Anterior Segment Grand Rounds

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UAB SCHOOL OF OPTOMETRY
Knowledge that will change your world

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No financial disclosures

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Lumps and Bumps

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Did you know…..?

Only 50% of lesions look like they should!

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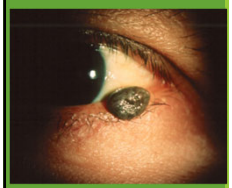
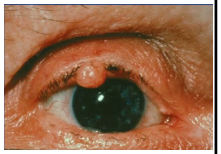
Squamous Papilloma



- **Most common benign neoplasm of the eyelid**
- Epidermal hyperplasia - "skin tags"
  - May be skin colored or hyperpigmented
  - Single or multiple
  - Often pedunculated
  - Avascular
- Neck, axilla, eyelids
- F>M
- Reasons for removal:
  - Cosmesis
  - Visual disturbance
  - Excisional biopsy



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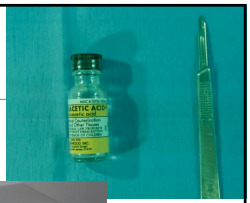
Lesion removal

- Chemical cautery
  - dichloroacetic acid
- Excision
- Radiofrequency



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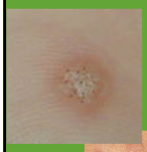
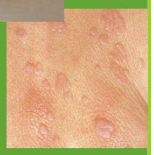
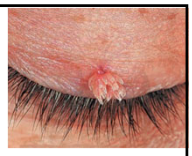
Verrucae





- Epidermal hyperplasia
- Caused by Human papilloma virus (50+ types)
- "Wart"
  - Verrucae vulgaris
  - Verruca plana
  - Filiform – most common on eyelid



- Can be spread by touch
- F>M, more common in children and young adults
- 2/3 spontaneously resolve within 2 years
- Can cause mild follicular conjunctivitis if on eyelid margin
- Removal:
  - Surgical excision (preferred around eyelids)
  - Cautery – electro or chemical

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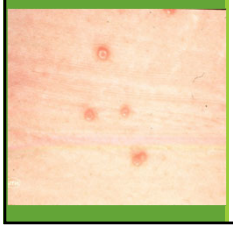
Molluscum Contagiosum



- Caused by poxvirus
- Umbilicated papules
  - Skin colored to pearly white
  - Often have a red base
- 2-5mm
- M>F
- Immunocompromised patients
- Sites: neck, eyelid, anogenital

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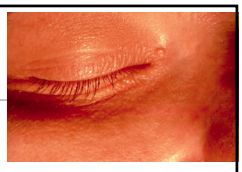
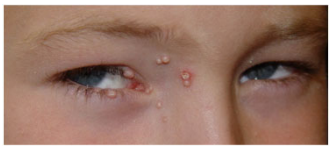
Molluscum Contagiosum



- Ocular findings:
  - Follicular conjunctivitis
  - SPK
  - Injection/hyperemia
- May resolve on own (6-9 months)
- Surgical excision recommended



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Sudoriferous Cyst

- Sweat gland cyst (Cyst of Moll)
  - aka apocrine hidrocystoma
- Serous contents
- Can be removed by stab incision
- Translucent if transilluminated

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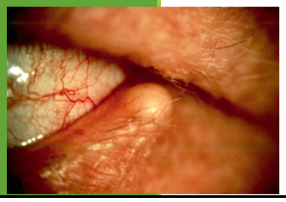
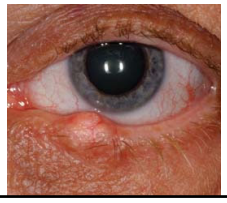
Sebaceous Cyst

- Retained sebum
- Yellowish color
- Moveable capsule under skin
- More common in elderly
- Remove for cosmetic reasons





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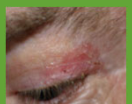
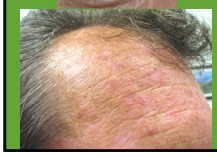
Premalignant Lesions: Actinic Keratosis





- AKA Senile or Solar Keratosis
- **Most common premalignant skin lesion**
  - Development of SCC in untreated lesions as high as 20%
- Often seen in older, fair-skinned patients
- Most common sites: face, hands, scalp
- Management (dermatologist referral): sunscreen, surgical excision (difficult), cryotherapy, 5-FU, PDT, creams (Aldara/imiquimod, Picato)

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Premalignant Lesions: Lentigo Maligna

- AKA Hutchinson's freckle
- Older, fair-skinned patients
- Sun-induced
- Dark patch
  - Irregular borders
  - Irregular pigment
- 30-50% become a malignant melanoma

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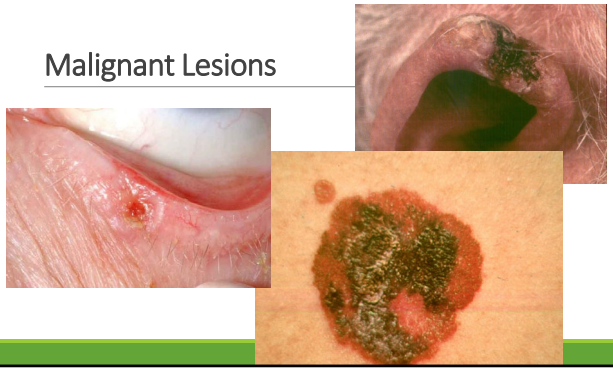
Malignant Lesions



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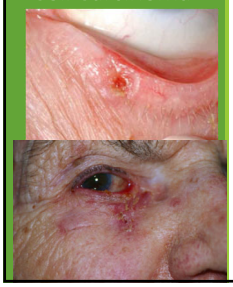
Malignant Lesions – Basal Cell Carcinoma



- **Most common malignant lesion of the eyelids (80-90%)**
  - 50-60% lower lid
  - 25-50% medial canthus
  - 15% upper lid
- No precursors
- Areas of chronic sun exposure
- Slow growing
- Metastasis is VERY unlikely
- Local invasion common
- Mohs' procedure recommended for removal

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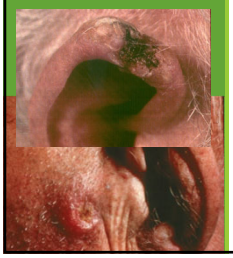
Malignant Lesions – Squamous Cell Carcinoma



- Much less common than BCC on the eyelid but higher potential for metastatic spread (5-10%)
- Older, fair-skinned
- Usually in sun exposed areas
- NO TYPICAL APPEARANCE
- Erythematous, indurated hyperkeratotic plaque or nodule with irregular margins
  - Tend to ulcerate
- Biopsy & excision recommended (Mohs' procedure)

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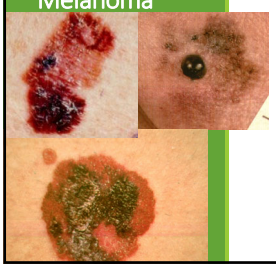
Malignant Lesions – Malignant Melanoma



- Low incidence but high mortality rate
- Can grow radially on surface but also vertically
- Superficial Spreading Melanoma – most common
  - Hallmark is irregular colors
- Management: biopsy and excision/reconstruction; typing and staging of tumor; frequent follow up

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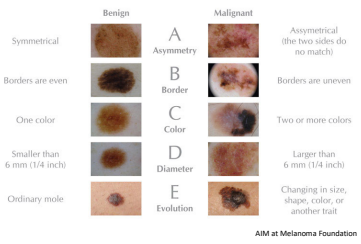
Lid lesion evaluation

- Want to know:
  - How long has lesion been there?
  - Is it changing?
  - Is it bothersome?
  - Is it bleeding?
  - Any previous hx of cancer?
- Clinical evaluation:
  - Any hair/lash loss?
  - Any abnormal vessels?
  - Any ulcerations?



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Lids and Lashes

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Blepharitis

Anterior
- Bacterial (*staphylococcal aureus*)
- Seborrheic (dandruff)
- Mixed
- Demodex

Posterior
- Meibomian Gland Dysfunction

Angular

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	Feature	Anterior blepharitis		Posterior blepharitis
		Staphylococcal	Seborrhoeic	
Lashes	Deposit	Hard	Soft	
	Loss	++	+	
	Distorted or trichiasis	++	+	
Lid margin	Ulceration	+		
	Notching	+		++
Cyst	Hordeolum	++		
	Meibomian			++
Conjunctiva	Phlyctenule	+		
Tear film	Foaming			++
	Dry eye	+	+	++
Cornea	Punctate erosions	+	+	++
	Vascularization	+	+	++
	Infiltrates	+	+	++
Commonly associated skin disease		Atopic dermatitis	Seborrhoeic dermatitis	Acne rosacea

Kanski, Clinical Ophthalmology

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Anterior blepharitis…Know your "crusts"….

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Staph blepharitis - Treatment

- Eyelid hygiene
  - Warm compresses
  - Commercial lid scrubs and cleansers
  - Hypochlorous acid-based cleansers
- Topical antibiotic (acute)
- Topical antibiotic-steroid (chronic)
- In office mechanical treatment to reduce bacterial colonization

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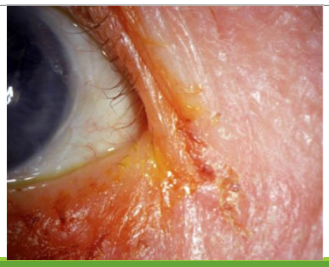
Angular blepharitis

- *Staph* or *Moraxella*



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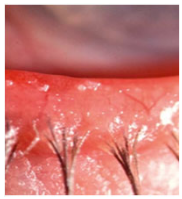
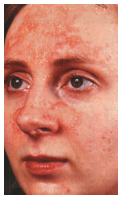
Seborrheic blepharitis - Treatment





- Manage associated seborrheic dermatitis
- Lid hygiene
  - Commercial lid scrubs and cleansers
- Best treated with topical corticosteroid
  - Triamcinolone cream 0.1%
  - fluorometholone ointment
  - loteprednol

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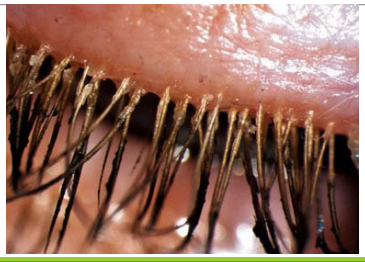
Demodex blepharitis



- "Cylindrical dandruff"
- Estimated to affect up to 25 million Americans
- Typically managed with:
  - Eyelid hygiene
  - Tea-tree oil based products

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What's new?

- ***Lotilaner ophthalmic solution 0.25%*** (TP-03, Tarsus Pharmaceuticals)
  - Paralyzes and eradicates *Demodex* mites by selectively inhibiting parasite-specific GABA-Cl channels

tarsus

Saturn-1 (phase 2b/3 clinical trial)
- Randomized, controlled, double masked trial
- 421 patients
- BID dosing for 43 days
- Enrolled patients received no treatment for blepharitis (lid hygiene) during the trial or 14 days prior to enrollment

Saturn-2 (phase 3)
- Randomized, controlled, double-masked trial
- 412 patients
- BID dosing for 6 weeks
- Enrolled patients received no treatment for blepharitis (lid hygiene) during the trial or 14 days prior to enrollment

Yeu E. et al. Saturn 1 Study Group. Lotilaner ophthalmic solution, 0.25%, for the treatment of Demodex blepharitis: results of a prospective, randomized, vehicle-controlled, double-masked, pivotal trial (Saturn-1). *Cornea*. Published online August 11, 2022.

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Saturn-1 results (TP-03 vs. vehicle)

- 81.3% of patients achieved a significant, clinically meaningful collarette cure (vs 23%)
- 43% achieved complete collarette cure/eradication of Demodex mites (vs. 7%)
- 45% of patients achieved at least 1 grade improvement in erythema (vs. 28%)
- 13.4% achieved complete collarette cure and absence of erythema of upper lid (vs. 1.0%)
- 91.9% of patients reported the drop comfort was "neutral to very comfortable"
- No AE leading to treatment discontinuation
  - Most common complaint instillation site pain/burning/stinging (11.8% vs. 7.7%)

Yeu E. et al. Saturn 1 Study Group. Lotilaner ophthalmic solution, 0.25%, for the treatment of Demodex blepharitis: results of a prospective, randomized, vehicle-controlled, double-masked, pivotal trial (Saturn-1). *Cornea*. Published online August 11, 2022.

Clinically meaningful collarette cure = ≤ 10 collarettes
Complete collarette cure = ≤ 2 collarettes

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Saturn-2 results

- 89% of patients achieved a significant, clinically meaningful collarette cure (vs 33%)
- 56% achieved complete collarette cure/ 52% eradication of Demodex mites (vs. 13%/14%)
- 45% of patients achieved at least 1 grade improvement in erythema (vs. 28%)
- 31.1% of patients achieved complete lid erythema cure (vs. 9.0%)
- 91% of patients reported the drop comfort was "neutral to very comfortable"
- No serious AE leading to treatment discontinuation
  - Most common complaints were instillation site pain/burning/stinging (7.9%) and dry eye (1.5%)

https://www.globenewswire.com/news-release/2022/05/02/2433294/0/en/Tarsus-Announces-Positive-Topline-Data-from-Saturn-2-Phase-3-the-Second-Pivotal-Trial-of-TP-03-for-the-Treatment-of-Demodex-Blepharitis-and-Expects-to-File-a-New-Drug-Application-T.html

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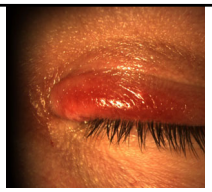
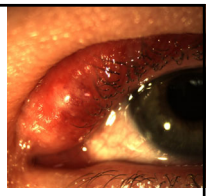
Hordeola

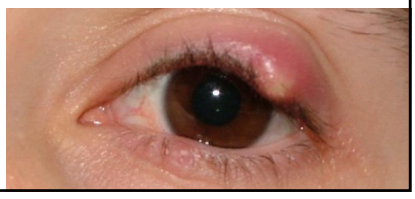
Internal – infection of Meibomian gland

External – infection of gland of Zeis or Moll

Main culprit = *staph aureus*







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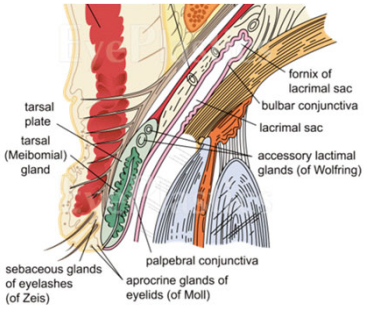

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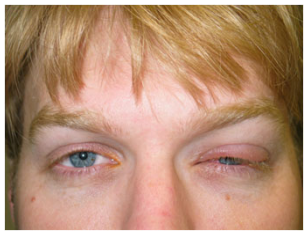
Preseptal cellulitis

- Acute infection of the lid anterior to the orbital septum
  - Often from *staph* or *strep*
- Painful, canthus to canthus involvement, warm/tender to the touch
- Can also occur secondary to bite, from upper respiratory infection
- Tx: warm compresses, oral antibiotics, daily follow up



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Differentiating between Preseptal vs Orbital Cellulitis

Clinical Finding	Preseptal	Orbital
Visual Acuity	Normal	Reduced
Proptosis	Absent	Marked
Chemosis	Rare/mild	Common
Hyperemia	Rare/mild	Marked
Pupils	Normal	Possible RAPD
Motility	Normal	Restricted
Pain on EOMs	Absent	Present
IOP	Normal	May be ↑
Temperature	Normal/mildly ↑	102-104°
Headache	Absent/mild	Common
Sick (N/V)	Absent	Common

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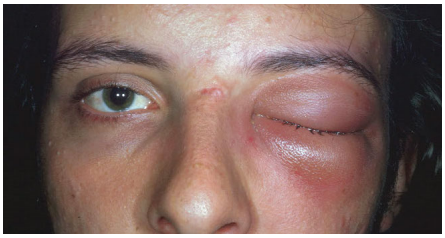
Preseptal or Orbital??



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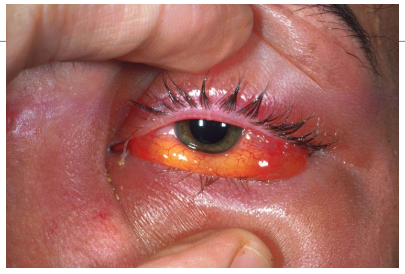

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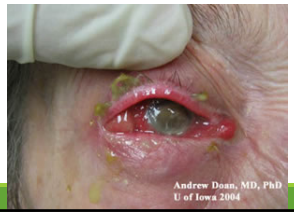

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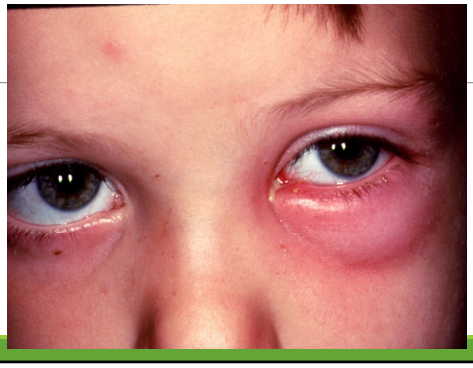

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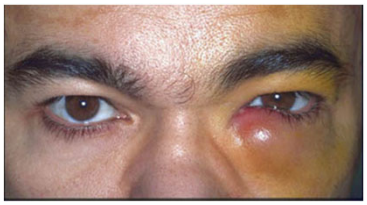
Dacryocystitis

- Infection of the lacrimal sac
- Symptoms: pain/tenderness/redness over lacrimal sac, swelling may extend periorbitally, may have mild discharge coming from puncta, tearing
- Common causes:
  - *Staph aureus*
  - *Staph epidermidis*
  - *Strep*
  - *Pseudomonas*
- Tx: Oral antibiotic, warm compresses, topical antibiotic drops for discharge, daily follow up; may need surgery
- D&I contraindicated!



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Oral antibiotics for lid infections

- Amoxicillin
  - 3rd gen penicillin
  - For most skin and soft tissue infections
  - AVOID in PCN allergy
  - Dose: 875mg BID x 10 days for adults
- Augmentin® (amoxicillin plus clavulanic acid)
  - For most skin and soft tissue infections
  - AVOID in PCN allergy
  - Dose: 875mg BID x 10 days for adults
  - Alternative: 500mg TID
  - Great choice in kids (good Gm +/Gm - coverage)
    - 20-40 mg/kg/day in children
    - If child weighs >88lbs, can dose as adult

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Peds prescribing

1. **Determine weight of child, convert into kg**

   2.2lbs = 1kg

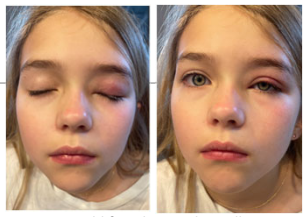
   Example: 55 lbs ÷ 2.2 = 25 kg

2. **Calculate maximum dose/day**

   Example:
   20mg/kg/day x 25 kg = 500 mg/day
   40mg/kg/day x 25 kg = 1,000 mg/day

3. Divide into q8 (÷3) or q12 (÷2) hour dosing

   Example: Dose: 400mg/5mL Take 5mL q12 hours



9 year old female, weighs 55 lbs, NKDA

Augmentin dose = 20-40 mg/kg/day

Augmentin suspension is supplied:

125mg/5mL 200mg/5mL

250mg/5mL 400mg/5mL

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Oral antibiotics for lid infections

- Cephalexin (Keflex®)
  - 1st generation cephalosporin
  - Good gm + coverage, poor gm – coverage (not great choice for preseptal)
  - Well tolerated, great choice for hordeola
  - Potential for cross-reactivity if PCN allergy
  - Dose: 500mg BID x 10 days
- Cefprozil (Cefzil)
  - 2nd generation cephalosporin
  - Better gm +/gm – coverage (preferred for preseptal)
  - Dose: 250-500mg BID x 10 days

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Oral Antibiotics for lid infections

- Trimethoprim/Sulfamethoxazole (Bactrim DS®)
  - For skin and soft tissue infections
  - Good coverage for suspected MRSA infections
  - AVOID in sulfa allergy
  - Side effects: GI upset, Stevens Johnson Syndrome
  - Dose: 1 DS tablet BID

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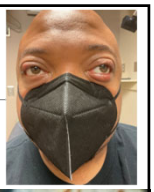
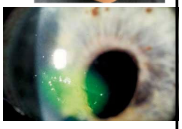
Doxycycline





- Drug of choice for MGD/Acne Rosacea/Chalazion
  - Initial dose: Doxycycline monohydrate 100mg QD-BID x 30 days
  - Maintenance dose: 50mg QD-BID
- Also useful in corneal wound healing (RCE, healing ulcers)
  - Inhibits matrix metalloproteinases (MMPs) that impair corneal healing
  - Dose: 50mg PO QD-BID x 6-8 weeks
- AVOID in children <8 years old, nursing mothers, pregnancy
- Caution in patients taking certain blood thinners
- Educate patients on SE's: GI upset, photosensitivity/sunburn, yeast infections, altered contraceptive effectiveness
- Potential to cause IIH

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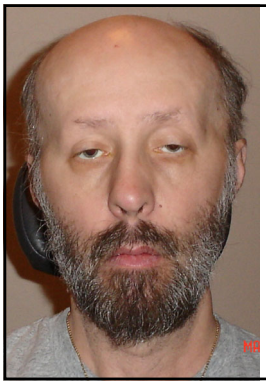


Case presentation
44YO WM, new patient

CC:
- Mild "watery eyes" which have worsened over the past 2 months
- Words run together after prolonged reading

PMH:
- Acid reflux disease
- Chronic sinusitis
- Erectile dysfunction

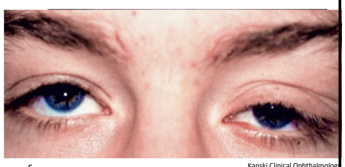
Medications:
- Nasal decongestant

POH:
- Single vision spectacle correction for distance
- Occasional use of artificial tears
- Droopy eyelids "since I was a child"

78

Clinical Evaluation of Ptosis
Exclude causes of pseudoptosis

- Dermatochalasis
  - Q-tip test
- ↓ vertical fissure height
  - Lack of support of lids
  - Lack of volume in the eye
  - Microphthalmos, enophthalmos, etc.
- Contralateral lid retraction
  - Upper lid normally covers superior 2 mm of cornea
- Ipsilateral hypotropia
  - Upper lid follows the globe downwards (will disappear when hypotropic eye pics up fixation)



Kanski Clinical Ophthalmolog

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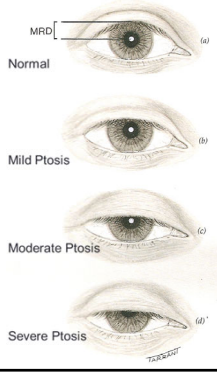
Clinical Evaluation of Ptosis

Marginal Reflex Distance (MRD)
- Most accurate measurement
- Patient looks directly at penlight
- Measure from light reflex of pupil to upper lid margin
- Normal is 4 – 4.5 mm
  - May be zero or negative



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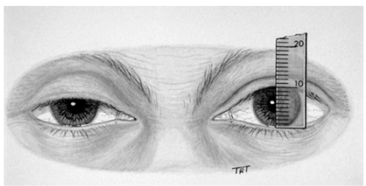
Clinical Evaluation of Ptosis

Vertical Fissure Height (Intrapalpebral Fissure)
- Distance between upper and lower lid margins at the widest point
- Normal UL rests 2 mm below upper limbus
- Normal LL rests 1 mm above the lower limbus
- Normal
  - Females: 8-12 mm
  - Males: 7-10 mm



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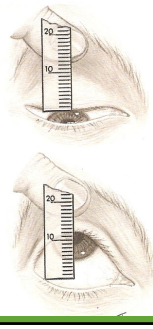
Clinical Evaluation of Ptosis

Upper Lid Excursion
- Aka Upper Levator Function
- Place thumb firmly against patient's brow
  - Negates action of frontalis muscle
- Patient looks down as far as possible and then looks up
- Measure amount of excursion
  - Good: ≥ 12 mm
  - Fair: 6-11 mm
  - Poor: ≤ 5 mm



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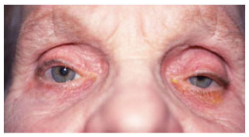
Clinical Evaluation of Ptosis

Upper lid crease

- Vertical distance from lid margin to the lid crease in **down-gaze**
- Females: ~10 mm
- Males: ~8 mm
- Absent – think congenital
- High – suggestive of aponeurotic defect
- Skin crease used as a guide for incision location in some surgical procedures



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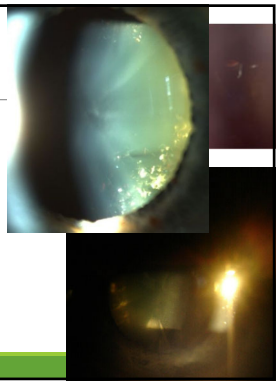
Examination, continued

- BCVA: 20/25- OD; 20/30 OS
- Pupils: ERRL (-)APD
- CT: 4 XP at D; 12 XP at N with low compensating vergences
- SLE:
  - Cornea:
    - 1+ SPK inferiorly OU with 2 sec TBUT OD, OS
    - Incomplete blink noted
  - Lens:
    - Multiple scattered red/green refractile cortical opacities OU
    - 1+ cortical spoking, Tr NS
- IOP: 8 mmHg OD, 9mmHg OS



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Fundus Photographs

RPE disruption and pigment clumping OS

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Ptosis

- Neurogenic
- Aponeurotic
- Mechanical
- Traumatic
- Myogenic

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Ptosis

Myogenic ptosis

- Developmental dystrophy/myopathy of levator muscle
- *Usually* congenital
- Acquired causes include:
  - Chronic progressive external ophthalmoplegia
  - Kearns Sayre syndrome
  - Myasthenia gravis (neuromyopathic)
  - Oculopharyngeal muscular dystrophy
  - Myotonic dystrophy

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Differential Diagnoses: What could it be?

- No evidence of any limitation of extraocular movements
- No peripheral pigmentary retinopathy

Rule-out Chronic Progressive External Ophthalmoplegia and Kearns Sayre Syndrome

- Patient denied ptosis or weakness worsened as day progresses
- Ice pack test negative

Rule-out Myasthenia Gravis

- Although patient had slightly slurred speech, he reported he did not have any trouble swallowing

Rule-out Oculopharyngeal Muscular Dystrophy

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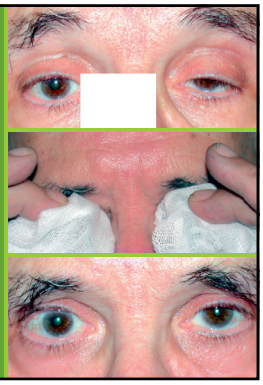
Myasthenia Gravis

- Autoimmune disorder
- More common in F<40 and M>60
- Muscle weakness that improves with rest
- Ptosis may be initial presenting sign
  - Asymmetric, unilateral → eventually will become bilateral
- Diplopia
- Acetylcholine receptor antibody test positive

- **Ice Pack Test**
  - **Up to 80% sensitivity**



Golnik et al. Ophthalmology Vol 106:7, July 1999

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Myotonic Dystrophy

Most common adult form of muscular dystrophy
- Prevalence 1 in 8000 patients
- No racial or gender predilection
- Most commonly presents 2nd – 3rd decade, but can present at any age
- Autosomal dominant inheritance

Characterized by myotonia (slow relaxation of muscles after contraction), muscle weakness, and progressive muscle atrophy

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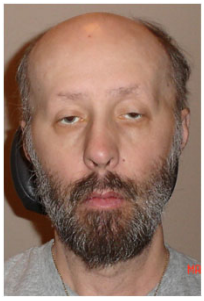

Myotonic dystrophy

Can affect multiple systems throughout the body
- Cardiac, endocrine, respiratory most often affected
  - Shorter life expectancy → pulmonary/cardiac complications
- First muscles affected include those of face, jaw, and neck, leading to the characteristic appearance of a droopy, expressionless face

Severity of disease increases with each generation affected
- Decreased intelligence and mental retardation typically occur after 3-4 affected generations

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Myotonic Dystrophy—ocular findings

Polychromatic "Christmas Tree" lenticular opacities
- Most frequent ocular manifestation
- Pathognomonic of the disease
- May be cortical, sutural, or subcapsular in location
- Most often asymptomatic, however 1/3 can cause reduced vision or other visual symptoms

Bilateral ptosis
- Present in 80% of patients
- Due to weakness and atrophy of the levator muscle

Extraocular muscle involvement
- High XP/CI common

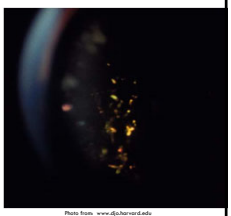

Photo from www.dfp.harvard.edu

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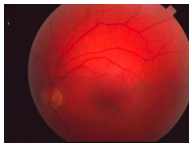
Myotonic Dystrophy—ocular findings

Hypotony
- Decreased aqueous production due to atrophy and degeneration of the ciliary body
- Average Goldmann IOP in patients with Myotonic Dystrophy = 10mmHg

Macular pigmentary changes
- Present in 20-30% of patients with myotonic dystrophy
- Pigmentary clumping and atrophic changes

Lagophthalmos
- Due to weakness of orbicularis oculi muscle
- Often leads to exposure keratitis and dry eye symptoms



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Treatment & Management

- There is currently no cure for myotonic dystrophy
- Co-management with specialty areas (neurology, cardiology, endocrinology, pulmonology) aimed at preventing and treating the complications of the disease
- Repetitively using muscles most often affected can help relieve myotonia
  - Antimyotonic drugs may be utilized in extreme cases
- Genetic counseling
- Treat exposure keratitis secondary to the myogenic ptosis and lagophthalmos
- Cataract surgery
  - Risk of recurrent posterior capsular opacification following intra-ocular lens implantation in myotonic dystrophy patients

Garrott, H.M., Walland, M.J. O'Day, J. Recurrent posterior capsular opacification and capsulorhexis contracture after cataract surgery in myotonic dystrophy *Clinical and Experimental Ophthalmology* Dec 2004; 32 (6) : 653-655.
Gjertsen, I.K., Candhig, H.U., Eide, N. et al. Recurrence of secondary opacification and development of a dense posterior fibrous membrane in patients with myotonic dystrophy. *Journal of Cataract and Refractive Surgery* Jan 2010; 23 (1) : 212-216.

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A Curious Case of Conjunctivitis

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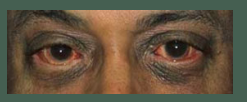
Case Presentation

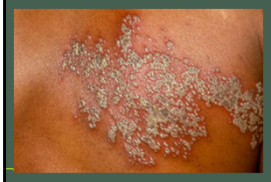


- 37yo BM
- Bilateral red/painful eyes x 2 days
  - +Photophobia
  - +Tearing
  - +Itching
  - +Blur
- Denies any URI, exposure to red eye
- Clinical examination:
  - +Diffuse conjunctival injection
  - +Chemosis
  - +Serous discharge
  - +SEIs
  - +Follicles
- Adenovirus testing in-office was negative

100

100

PMHx



- Severe atopic dermatitis and eczema
- Patient reported starting Dupixent ~4 weeks prior
- Red eyes began shortly after 2nd dose/injection

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Dupixent® (dupilumab)

March 2017 - First FDA approved human monoclonal antibody for treatment of moderate to severe eczema (atopic dermatitis) in adults 18+

- March 2019 approved for adolescents (12-17)
- May 2020 approved for children (6-11)

Subcutaneous injection every 2 weeks

Inhibits overactive signaling of two key proteins, interleukin (IL)-4 and IL-13, which are believed to be major drivers of the persistent underlying inflammation in atopic dermatitis

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Dupilumab-associated conjunctivitis

Clinical trials have consistently reported **increased incidence of conjunctivitis with dupilumab-treated patients vs. placebo**

Study	Dupilumab*	Placebo
CHRONOS	13.6%	7.9%
SOLO1	10%	1.7%
SOLO2	4.7%	1.3%
CAFE	28%	11.1%

*Dupilumab dosed q14days

Simpson EL et al. Two phase 3 trials of dupilumab versus placebo in atopic dermatitis . N Engl J Med 2016.
Aszodi N et al. Management of dupilumab-associated conjunctivitis in atopic dermatitis. Deutsche Dermatologische Gesellschaft (DDG) 2019.

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Dupilumab-associated conjunctivitis

The majority of patients with dupilumab-associated conjunctivitis experience mild disease[1]

- Risk factors:
  - Severe baseline atopic dermatitis
  - History of conjunctivitis
  - Low serum levels of dupilumab

Interval between treatment initiation and clinical signs ranged from 20-389 days[1]

[1]Wollenberg A et al. Conjunctivitis occurring in atopic dermatitis patients treated with dupilumab - clinical characteristics and treatment . J Allergy Clin Immunol Pract 2018.

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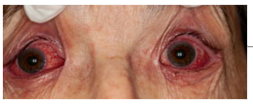

Dupilumab-associated conjunctivitis

Common Symptoms:[1]

- Pain/irritation (96.6%)
- Redness (82.8%)
- Watering/discharge (62.1%)
- Itching (62.1%)
- Light sensitivity (20.7%)

Clinical Signs[1]:

- Erythema/injection/ limbal hyperemia (62.1%)
- Corneal SPK/PEE (55.2%)
- Papillary reaction (27.6%)
- Follicular reaction (13.8%)

[1]Bohner A et al. Dupilumab-associated ocular surface disease: clinical characteristics, treatment, and follow up. Cornea. 2021.

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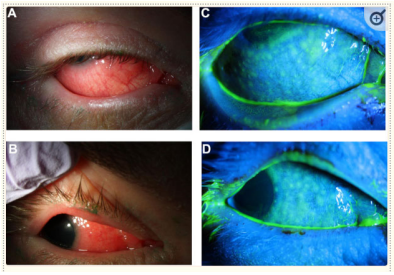

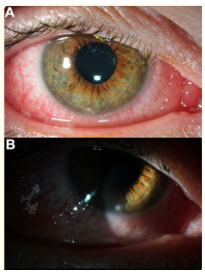

Tauqeer Z et al. Clinical Characteristics and Treatment for Dupilumab-Related Ocular Complications in Atopic Dermatitis Patients. *Clinical Ophthalmology* 2022

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Management of Dupilumab-associated conjunctivitis

Responds well to topical corticosteroids

Also can consider:

- OTC antihistamine/mast-cell stabilizer
- PFAT
- Cold compresses
- Cyclosporine/Lifitegrast

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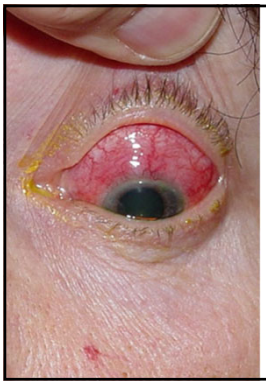

Case Presentation: 60 YO WF

CC: painful, red left eye

Onset: 3 days ago

+tearing, +photophobia

No relief with Visine

PMH: + Rheumatoid Arthritis

Meds: Plaquenil 200mg BID, daily multivitamin

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Exam findings

	OD	OS
Visual Acuity	20/20	20/30
Pupils, EOM, CVF	Normal	Normal
Conj/Sclera	W&Q	3+ diffuse, deep injection S>I that does not blanch with 2.5% phenylephrine
Cornea	Clear	Clear
AC	Deep & Quiet, angles open	Trace cell, angles open
IOP	16	16
DFE	Normal	Normal

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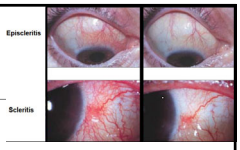
Episcleritis vs. Scleritis



EPISCLERITIS

- Little to no pain, no discharge
- Inflammation affects only conjunctival and superficial episcleral vascular plexuses
- Typically self limiting, responds well to lubrication and topical steroids or NSAIDs

SCLERITIS

- Moderate to severe pain
- Inflammation extends into deep episcleral plexus
- Will not completely blanch with phenylephrine administration
- Managed with oral anti-inflammatories

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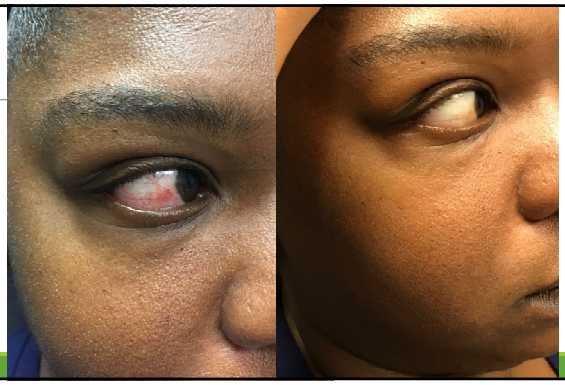

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Scleritis

- Initial presentation unilateral or bilateral
  - Exception is posterior scleritis (unilateral)
- Recurs
- More common in women, 4th-6th decade
- Symptoms: **severe pain**, ± photophobia, ± tearing, ± decreased VA
- **~50% have underlying systemic disease**
  - Usually connective tissue disease
- May be associated with anterior chamber reaction and/or ocular hypertension

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Associated Systemic Disorders

Connective Tissue Disease
- Rheumatoid Arthritis
- SLE
- Psoriatic Arthritis
- Inflammatory bowel disease
- Sjögren syndrome
- Gout
- Etc.

Infection
- HZ
- Syphillis
- TB
- Lyme
- Toxo

Miscellaneous
- Atopy
- Rosacea

Idiopathic

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General Work-Up

RF	ESR
ACE	CRP
ANA	Complement 3
ANCA	Complement 4
Anti-CCP	Uric acid
HLA-B27	Quantiferon TB Gold
FTA-ABS	Lyme antibodies
RPR	Chest X-ray
CBC	

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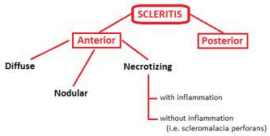
Classification of Scleritis

Anterior scleritis
- Diffuse (most common)
- Nodular
- Necrotizing (death of cells or tissue thru injury or disease)
  - With inflammation
  - Without inflammation

Posterior scleritis



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Treatment

- NSAIDs
  - Ibuprofen 400-600mg QID
  - Naproxen 250-500mg PO BID
  - Indomethacin 50mg TID
- Oral steroids
  - Initial dose: Prednisone 60-100mg PO QD x 1 week
- Immunosuppressive therapy
- Topical and injectable meds??
- Comanagement:
  - Uveitis/Ocular Immunology
  - Rheumatology
  - Internal medicine
  - Infectious disease

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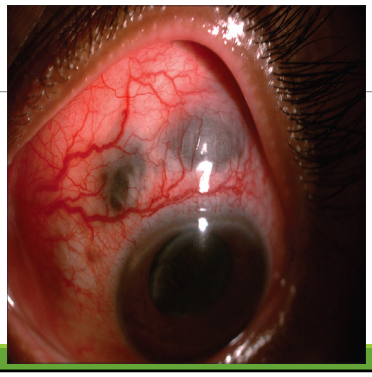

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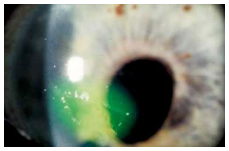
Case Presentation: 58 yo WF



CC: red, painful eye
+tearing
+FBS
+blur
- Onset: this morning upon awakening

- POH:
  - mascara brush injury to eye ~ 9 months prior,
  - (-) CL wear

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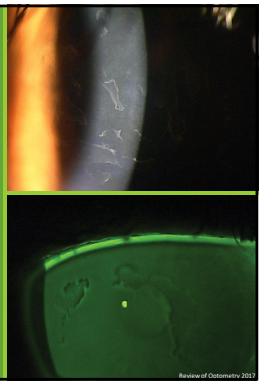
Recurrent Corneal Erosion

- Inadequate epithelial basement membrane adhesions
- May occur secondary to corneal injury or spontaneously
- If no history of trauma, suspect what underlying condition?
  - Epithelial (Anterior) Basement Membrane Dystrophy (EBMD)
  - Reidy et al. 104 patients with RCE
    - Trauma 47 patients (45%)
    - Corneal dystrophy (EBMD) 30 patients (29%)
    - Trauma + EBMD 18 patients (17%)

Reidy JJ, Pauli MP et al. Recurrent erosions of the cornea: epidemiology and treatment. *Cornea* 2000 Nov; 19(6): 767-771.



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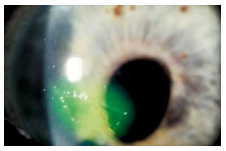
RCE Treatment

Treat abrasion first, prophylactic antibiotic
Topical steroid (FML, Lotemax) with taper X 2 mos
Doxycycline 50mg BID X 2 mos
Muro 128 ung X 2 mos
Freshkote TID X 2 mos
Restasis BID
Regener-Eyes
Amniotic membrane
Bandage Contact Lens
Superficial Keratectomy



Karpecki, P. Pearls: Management of Recurrent Corneal Erosion. Accessed from http://www.eyecareeducators.com/site/pearls_management_of_recurrent_corneal_erosion.htm

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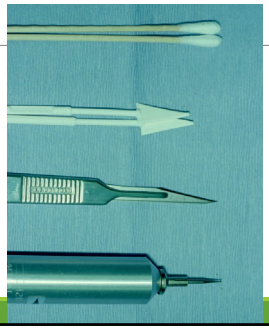
Management

Mechanical Debridement
- Removes loose epithelium
- Followed by BCL and broad spectrum antibiotic



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Bandage Contact Lens

- Designed to relieve pain
- Worn on continuous wear basis
- Lubrication is key to healing
- Consider temporary punctal occlusion
- Minimum of 6 weeks needed to allow BM remodeling to return to normal

FDA approved BCL Options:
- Acuvue Oasys (J&J)
- Air Optix Night and Day (Alcon)
- Purevision (Bausch and Lomb)

CPT Code 92071 (99070) – Fitting of contact lens for treatment of ocular surface disease

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CLINICAL SCIENCE

Treatment of Recurrent Corneal Erosion by Extended-wear Bandage Contact Lens

Frederick W. Fraunfelder, MD and Mauricio Cabezas, MD

Cornea Volume 30, Number 2, February 2011

- Patients who failed 6 weeks of topical lubrication therapy
- 12 patients fit with BCL EW x 3 months (Night & Day)
- Prophylactic ofloxacin BID
- Follow up q 2 weeks for 3 months (BCL removed and replaced each visit)
- After BCL wear, encouraged to use PFAT QID and bland ophthalmic ung at bedtime
- 75% asymptomatic after 1 year

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Alternative Treatments

Matrix metalloproteinase enzymes
- Increased levels of MMP-9 and MMP-2 in RCE patients
- Degrade corneal epithelial BM and anchoring fibrils

Tetracyclines inhibit MMP
- Doxycycline 50 mg QD-BID x 2 months + topical steroid (FML) TID x 4 weeks
  - At 8 weeks, 71% of patients were symptom free
  - 83% denied symptoms of relapse at 6 months; 73% at 12 months

Wang L et al. Treatment of recurrent corneal erosion syndrome using the combination of oral doxycycline and topical corticosteroid. *Clin Experiment Ophthalmol* 2008 Jan-Feb; 36(1): 8-12

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Sutureless Amniotic Membranes

- Contains growth factors that promote epithelial wound healing on the surface of the eye
- Suppresses inflammation and inhibits scarring
- Indications include ocular surface diseases such as:
  - Neurotrophic ulcerations, non-healing epithelial defects, recurrent corneal erosions, and chemical burns, etc.

Prokera (Bio-tissue)

AmbioDisk (Katena)

BioDOptix (Integra)

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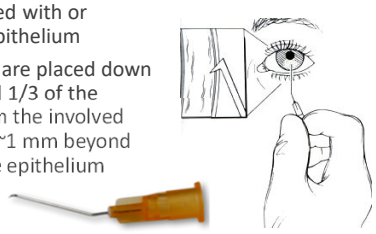
Stromal Puncture (aka "epithelial reinforcement")

- Can be performed with or without intact epithelium
- Micropunctures are placed down to the superficial 1/3 of the corneal stroma in the involved area, extending ~1 mm beyond the area of loose epithelium



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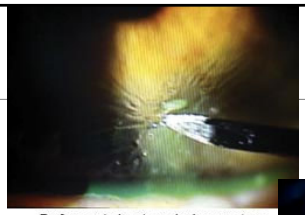
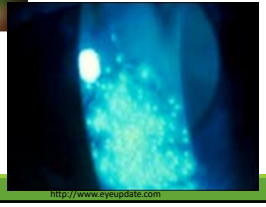


Perform anterior stromal micropuncture for RCE.



http://www.eyeupdate.com

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Treatment success rates

Table 1. Initial Treatment Success Rates Reported For RCE

Authors	Treatment	Technique	# of Eyes	Success Rate
Buxton & Fox	Debridement		13	85%
McClean et al.	Anterior Stromal Puncture	20-gauge needle	21	86%
Tsai et al.	Anterior Stromal Puncture	Nd:Yag	33	85%
Buxton & Constad	Superficial Keratectomy	Diamond Burr	33	97%
Soong et al.	Superficial Keratectomy	Diamond Burr	54	94%
Hodkin & Jackson	Superficial Keratectomy	Amoils Brush	23	88%
Maini & Loughnan	Phototherapeutic Keratectomy	Excimer Laser	76	89%

- Debridement, followed by Prokera placed in 11 eyes with RCE
  - Ten of the 11 eyes (91%) were symptom-free during the mean follow-up period of 13.7 +/- 2.2 months, with reepithelialization occurring between days four through seven

Huang Y, Sheha H, Tseng SCG (2013) Self-retained Amniotic Membrane for Recurrent Corneal Erosion. J Clin Exp Ophthalmol 4: 272 doi:10.4172/2155-9570.1000272

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Review! Corneal Dystrophies

Epithelial and Subepithelial Dystrophies
- Anterior Basement Membrane Dystrophy (aka EBMD)
- Meesmann Corneal Dystrophy

Bowman's Layer Dystrophies
- Reis-Bűcklers' Corneal Dystrophy
- Thiel-Behnke Corneal Dystrophy

Stromal Corneal Dystrophies
- Lattice Corneal Dystrophy
- Granular Corneal Dystrophy
- Macular Corneal Dystrophy
- Schnyder's Corneal Dystrophy

Descemet Membrane and Endothelial Dystrophies
- Fuchs Endothelial Corneal Dystrophy
- Posterior Polymorphous Corneal Dystrophy

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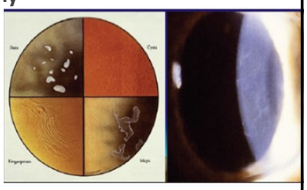
Epithelial Basement Membrane Dystrophy

- **Most common corneal dystrophy**
  - 2% of population
- Bilateral, typical onset after age 30
- **10%+ have RCE**
  - Pain
  - Tearing
  - Blurred vision



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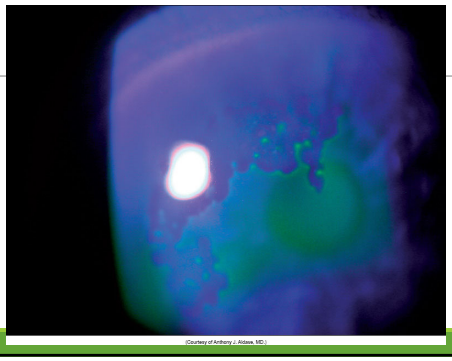

(Courtesy of Anthony J. Aldave, MD.)

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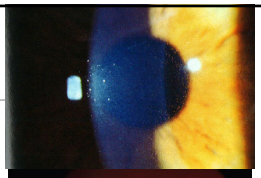
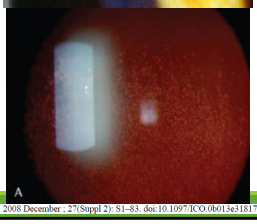
Meesman's Corneal Dystrophy

- Hundreds of tiny vesicles (cysts) develop in epithelium
- Vesicles extend to the limbus and are most numerous in the interpalpebral area
  - Best seen with indirect illumination or retroillumination
- Rare, bilateral, slowly progressive
- Manifests in the first few years of life
- **Can result in RCE**





A

Cornea. 2008 December ; 27(Suppl 2): S1–83. doi:10.1097/ICO.0b013e31817780fb

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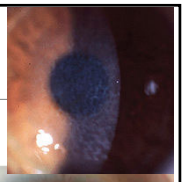
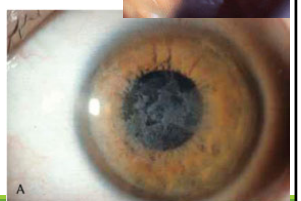
Reis-Bűcklers' Corneal Dystrophy

- Fine reticular pattern of opacities in Bowman's layer
- Affects central and mid-peripheral cornea
- Reduced vision in 2nd or 3rd decade
- **RCE's often begin in first 1-2 years of life**





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Cornea. 2008 December ; 27(Suppl 2): S1–83. doi:10.1097/ICO.0b013e31817780fb

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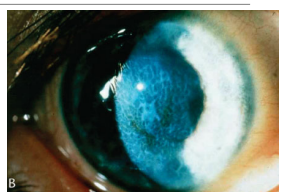
Thiel-Behnke Corneal Dystrophy

- Honeycomb-shaped Corneal Dystrophy
- Thought to be less aggressive than Reis-Bűcklers' Corneal Dystrophy
- **RCE can cause discomfort/pain in 1st-2nd decade**
- Gradual visual impairment develops later (slowly progressive)



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Cornea. 2008 December ; 27(Suppl 2): S1–83. doi:10.1097/ICO.0b013e31817780fb

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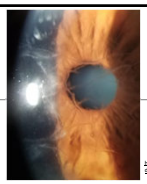
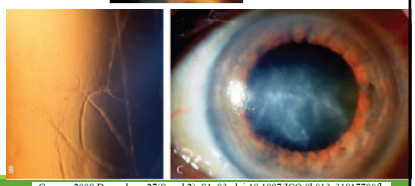
Lattice Dystrophy



- **Most common stromal dystrophy**
- Branching refractile lines in anterior central stroma that can thicken and opacify, affecting visual acuity
  - Progressive, vision typically impaired by 4th decade
- **Can result in RCE**



Cornea. 2008 December ; 27(Suppl 2): S1–83. doi:10.1097/ICO.0b013e31817780fb.

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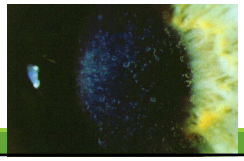
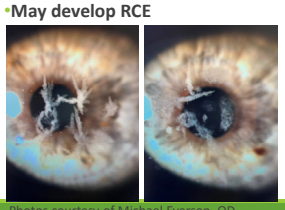
Granular Corneal Dystrophy, Type 1

- "Crushed breadcrumb" appearing deposits within the anterior stroma
- Childhood onset
- **May develop RCE later in disease**



Granular Corneal Dystrophy, Type 2 (Avellino Dystrophy)

- Granular Dystrophy Type 1 + Lattice Dystrophy
- **May develop RCE**



Photos courtesy of Michael Everson, OD

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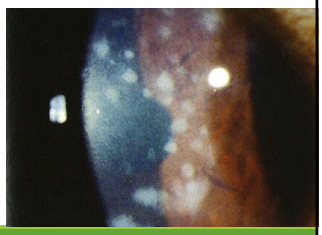
Macular Corneal Dystrophy

- Least common, but **most severe stromal dystrophy**
- Poorly demarcated gray-white opacities with diffuse cloudiness in intervening stroma
- Can involve all layers of the cornea
- May extend limbus to limbus
- Opacities may protrude through Bowman's **causing RCE**



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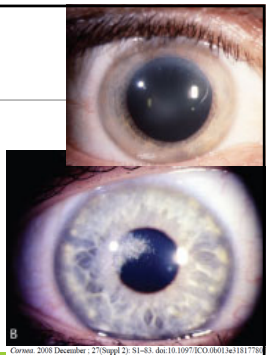
Schnyder's (Crystalline) Corneal Dystrophy

- ± Fine, ring of yellowish-white crystalline cholesterol deposits in central anterior stroma (54%)
- May be associated with hyperlipidemia
- Vision is usually not significantly affected
- **NO RCE's in this stromal dystrophy**



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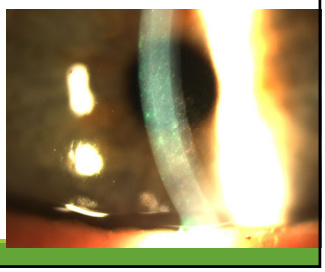
Fuch's Dystrophy

- Clinical presentation:
  - Corneal guttata
  - Pigment on endothelium
  - Stromal edema
- Usually manifests in 5-6th decade
- F>M
- Bilateral and progressive
- Complaints typically blur upon awakening
- Can develop microcystic edema/**RCE**



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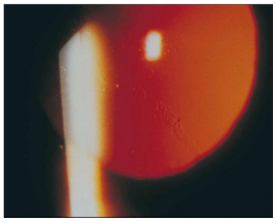
Posterior Polymorphous Corneal Dystrophy

- Nodular grouped vesicular and blister-like lesions on endothelial surface
- Band-like structures ("railroad tracks")
- Multilayered endothelium with thickened Descemet's membrane

Abnormal cells may extend into trabecular meshwork

- ~15% incidence of glaucoma



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