External Disease Questions

1. Picture keratoacanthoma
   - Form of pseudoepitheliomatous hyperplasia
   - Ddx includes **umbilicated lesions**
     1) molluscum
     2) basal cell carcinoma
     3) keratoacanthoma
     4) SCC
     5) sebaceous hyperplasia and trichofolliculoma
   - dome shaped nodule with keratin plug
   - rapid progression over 6-8 weeks and then may regress
   - can grow large
   - can cause permanent damage to lid margin so you must excise all of them
   - the other lesions are covered in other section

2. Molluscum conagiosum
   - viral infection common in children
   - caused by pox virus (DNA)
   - if multiple think HIV or immunosuppressed
   - may cause chronic and acute follicular conjunctivitis
   - treat by currette, excise and cryo
   - pathology shows Henderson Patterson bodies

3. Stromal dystrophies with discussion of recurrence
   - granular>hyaline>MT AD
   - clear intervening spaces and periphery spared
   - treat with PTK if superficial and PKP if deep

   - lattice>amyloid>congo red and crystal violet AD
   - painful recurrent erosions and scarring
   - three types (1: classic, 2: Meretija systemic neuropathies, 3: AR in Japenese)

   - macular>MPS>alcian blue (keratin sulfate) AR
   - two types

   - need for graft macular>lattice>granular
   - recurrence lattice>macular>granular

4. Shown Munson's sign: Dx keratoconus
   - ➢ usually sporadic but can be family history
   - ➢ Ddx keratoconus, pellucid, keratoglobus
   - ➢ keratoconus
     - assoc: atopy, Down's, LCA, EDS
     - early signs: irregular water drop reflex, inferior steepening, Vogt's striae, Fleicher ring
     - late: Munson's, scarring, breaks in Bowman's hydrops
     - path: #Bowman's, stromal thinning, scarring and iron
     - tx: 1. RGPCL (flat vs vault) 2. PKP
     - tx hydrops: 1. Cyclo 2. Hypertonic saline 3. No surgery
   - ➢ pellucid marginal degenerartion
     - protrusion above thin point
     - irregular against the rule astigmatism on topography
     - tx: 1. RGP 2. Large PKP
   - ➢ keratoglobus
     - assoc with Ehlers-Danlos and LCA
     - thinning in mid periphery
     - do **TECTONIC GRAFT FIRST as PKP does poorly**

5. Shown papillary conjunctivitis (giant)
   - ➢ ddx

DDx of giant papillae: (>1 mm in size)
1) **v**ernal
2) **a**topic KC
3) **C**L wearer
4) **p**rosthesis
5) **s**uture
6) **e**xtruded scleral buckle
Other: (smaller): SLK, trachoma

   - ➢ vernal
     - seasonal
     - boys>girls
     - type 1 and 4 hypersensitivity
     - cobblestones, limbal follicles, Horner-Trantas dots
     - SPK, sheild, pannus
   - ➢ atopy
     - type 1 hypersensitivity and depressed immunity
     - PERENNIAL and hx atopy
     - more cataracts
   - ➢ treatment

Treatment - vernal KC and atopic KC
1) cool compresses
2) topical antihistamines (Livostin) or
antihistamine + vasoconstr. (Vasocon A)
3) topical mast cell stabilizer (Alomide - lodoxamide)
4) topical NSAIDs (Acular - ketorolac)
5) air conditioning
6) topical steroids (high dose with rapid taper)
7) topical cyclosporin 2% (in olive oil)
8) move to cool climate in severe cases
9) CL for shield ulcer
10) don't excise papillae ! - useless

Treatment - contact lens GPC
1) Improve lens hygene (protein removal, disinfection with hydrogen peroxide)
2) replace lenses
3) change from extended wear to soft CL
4) refit lenses
5) short course topical steroids
6) mast cell stabilizer (Alomide)
7) change to gas permeable
8) D/C lenses (last resort) permanently

6. Opacified cornea with intense redness

Prognostic factors for chemical burns
1) size of epithelial defect
2) corneal stromal haze
3) limbal ischemia

Treatment for alkali burn acutely (treat ulceration)
A) Mild
1) copious irrigation until pH neutral (up to 24 hours) - after anesthetic *litmus or urine chemstrip)
2) **double evert lid to make sure no particles present**
3) cycloplegics (atropine)
4) topical antibiotics
5) pressure patch between drops

B) moderate to severe (add these steps)
1) oral Diamox for IOP (to reduce topical toxicity)
2) intense topical steroids (QID to Q3h) for 7 days then taper; can use topical medroxyprogesterone afterwards
3) 2g Vit C po per day
4) tetracycline po (binds calcium to interfere with PMN function) - or citrate?
5) topical Mucomyst QID (inhibits collagenase)
6) consider CL glued to denuded stroma
7) glass rod with antibiotic ointment BID to prevent symblephera (scleral shell if insufficient)

8) if very severe burn may consider AC tap for 0.1 to 0.2 ml then reform with sterile BSS

To heal epithelium in alkali burn (days to weeks after)
intensive lubrication (non-preserved)
tissue glue
bandage contact lens (after 2 weeks if epith. not healed; use for 1 month after epithelium is healed)
autologous conj transplant
tarsorraphy
conj. flap (last step)
PKP (12-18 months after)

- explain use of citrate, acetylcysteine, vit C

1) N-Acetylcysteine (Mucomyst) - comes as 20%; can be diluted to 10%
- unstable
- chelates divalent ions and breaks disulfide bonds
- collagenases appear 1 week post-trauma and sterile ulcers appear 2-3 weeks post-trauma if epithelium not healed
- Dose: Q2H post trauma (start at 1 week post-trauma?) to block action of collagenases

2) Ascorbate (Vit C)
a) topical (10%): q2hr x 1 week post alkali burn, then QID until epithelium healed
b) oral: 8 g Qday (2g QID)
- an essential cofactor in the rate-limiting step of collagen formation (probably not a significant factor in burns)
- appears to be useful in reducing sterile stromal ulceration

3) Citrate (+/- EDTA?)
topical: 10% Q1H
oral: 2g po Q6H
- calcium chelator: decreases the membrane and intracellular levels of calcium
- impairs chemotaxis, phagocytosis, and release of lysosomal enzymes of PMN's
- inhibits the metalloprotease enzymes (including collagenase) of PMN's and injured keratocytes

- glaucoma is biphasic: initial IOP rise from collagen shrinkage and then later IOP rise from damaged TM and or PAS

7. Histopathology of LGT
   - Benign mixed
     - mixed epithelial and mesenchymal elements
     - double layer epithelium in epi ductules
     - outer spindle make myxoid, , cartilage and sometimes bone
   - Adenoid cystic
     - cribriform

- basaloid
- tubular
- sclerosing
- comedocarcarcinoma

➢ malignant mixed
- squamous acinar
- if BMT recur then over 30 years 20% will become MMT

➢ adenocarcinoma looks like you guessed it adenocarcinoma

➢ mucoepidermoid
- paving stone squamous with goblet cells in there

8. Patient presents with red swollen mass below MCT
➢ dx dacryocystitis
➢ ddx: cellulitis preseptal, sinusitis, malignancy
➢ caused by: strep and staph most common.
➢ tx
(1) Do Not irrigate or probe
(2) warm compresses
(3) topical antibiotics
(4) oral keflex
(5) iv if severe more likely if child
(6) incise and drain pointed abscess
(7) delay DCR till later

9. Picture of graft with row of KP on endothelium surface
➢ three types of rejection
(8) endothelial
(1) common, 90% by 1 year
(2) VA, cells, KP, stromal edema
(3) hit with steroids and cyclo
(9) stromal
(1) subepithelial infiltrates
(2) steroids
(3) means endo rejection more likely
(10) epithelial
(1) epi defect
(2) steroids and antibiotics

2. Picture of Zoster
➢ **<u>Epidemiology</u>**

- Annual frequency in American population ~ 2-4%
- Annual attack rate rises with age: 3/1000 between 20 and 49
  10/1000 between 80 and 90
- V_1 involved in ~ 8-56% of cases.
- Ocular involvement in 50-71% of V_1 cases.
- Increasing number of patients who are immunocompromised.

- **Pathogenesis and Histopathology**

  Acute infection: Non granulomatous inflammation of iris, CB, choroid.

  Chronic infection: Giant cell reaction to Decemet's membrane.
  Granulomatous inflammation of the choroid with overlying retinal necrosis.
  Lymphocytic infiltrate of PCN, PCV.
  Perivasculitis.

- **Clinical Features**

Dermatome distribution
Signs & Symptoms

- Prodrome: generalized malaise, fever, H/A
- Skin: hyperesthesia, pain, burning
- Macular rash, vesicles, edema

Ocular Complications of HZO

LidsCanalicular Scarring
Entropion
Scarring
Cicatricial ectropion
Ptosis

Corneal
PEK (51%)
Pseudodendrites (51%)
Ant stromal infiltrates (41%)
Keratouveitis (34%)
Neurotrophic keratitis (25%)
Delayed mucous plaques (13%)
Exposure keratitis (11%)
Disciform keratitis (10%)

Conjunctivitis

Uveitis
Anterior (40%)
Sectoral iris atrophy
Diffuse

Secondary Glaucoma (12%)

Retinitis
ARN

Neuroophthalmic Involvement
Cranial nerve involvement
CVA, Arteritis

Postherpetic Neuralgia (9 to 20%)

Sclera
Scleritis
Episcleritis

Treatment

Antiviral Drugs

1. ***Oral Acyclovir 800mg x5/day for 7 days.***
   Greatest benefit (but not confined) within 72 hours.
   Faster resolution of rash, pain & viral shedding.
   Decrease in new lesions.
   Decreased incidence in episcleritis, keratitis & iritis.
   No effect on PHN.

2. ***Oral Famcyclovir 500mg TID for 7 days.***
   Faster resolution of rash, pain & viral shedding.
   Decrease in new lesions.
   Decreased incidence in episcleritis, keratitis & iritis.
   Significantly faster resolution of PHN.

3. ***Topical acyclovir***
   Efficacy not proven.

Steroids

1. ***Topical steroids***
Indicated for immune keratitis & iritis.

2. ***Systemic steroids***
Controversial.

Cimetidine

Cimetidine 300mg qid x 7 days
Relief of discomfort, edema, erythema.
Not proven.

Capsaicin

Zostrix apply cream 3-6x/day
Indicated for PHN.
2 to 6 weeks before effect.

Antidepressants

Amitriptyline, doxepin, imipramine, desipramine, nortriptyline +/-

perphenazine.

Surgery

1. Tarsorrhaphy for neurotrophic keratitis.
2. Cryotherapy for trichiasis.
3. Entropion/ectropion repair.
4. DCR + Jones tube for drainage obstruction.
5. Conj flap or tissue adhesive for corneal melting.
6. PKP limited role.

Treatment protocols:

a) HZO

3. Acyclovir 800mg x5/day for ten days if within 72hrs
4. Famvir is alternative better for PHN but prohibitively expensive
5. Steroids if stromal keratitis or uveitis do not have to worry about epithelial prophylaxis
6. Treat IOP as needed

b) PHN

1. Lidocaine cream 5%
1. Amitriptyline 12.5 to 25mg
2. Capsaicin cream (yea right)
3. Pain managment team referral (blocks and all that stuff)

V1

1. .Supratrochlear 2. Supraorbital	1. Communicating branch to CG 2. Long posterior 3. Posterior ethmoid 4. Anterior ethmoid 5. Infratrochlear	Lacrimal
Upper lid, forehead, Superior conj.	Ant & Pos ethmoid sinus Both lids, conj, sclera, Cornea, iris, choroid Tip of nose	Temporal upper lid

Primary Infection

Latent State

in CMI

Reactivation

Ganglionitis

Centripital spread down axon

Clinical manifestations of VZV

11. Typical dendrite

Etiology/Risks:

HSV is transmitted by direct contact of epidermis or mucous membranes with infectious secretions.
HSV1☞50 to 90% adults have Ab's against. Generally waist up.
HSV2☞80%pros, 25%adults. Waist down.

Critical symptoms:
Primary infection:

unilateral blepharokeratoconjunctivitis
Follicular conjunctivitis + LN
+/- membrane
Eyelid vesicles
2/3 keratitis
1/10 stromal keratitis & uveitis

Recurrent infection: (latent from nerve & cornea??)
1)) Blepharoconjunctivitis. No keratitis at times.
2) Dendritic & geographic keratitis. PEE☞dendrite☞geographic. "Central, bulbs, edge rose Bengal, pool fluor, subepi infiltrates, ghost dendrite, corneal hypesthesia". Lasts three weeks. Treat to prevent immunologic response!!!
3) Stromal keratitis and uveitis (occurs in 15% of pts with recurrent disease, correlation with number of recurrence & stromal disease).

A. Nonnecrotizing stromal keratitis
✌"Homogeneous translucent cellular infiltrate with stromal edema and ring infiltrate"
☺Generally no stromal vascularization
✹One type known as disciform keratitis, "disc shaped zone of corneal edema often without stromal inflammation"
✹Often KP's with iridocyclitis
B. Necrotizing stromal keratitis
✌"Single cheesy, white, necrotic infiltrates"
☹Often stromal vascularization
C. Anterior chamber rxn may be granulomatous ornon granulomatous. Diffuse KP's.
4) Elevated IOP caused by trabeculitis.

5) Iris atrophy

Histopathology:

Pathogenesis: Primary infection (pi) on area innervated by trigeminal nerve. Primary infection usually nonspecific URTI☞virus spreads to sensory nerve endings☞transport to cell bodies and resides there☞genome of virus into nucleus of neuron☞pi of any of three branches of V can result in si in any of branches (backdoor spread)!!!

Ddx: Dendritic lesions: VZV, EBV, healing epi defect, tyrosinemia, soft CL.

Diagnosis: In cases where diagnosis in question then you may either culture or antigen detection test (same sensitivity. You may also take a corneal biopsy which may show characteristic intranuclear bodies (Lipshultz).

Treatment: 1) **Blepharoconjunctivitis:** viropitic x5/day or vira ung x5/day or oral acyclovir

2) **Dendrite Keratitis**:

1. Self limited disease will resolve on own.
2. Epithelial debridement or impression cytology
3. Trifluridine (viroptic) 1% x8/day, 8-10 days, shown better for geographic ulcers then vidarabine
4. Vidarabine 3% ung x5/day, 8-10 days
5, Oral acyclovir 400mg x5/day

3) **Stromal keratitis non necrotizing**

1. If no epithelial disease then prophylaxis with either trifluridine or oral acyclovir.
2. Plus start high with PF 1% q 1-4 hours and taper with response. May need maintenance, lowest possible dose.

4) **Stromal keratitits necrotizing**

1. First in this case you have to work up like all corneal ulcer to secure the diagnosis
2. Difficult form to treat
3. Once dx secured then treat with topical trifluridine and oral acyclovir (numbers too small in HEDS but seems prudent)
4. Judicious use of seroids

4) **Complications**

Vortex epitheliopathy, recurrent erosions, trophic ulcers, corneal perforation, stromal scar, astigmatism, lipid keratopathy.

1. Trophic ulcers>patch>bandage CL>tarrsoraphy
2. Glue Decemetoceles or perfs in inflammed eye to buy time for graft. High graft failure with inflammed eye.
3. High steroids prior to surgery? To decrease vasc proir to graft.
4. 80% success if eye quiet 6 months prior to graft.
5. ??role of viroptic or acyclovir post graft

.

Pearls: Differ from Adeno by keratitis, vesicles, unilateral (usually).
Geographic risks are: strain of virus, immunosuppression

HEDS: Steroids help resolutiona and limit severity of non necriting stromal disease.

Oral acyclovir may help with uveitis.
Oral acyclovir does not help prevent non necrotizing after epithelial disease.
Oral acyclovir not effective for stromal keratitis.
Oral acyclovir does help prevent epithelial recurrence.

Meds used for HSV
Antivirals
A) Systemic
1) Acyclovir
- oral 200-800mg: 5x/day
- activated by herpes thymidine kinase
- Acyclovir triphosphate then competes for dGTP, and is incorporated onto growing viral DNA
- indication: HSV, ARN, PORN, BARN
- side effects: renal toxicity, dehydration, gastrointestinal distress and headache; rare: CNS toxicity

2) Famcyclovir (oral penciclovir)
- 250-750mg TID
- indication: HZV treatment (zoster)
- activity: HSV-1, HSV-2, HZV, and EBV
- side effects: none reported

B) Topical
1) Trifluridine (Viroptic)
- 1% drops: 9x/day
- pyrimidine
- viral thymidylate synthetase
- HSV treatment
- HSV-1, HSV-2, ±adenovirus
- side effects: toxicity, follicular conjunctivitis, pseudopemphigoid

2) Idoxyuridine (Herplex)
- 0.5% ointment: 5x/day
- pyrimidine
- viral DNA polymerases
- HSV treatment
- HSV-1, HSV-2
- side effects: toxicity, follicular conjunctivitis, pseudopemphigoid

3**) vidarabine (Ara A)**
- 3% ointment: 5x/day
- purine nucleoside
- viral DNA polymerase
- HSV treatment
- HSV-1, HSV-2, VZV CMV
- side effects: toxicity, follicular conjunctivitis, pseudopemphigoid

4) acyclovir (Zovirax)
- ointment 3%
- pyrimidine
- viral DNA polymerase
- HSV treatment
- HSV-1, HSV-2, VZV, EBV, ±CMV

- side effects: toxicity, follicular conjunctivitis, pseudopemphigoid

Variations and little tricks for questions:

2. Decreased corneal sensation; occurs in 80%
3. Use oral if topical can't be given
4. Catarct surgery planned. Wait for 6month disease free period and start acyclovir 24 pre-op and conitnue for 14 days post

12. Picture of inferior staining with filaments
    - **DDx of corneal filaments**
      "5P, 3S, 3 viruses"
      5 P
      1) post trauma
      2) ptosis
      3) patching
      4) post-op
      5) neuroParalytic (CN VII) (& neurotrophic(CN V)

      3 S
      1) SLK
      2) Sicca
      3) sick epithelium
         a) bullous keratopathy
         b) recurrent erosions
         c) meds toxicity

      3 viruses
      1) HSV
      2) HZV
      3) adenovirus

    - How does mucomist work for filaments
      N-Acetylcysteine (Mucomist) - comes as 20%; can be diluted to 10%
      - unstable
      - chelates divalent ions and breaks disulfide bonds
      - collagenases appear 1 week post-trauma and sterile ulcers appear 2-3 weeks post-trauma if epithelium not healed
      - Dose: Q2H post trauma (start at 1 week post-trauma?) to block action of collagenases

    - you must treat the underlying cause of the filaments before considering mucomist

    - Ddx of **Dry Eyes**
      (tear meniscus <1mm, TBUT <10sec)
      1. Idiopathic
      2. CVD (Sjoogren's, RA, SLE, WG)
      3. Scarring (Very L & C SAND CHIPS)
      4. Drugs (OC, H2 block, Beta block, Atr)

5. Lacrimal gland infiltrate (sarcoid, tumor)
6. Post radiation
7. Vitamen A
8. Blepharitis
9. Eyelid abnormality (exposure)
10. Nocturnal lagophthalmos

- tear film physiology
  - three layer
  - near epithelium is mucous produced by the holocrine goblet cells
  - middle layer aqueous made by eccrine accessory lacrimal glands of Wolfring and Krause (basal) and lacrimal gland for reflex tearing
  - Oil made by the apocrine glands of Moll make up up the most superficial layer
  - aqueous layer becomes diminished as you age
  - lysozyme becomes diminished with age

13. Picture of follicular conjunctivitis
    - Ddx

Ddx of acute follicular conjunctivitis
(< 4 weeks):

A) Viral
1) **A**denovirus
2) **H**SV
3) molluscum (Toxic)
4) verruca (HPV) (Toxic)
5) **E**nterovirus
6) **N**ewcastles' (birds; RNA virus)
7) EBV

B) **Chlamydia**
1) **I**nclusion - types D-K
2) trachoma - types A-C

C) **Toxic**
1) miotics
2) antivirals (IdU)
3) adrenergics
4) atropine
5) sulfas

D) **Bacterial** (chronic?)
1) **P**neumococcus ?
2) **M**oraxella
3) Burrelia Burgdoferi (Lyme)

DDx of chronic follicular conjunctivitis (> 4 weeks):
("MAPFITT")
A) **Viral** (Toxic)
1) **M**olluscum
2) verruca

B) **Chlamydia**
1) **I**nclusion
2) Trachoma

C) **Toxic**
1) same meds as acute

D) **Bacterial**
1) strep **P**neumococcus ?
2) Burrelia Burgdoferi (Lyme)

E) **Protozoal**
1) Phtyriasis Pubis (pubic lice)

F) **Neoplastic**
1) benign lymphoid **F**olliculosis (99%)
2) lymphoma (1%)
G) **Other**
1) **A**xenfeld
2) **T**hygeson (Merryl Thygeson's)
3) canaliculitis

- work up acute follicular conjunctivitis
  - (1) r/o meds and molluscum
  - (2) Giemsa stain & Pap? For inclusion
  - (3) culture viral and McCoy
  - (4) immunoflourescence antigen detection or ELISA for chlamydia
- treatment of inclusion conjunctivitis
  - (5) doxycycline 100mg BID
  - (6) TTC 500 mg QID
  - (7) pt pregnant or allergic then erythromycin 500 QID
  - (8) pt less then 7 years same as ©

- work up for chronic follicular conjunctivitis
  - (9) same as above
  - (10) do FTA-ABS (Parinauds)
  - (11) CXR PPD (Parinauds)
  - (12) Lowenstein Jenson
  - (13) Tularemia serology

(14) Biopsy

14. Questions about the relative strength of steroids

Generic Name	Trade Name	Potency	Dose	IOP _	Forms
Cortisol (standard)		1			natural
Dexamethasone	Decadron	40			gtt (0.1%), IV
Fluorometholone	FML	43			gtt (0.1%)
Hydrocortisone	Solucortef	0.8		20	IV/IM
Medroxyprogesterone	Medrysone				gtt (1%)
Methylprednisolone	Solumedrol	5			IV
Prednisolone	PredForte	4			gtt (1%)
Prednisone	Prednisone	4		5	po

- You should know that epithlium of cornea is lipophylic, stroma more hydrophiic and endothelium same as epithelium
- Cornea prefers biphasic compounds
- acetate is biphasic and phosphate is hydrophilic

15. Ptosis.

Question #1: What questions on history are important in the evaluation of ptosis?

Onset, duration, severity, variability, old photos.
Previous surgery.

Question #2: Key ocular signs to help differentiate causes of prosis?

Ipsilateral miosis: Horner's
Ipsilateral mydriasis: III
Skin crease: involutional
Dermatochalsis, entropion, hypotropia, contalateral retraction: pseudoptosis

Question #3: Key check list prior to surgery?

Schirmer's test
Preop photos
VF
Bell's
Hering's law
Levator function
Refraction in kids (WTRAstig)
Caution: dry eyes, poor Bell's, big pupil

Question #4: What is the differential diagnosis of ptosis.

A) neurogenic
1) Horner's
2) IIIrd nerve palsy
3) 3rd nerve misdirection
4) Marcus-Gunn

B) aponeurotic
1) involutional
2) post-op
3) blepharochalasis

C) Mechanical
I) scarring
II) excess weight
1) dermatochalasis
2) tumors
3) edema

D) myogenic
I) congenital
a) simple
b) blepharophimosis syndrome

II) myogenic
1) muscular dystrophy
2) oculopharyngeal dystrophy
3) CPEO
4) post botox

Neuromyopathic
1) myasthenia

Congenital	**Tx**
Myopathic (hypo common, 30% bilat)	Max Lev resec or FS
Blepharophimosis syndrome (AD, triad)	Staged
Marcus Gunn Jaw winking (III-V miscommunication)	Mild: LR, Severe: L diss & FS
III	

Acquired	
III	FS
Horner's	?Fasanella
MG	LR
CPEO	FS
Aporneurotic	LR
Mechanical	

Question #5: Grade LF and which procedure would you do based on results?

LF function	Amt.	Surg
Poor	<4	FS
Mod	4-7	Supramax LR
Good	8-15	LR

Question #6: Describe levator resection.

F) Ptosis

i) Fascinella-Servat
- excision of upper tarsus, lower Muller's and overlying conjunctiva

ii) levator resection/reinsertion
- local anesthetic (except kids and anxious adults)
- eamine up and down
- #15 BP blade through skin
- divide orbicularis
- now see septum and you divide you see and retract fat pads
- disensert aponeurosis
- separate Muellers
- 6-0 polysester to suture apo to tarsus check conj side
- close 7-0 vicryl to attatch orbic to aponeurosis
- skin with 6-0 plain

- lid crease incision
- cut through septum
- identify levator aponeurosis
- 5-0 Vicryl to suture levator to tarsus
- 6-0 plain to close skin

iii) frontalis suspension
- pentagon
- autologous fascia lata
- banked fascia lata or silicone

Question #7: What are the complications?

Undercorrection
Overcorrection: lower if exposure a problem
Crease problems
Lagophthalmos and keratitis

Question #8: You are on call, you are called about Dr. Arthurs pt who had a bleph earlier now complaining of pain and decreased vision...what do you do?

- See pt immediately. Lateral canthotomy>Explore and decompress wound>orbital decompression

16. Patient with severe blepharitis. Turns out to be Rosacea.

Disease:	**Rosacea**: skin condition characterized by excessive sebum production.
Etiology/Risks:	30 to 50 years old. Slight female predom.
Critical symptoms:	Bilateral chronic conjuctivitis.
Critical Signs:	Eyelid telengiectasias, pustules, papules, erythema in malar distribution. Cornea pannus & infiltrate in inf cornea, spk. (triangular). ATD. Rhinophyma (late)
Histotopathology:	Sebceous gland dysfunction, type IV inflammatory rxn.
Treatment:	1) Oral TTC 250mg qid or Doxy 100mg bid for 3-6 weeks then taper to min dose. Erythromycin may be used. 2) Lid care.
Pearls:	topical metronidazole

17. Patient with symblepharon. Dx. Work up and treatment?

DDx of membranous/pseudomembranous conjuctivitis:

"Very Light Crunchy SAND CHiPS"

A) Bacterial

1) **S**trep pyogenes (pus)
2) **N**eisseria (pus)
3) **D**iphteria (mb everywhere)
4) Strep pneumo
5) *any* severe bacterial conjunctivitis

B) Viral

1) **A**denovirus (type 8)
2) **H**SV

C) Chlamydia

1) **I**nclusion of <u>newborns</u>

D) Autoimmune

1) **P**emphigoid
2) **V**ernal
3) **S**teven Johnson
4) **L**igneous conjuctivitis

E) Trauma
1) **C**hemical burns

Ddx of cicatricial conjunctivitis
membranes + "RRATS"
1) *any* membranous conjunctivitis (OCP, Adeno, Inclusion)

A) Infectious
1) **T**rachoma
2) Lyell's syndrome (staph scalded skin syndrome - SSSS)

B) Immune
1) **A**topic KC
2) dermatitis herpetiformis (like OCP - sub epith. IgA's)
3) sarcoid
4) scleroderma
5) rosacea
6) lichen planus
7) epidermolysis bullosa
8) **R**osacea

C) Enzyme problem
1) porphyria

D) Trauma
1) **R**adiation
2) **S**urgery

E) Other
1) linear IgA dermatosis (mimcs OCP)

- Dx OCP discuss

Etiology/Risks: women 2 to 1, >60yrs.
Pseudo caused by many medications

Critical symptoms: Recurrent mild to moderate conjuctivtis: hyperemia, edema, ulceration, tear dysfunction, FB sensation, tearing, mucopurulent d/c. Oral mucosal lesions common.

Critical Signs: Inferior symblepharon, foreshortened lower fornix. Other: SPK, 2bacterial, TFD, entrop, trich, pannus, limited EOM, COAG. Other mucous membranes may be affected.

Inheritence: nil. HLA-DR4 may be associated.

Histopathology: Bx specimens may be positive for immunofluoroescence or immunohistochemistry for C3, IgG, IgM, IgA localized to BM

Investigations: Conjunctival bx.

Ddx: SJS, membranous conjunctivitis, chemical burn, topical meds, atopy, radiation, SCC.

Treatment: 1) Tears, tx blepharitis, punctal occlusion.
2) Steroids topical/systemic for short term releif.
3) Dapsone (beware G6PD & sulpha allergy)
4) Cyclophosphomide or azothioprine
5) Surg for entrop, trichiasis. Mucous memb grafts.

Pearls: Beware dx of unilateral.
Similar condition (pseudopemphigoid) with medications: pilo, epi, timolol, idoxuridine, phopholine. Big diff is this will stop progress when inciting agent stopped

18. Picture of entropion

How do you treat severe lagophthalmos with exposure?

- **Question: What are the causes of entropion?**
- Involutional, cictritial, spastic and congenital

Question: What are the three causes of involutional entropion?

- CPF laxity, horizontal lid laxity, overriding orbic
- Clues for disinsertion: white line bleow inferior border of tarsus, deeper than usual inferior formix ptosis of lower eyelid, little movement of lower lid

Question: What isthe cause of spastic entropion?
Following irritation and inflammation. Usually after surgery.
Use temporary methods to repair: tape, Quickert and occaisionally Botox.

Repairs?

i) Quickert everting sutures
- temporary treatment
- Three 4-0 silk mattress (or 6-0 plain which can be left) sutures are introduced in a double-armed manner from the palpebral surface of the eyelid near the inferior fornix.
- The sutures are brought anteriorly along the anterior surface of (but not in) the tarsus, and exit the skin just inferior to the cilia.
- they are tied on the skin side (with bolsters for silk?)
- This rotates the eyelid margin away from the globe

ii) Lateral Tarsal Strip
- after clamping, skin incision is from the lateral canthus angling 15º below the horizontal for 1 cm
- medial cut edge of eyelid is grasped with a toothed forceps
- lower limb of the LCT is severed with scissors
- the lateral eyelid is divided at the gray line with a blade
- The lid-splitting incision is carried medially for 5 to 7 mm (depending on the amount of tightening desired).
- The anterior lamella (skin and muscle) is resected.
- The mucosa of the posterior lamella is removed by scraping with a scalpel.
- 2 4-0 Vicryl or 5-0 nylon or 4-0 Prolene suture on a P2 needle passed through tarsus and periosteum
- secure lower eyelid 2 mm inside the lateral orbital rim.
- angle formed by suturing upper lid gray line to tarsal strip laterally with 6-0 plain
- skin closed with 6-0 plain or nylon

What are the complications of these surgeries?
Consecuctive ectropion, hematoma, eyelid retraction, exposure, granuloma, symblepharon, ptosis.

iii) LTS + reinsertion of lower lid retractors
- The lower eyelid retractors are approached from 1) the conjunctival or 2) skin surface
- The skin approach allows simultaneous correction of the overriding orbicularis
- The conjunctival approach avoids placing an incision in the eyelid skin

1) The conjunctival approach:
- The lower eyelid is first controlled with marginal 4-0 silk traction sutures.
- The eyelid is then everted over a Desmarres retractor.
- The conjunctiva is incised along the inferior border of the tarsus.
- the conjunctiva is dissected from the lower eyelid retractors.
- A white, horizontal line (the edge of the recessed lower eyelid retractor) can be identified.
- The lower eyelid retractor is reattached to the inferior border of the tarsus with .
- The conjunctiva is sutured to the inferior tarsal border with 7-0 vicryl.
- Alternatively, the lower eyelid retractor and conjunctiva are reattached by one suture that picks up the free edges of both.

2) The cutaneous approach for those who have no posterior lamellar forshortening:
- A subciliary incision is made 4mm below edge of tarsus.
- A skin-muscle flap is dissected inferiorly to the orbital rim off the tarsus
- The orbital septum is opened and the lower eyelid retractor is identified.

- A frank dehiscence may be seen.
- The lower eyelid retractor is dissected free
- Once freed, the lower eyelid retractor is sutured to the anterior, inferior surface of the tarsus with 6-0 vicryl
- The skin is closed with 6-0 plain.

Other repairs: Weis procedure, cauterization on skin side

19. **ectropion**

- Etiologies of ectropion: congenital, involutional, paralytic, cicatricial, mechanical

i) temporary: inverting sutures: opposite of Quickert:
- go from high on inner side (just below tarsus) towards inferior on skin surface with 2 double-armed chromic tied with cotton pledgets on lower skin surface

ii) permanent: LTS +/- inverting sutures
iii) ant/post lamellar graft for cicatricial

- **Punctal ectropion**:

medial spindle procedure
- excise spindle section of conj. + lower eyelid retrators
- sew closed with 7-0 Vicryl or chromic including lower retractors

20. **How do you repair lid lesions?**

A) small (<25%)
1) direct closure
2) lower crus lat. cantholysis to advance lateral lid
B) moderate (25-50%)
1) lower crus lateral cantolysis
2) semicircular flap (Tenzel)
or 3) tarsal-conjunctival flap from adjacent lower lid tarsus with skin graft (pre-auric.)
or 4) full-thickness (skin + muscle + tarsus + conj) graft from contralateral upper lid
or 5) tarsoconjunctival graft from contralateral *upper* eyelid with adjacent skin flap

C) large(>50%) - need advancement of tissues
1) upper lid tarsus-conj flap + skin graft (modified Hughes)
2) tarso-conjunctival graft from upper lid + adjacent skin flap
3) posterior lamellar graft (ear, palate) with adjacent skin flap
NB: either posterior or anterior lamella must have vasc. supply (1 graft, 1 flap) except for small full thickness graft which often don't do well

Large flaps
1) Mustarde - to anterior ear (for lower lid)
2) Cutler-Beard (for upper lid)

3) glabellar (for medial canthal area)

21. **Describe the repair of an eyelid laceration.**

- 5-0 or 6-0 interrupted Vicryl should be placed *in the tarsus* 1 to 2 mm from the eyelid margin
- In the upper eyelid this should be a partial-thickness bite, while in the lower eyelid this may be a full-thickness bite since corneal abrasions are less likely from lower eyelid sutures.
- This initial suture is placed to result in the correct approximation of the margin edges.
- After placement of this initial suture, interrupted 6-0 silk sutures are placed in the eyelid margin.
- One suture is placed in the mucocutaneous margin, one in the gray line, and one in the posterior eyelash line.
- The suture bites should be approximately 2 mm from the edge of either side of the laceration and 2 mm deep.
- Before the margin sutures are tied, additional Vicryl can be placed intratarsally. Three such sutures are usually sufficient in the upper eyelid tarsus, and two are placed in the lower eyelid tarsus.
- Absorbable sutures should be used to reapproximate the orbicularis muscle after the tarsal sutures are tied.
- The skin is closed with 6-0 or 7-0 silk or nylon, sutures
- In children, 6-0 mild chromic or fast-absorbing gut sutures can be used for skin closure.
- leave amrgin sutures for 10-14 days; others: 1 week

With canalicular laceration

Identification of the proximal cut end:

- the medial end of the canaliculus can usually be found by following the probe and examining the other side of the laceration looking for the characteristic shape and glistening epithelium of the canaliculus
- Allowing tissue swelling to subside with time, applying ice compresses, and injecting hyaluronidase solution with massage may restore normal contour and alignment so that the lacrimal laceration may be identified.
- If the opening cannot be identified, irrigation of the opposite canaliculus with air and flooding the field with water can demonstrate air bubbles emerging from the laceration site.
- Milky corticosteroid suspensions or diluted fluorescein can also be irrigated through the opposite canaliculus and subsequently visualized at the laceration opening.
- Injection of methylene blue is not advised because it stains the tissues and may further obscure the anatomy.

Stenting the canaliculus

- canalicular lacerations should be stented as part of their repair.
- Both monocanalicular and bicanalicular stents have been described.
- Bicanalicular stents usually consist of silicone tubing (Crawford tubes) attached to metallic probes, which are passed through the upper and lower canaliculi, across the lacerated portion of the canaliculus, and down the nasolacrimal duct into the nose.

These tubes are very easy to pass through the lacrimal system and retrieve from the nose with a Crawford hook
- The probes are then removed and the ends of the silicone shortened and sutured or tied to themselves and to a larger bolster to prevent the tube from being inadvertently pulled out of the canaliculi.
The nose must be anesthetized with either topical cocaine (4% or 10%), 4% topical lidocaine, or benzocaine spray for successful passage of the tubes.
. In general, the repaired canaliculus should remain stented for at least 3 months and if possible longer to prevent a stricture from forming within the repaired canaliculus.
Suturing the wound
- some surgeons recommend directly suturing the edges of the canaliculus to each other using 8-0 absorbable sutures
- Placing mattress sutures anterior, posterior, and, if possible, inferior to the sides of the canaliculus without actually suturing the edges of the canaliculus together is usually sufficient for canalicular re-formation over a silicone stent (Double-armed 6-0, 7-0, or 8-0 polyglactin 910)
- 5-0 or 6-0 polyglactin sutures can be used to close the deep tissue layers and orbicularis muscle.
- If possible, one of these sutures should be used to connect the medial end of the tarsus to the lateral end of the cut medial canthal tendon.
- This will aid in holding the eyelid in place against the globe.
- In deep lacerations, every attempt should be made to place this suture into the deep portion of the medial canthal tendon, which inserts onto the posterior lacrimal crest.
- The skin is closed with nonabsorbable 6-0 or 7-0 sutures.

22. **Describe how to perform an enucleation.**

Indications
1) tumor
2) severe trauma (symp. ophthalmia risk)
3) endophthalmitis (prevents infection form reaching orbit
Procedure
- general anesthesia
- 360 degree peritomy
- remove muscles with 5-0 vicryl attached to muscles and clamp sutures (Bulldog?)
- free attachments
- cut nerve in 1 swoop
- insert gaze to prevent bleeding
- measure implant
- insert medpor implant with dacron shell (other options: Allen, hydroxyappetite)
- attach muscles to shell
- sew Tenon's closed with running 6-0 Vicryl need good closure
- close conj (8-0 plain or vicryl?)

Indications

1) eye with intraocular malignancy
2) eye suspected of malignancy which is NLP
3) chronically painful eye with poor vision
4) severe trauma (sympathetic ophthalmia)

23. **Describe how to perform an evisceration.**

Indications

blind painful eye (eg, neovascular glaucoma) no chance of malignancy. Some people argue that eyes with infection are better treated with evisceration so as to not contaminate the orbit.

- cut off cornea
- scoop out uvea
- insert small implant
- tie sclera over implant

Post-op: prosthesis over implant with scleral shell

Describe a retrobulbar alcohol injection.

Indications

1) blind painful eye

Procedure

1) 2 cc anesthetic (lidocaine + marcaine)
2) 0.5cc 100% alcohol

Post op: prosthesis on top

Complications

1) swelling
2) Persistent anesthesia of periorbital region
3) ptosis
4) extraocular muscle palsy

23. Photo of rash on lower lid extending onto cheeks. Dx. Contact dermatitis

- **Drugs causing contact blepharoconjunctivitis**
  1) atropine/ homatropine
  2) aminoglycosides (genta, tobra, neomycin)
  3) antivirals
  4) natamycin
  5) EDTA
  6) thimerosol

24. Patient with ptosis

- Question #1: What questions on history are important in the evaluation of ptosis?

Onset, duration, severity, variability, old photos.
Previous surgery.

- Question #2: Key ocular signs to help differentiate causes of prosis?

Ipsilateral miosis: Horner's
Ipsilateral mydriasis: III
Skin crease: involutional
Dermatochalsis, entropion, hypotropia, contalateral retraction: pseudoptosis

- Question #3: Key check list prior to surgery?

Schirmer's test
Preop photos
VF
Bell's
Hering's law
Levator function
Refraction in kids (WTRAstig)
Caution: dry eyes, poor Bell's, big pupil

- Question #4: What is the differential diagnosis of ptosis.

A) neurogenic
1) Horner's
2) IIIrd nerve palsy
3) 3rd nerve misdirection
4) Marcus-Gunn

B) aponeurotic
1) involutional
2) post-op
3) blepharochalasis

C) Mechanical
I) scarring
II) excess weight
1) dermatochalasis
2) tumors
3) edema

D) myogenic
I) congenital
a) simple

b) blepharophimosis syndrome

II) myogenic
1) muscular dystrophy
2) oculopharyngeal dystrophy
3) CPEO
4) post botox

Neuromyopathic
1) myasthenia

Congenital	**Tx**
Myopathic (hypo common, 30% bilat)	Max Lev resec or FS
Blepharophimosis syndrome (AD, triad)	Staged
Marcus Gunn Jaw winking (III-V miscommunication)	Mild: LR, Severe: L diss & FS
III	

Acquired	
III	FS
Horner's	?Fasanella
MG	LR
CPEO	FS
Aporneurotic	LR
Mechanical	

- Question #5: Grade LF and which procedure would you do based on results?

LF function	Amt.	Surg
Poor	<4	FS
Mod	4-7	Supramax LR
Good	8-15	LR

- Question #6: Describe levator resection.

F) Ptosis
i) Fascinella-Servat
- excision of upper tarsus, lower Muller's and overlying conjunctiva

ii) levator resection/reinsertion
- local anesthetic (except kids and anxious adults)
- eamine up and down
- #15 BP blade through skin
- divide orbicularis
- now see septum and you divide you see and retract fat pads
- disensert aponeurosis
- separate Muellers
- 6-0 polysester to suture apo to tarsus check conj side

· close 7-0 vicryl to attatch orbic to aponeurosis
· skin with 6-0 plain
- lid crease incision
- cut through septum
- identify levator aponeurosis
- 5-0 Vicryl to suture levator to tarsus
- 6-0 plain to close skin

iii) frontalis suspension
· pentagon
· autologous fascia lata
· banked fascia lata or silicone

➢ Question #7: What are the complications?

Undercorrection
Overcorrection: lower if exposure a problem
Crease problems
Lagophthalmos and keratitis

➢ Question #8: You are on call, you are called about Dr. Arthurs pt who had a bleph earlier now complaining of pain and decreased vision...what do you do?

➢ See pt immediately. If high IOP and evidence optic nerve dysfunction
(15) Lateral canthotomy
(16) Explore and decompress wound
(17) orbital decompression

25.