indications:
  - Fuch's Endothelial Dystrophy
  - Bullous Keratopathy
  - Other Endothelial loss/injury

Descemet's Stripping Endothelial Keratoplasty DSEK

- Pre-Op Management:
  - Lamellar vs Full Thickness
    - Scar
    - History of prior surgery/ hardware
    - Visibility
  - Discussion of Post-op requirements
  - Optimize Cornea
  - Concurrent Procedure

Surgical steps and techniques: DSEK



- Wound
- Descemetorrhexis
- Insertion
- Positioning
- Apposition
- Wound Closure

Descemet's Stripping Endothelial Keratoplasty DSEK

- Post-Op Management
  - Positioning
  - Medications
  - Re-bubble
  - Refraction

Descemet's Stripping Endothelial Keratoplasty DSEK

- Possible Surgical Complications
  - Intra-Op
  - Post-Op
    - Immediate
    - Long Term

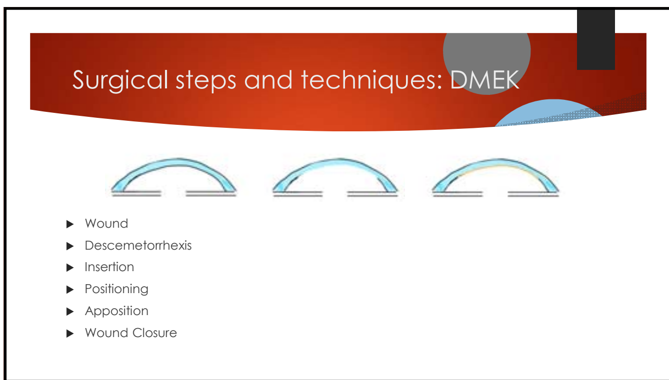
Descemet's Membrane Endothelial Keratoplasty DMEK

- Indications:
  - Fuch's Endothelial Dystrophy
  - Bullous Keratopathy

Descemet's Membrane Endothelial Keratoplasty DMEK

- Pre-Op Management:
  - DMEK vs DSEK vs Full Thickness
    - Scar
    - History of prior surgery/ hardware
    - Lens Status
    - Visibility
  - Discussion of Post-op requirements
  - Optimize Cornea
  - Concurrent Procedure
  - LPI

Surgical steps and techniques: DMEK



- Wound
- Descemetorrhexis
- Insertion
- Positioning
- Apposition
- Wound Closure

Descemet's Membrane Endothelial Keratoplasty DMEK

- Post-Op Management
  - Positioning
  - Medications
  - Re-bubble
  - Refraction

Descemet's Membrane Endothelial Keratoplasty DMEK

- Possible Surgical Complications
  - Intra-Op
  - Post-Op
    - Immediate
    - Long Term

Corneal Transplantation

PKP DALK DSEK DMEK

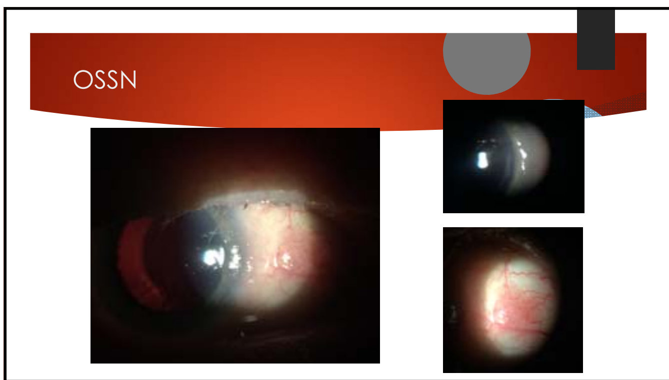
OSSN: Case Presentation

- CC: Growing lesion OS
- HPI: 80 yo white man
  - h/o left cheek BCC s/p MOHS
  - Farmer
  - Growth OS for over 1 year
  - Intermittent eye redness
  - No pain
  - Vision unchanged
- POH: POAG OU
  - Latanoprost qhs, brimonidine BID
  - Denies trauma/surgery
- PMH: COPD, BCC
- Social: previous tobacco use; farmer
- Family: no known h/o skin malignancy

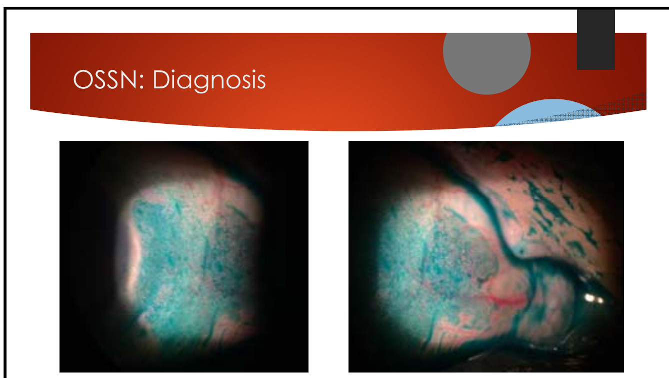
OSSN

- 20/30 VA OU
- Pertinent External exam: scar on cheek
- SLE/ DFE OD normal except mild MGD, cataract, and cupping.

OSSN



OSSN: Diagnosis



OSSN: CIN

Yanoff M, Fine BS: Ocular Pathology, 5th ed, St Louis, Mosby, 2002.

OSSN: Differential Diagnosis

- Neoplastic
  - CIN
  - SCC
  - Keratoacanthoma
  - Conjunctival lymphoma
  - Melanoma
- Inflammatory
  - Nodular scleritis
  - Phlyctenulosis
- Other Benign lesions
  - Pterygium
  - Pannus
  - Nevus
  - Pyogenic granuloma
  - Conjunctival inclusion cyst

OSSN: Medical Management

- Observation
- Fluorouracil (5-FU)
- Mitomycin C (MMC)
- Interferon α2b (IFNα2b)
- Side Effects
- Cost
- Adjuvant vs Primary

OSSN: Surgical Management

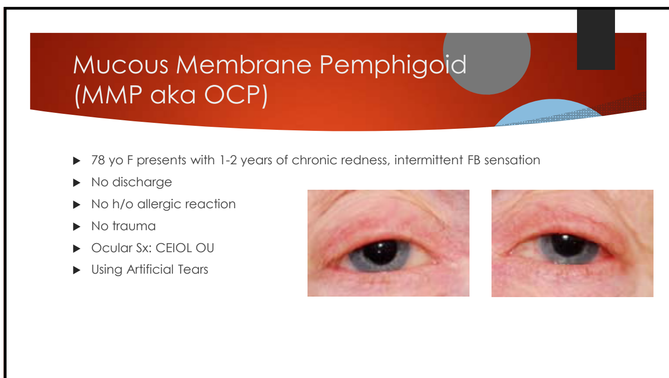
- Indications for Surgery:
  - Biopsy
  - Primary Treatment
  - Post pre treatment with medication
- Steps and Techniques:
  - No Touch Technique
    - Excise lesion with 4mm margins
    - Cryo edges of conjunctiva
    - Consider topical agent on cornea/scleral bed
    - Closure
      - Leave bare
      - Simple Closure
      - Amniotic membrane

OSSN: Post- Op Treatment

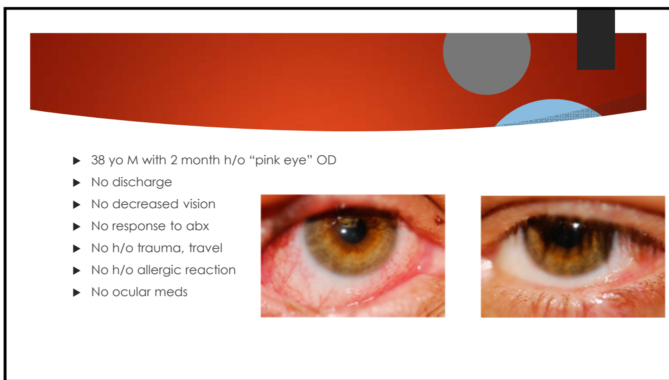
- Consider adjuvant medications
- Monitor
  - Healing
  - Recurrence
- Possible Complications
  - Immediate
    - Poor wound healing
    - Incomplete excision
  - Long Term
    - Limbal stem cell loss
    - Recurrence

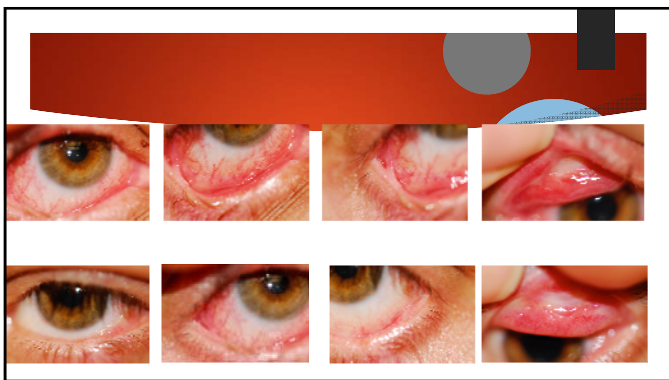
Mucous Membrane Pemphigoid (MMP aka OCP)

- 78 yo F presents with 1-2 years of chronic redness, intermittent FB sensation
- No discharge
- No h/o allergic reaction
- No trauma
- Ocular Sx: CEIOL OU
- Using Artificial Tears



Mucous Membrane Pemphigoid
(MMP aka OCP)


38 yo M with 2 month h/o "pink eye" OD
No discharge
No decreased vision
No response to abx
No h/o trauma, travel
No h/o allergic reaction
No ocular meds



Mucous Membrane Pemphigoid: Diagnosis and Differential

- Clinical Findings
  - Inflammation
  - Forniceal scarring
  - Symblepharon
  - Trichiasis
  - Corneal break-down/melt
- Biopsy
- Differential
  - Prior Conjunctivitis with scarring
  - SJS
  - Medication toxicity
  - Surgical Scarring
  - Burns/Chemical Exposure
  - Trachoma

Mucous Membrane Pemphigoid: Treatment

- Medical Management
  - Key to controlling disease
  - Available agents:
    - Dapsone
    - Methotrexate
    - Other Immunosuppresants
- Surgical Considerations
  - Timing
  - Lid procedures
  - Epilation

Mucous Membrane Pemphigoid: Complications

- Acute
  - Irritation
  - Dry Eye
- Intermediate
  - Scarring
  - Trichiasis
- Chronic
  - Symblepharon
  - Poor Healing/ loss of limbal stem cells
  - Melt
  - Infection
  - Perforation
  - Blindness

Acanthamoeba

- CC: Painful Corneal Ulcer, Right eye
- HPI: 64 yo WM Contact Lens wearer presents after 15 days of pain, redness blurry vision, OD. Treated at outside Ophthalmologist for bacterial and herpetic ulcer, OD
  - No h/o hot tubs, fresh water exposure
  - No trauma
  - CL wear daily; No swimming or sleeping in lenses
  - Currently on zirgan 5/D, Valtrex 1g TID
  - Off Abx x 5 days

Acanthamoeba

- Exam:
  - Va: OD(sc): CF OS(cc CTL): 20/30
  - Pupils: no view OD; no APD
  - IOP: OD: 8
  - HVF: Full OU
  - EOM: Full OU

Acanthamoeba

- SLE OD:
  - SC: 3+ injection, discharge
  - K: 5.5x 5.5 ring infiltrate with central edema, +radial perineuritis
  - AC: no hypopyon

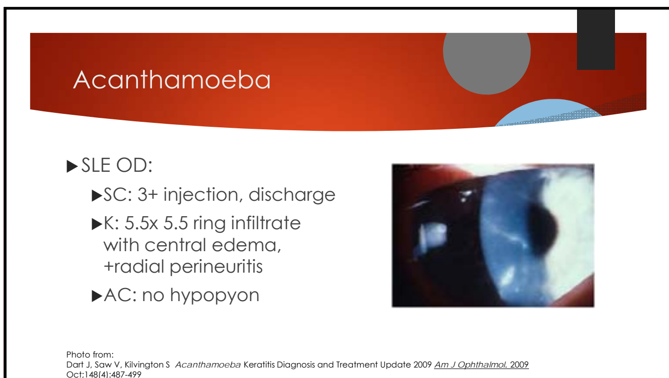
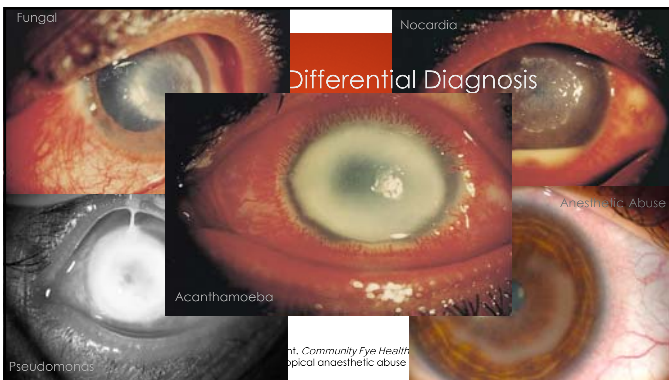


Photo from:
Dart J, Saw V, Kilvington S *Acanthamoeba* Keratitis Diagnosis and Treatment Update 2009 *Am J Ophthalmol.* 2009 Oct;148(4):487-499

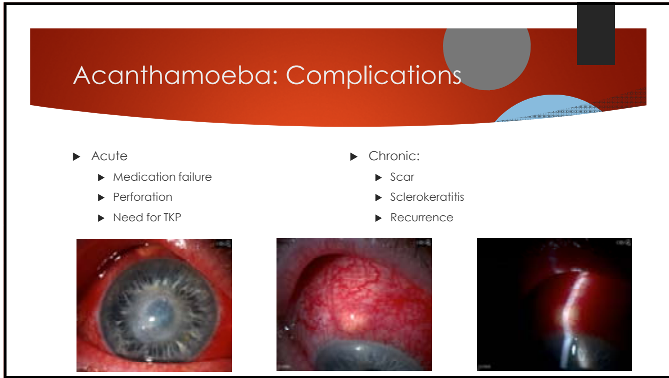
Acanthamoeba: Diagnosis

- Symptoms
- Clinical Findings
- Diagnostics
  - Culture
  - Confocal



Acanthamoeba: Treatment

- Medical Management
  - Chlorhexadine
  - PHMB
  - Brolene
  - Oral Azoles
  - Other
  - Long course required
- Surgical Considerations:
  - Biopsy
  - Corneal Transplant



Questions?