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Common Cases to Keep an Eye on in Pediatric Ophthalmology

July 22, 2022

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UAB Medicine/Callahan Eye

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No financial disclosures

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Objectives

1. Review **common** cases in pediatric ophthalmology
2. Review **treatment** and **management** options
3. **Highlight** features of the cases to watch closely

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Case 1 AB

- A 3-year-old male presented same day to the Callahan ER after being scratched by the family cat on the right side. UTD on immunizations (patient and cat). No significant previous eye injury or history.
- ER Exam RE:
  - Moderate eyelid edema/abrasions, nasal subconjunctival hemorrhage, no corneal abrasion
  - Otherwise Anterior/Posterior exam benign

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Case 1 AB

- A/P from ER:
  1) Subconjunctival hemorrhage RE
  2) Eyelid abrasions RE
     - Ofloxacin QID OD for 1 week
     - Amoxicillin 250 mg BID for 10 days
     - Acetaminophen for pain/comfort
- Follow-up:
  - 2-3 days outpatient

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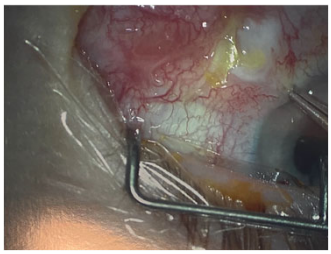
Case 1 AB

- Presented to clinic 10 days later
  - **Continual** pain and irritation RE
  - **"bloody tears"**
- Assessment/Plan:
  - Conjunctival foreign body RE
  - To OR



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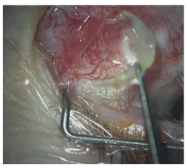
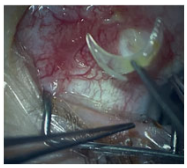
AB To OR next day
Conjunctival Foreign Body Removal RE

- **Removed FB**: suspected cat nail
- Westcott: dissect through area to ensure **no globe penetration**
- **Visualized/hooked MR muscle** to ensure no injury
- 0.5 cc Ancef injected subconj infranasally
- Closed conjunctival with 2 interrupted 8-0 Vicryl sutures

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AB Post-Op

- Regimen
  - Moxifloxacin QID/Erythromycin QID OD 1 week
  - Extend PO ABX total 14 days
- POW#1:
  - RE **healing well**, no signs of infection
  - **No motility deficits**

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Nonhealing conjunctival laceration?
*think foreign body!

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Case 2 CD

- A 3-year-old female presented outpatient after an ER visit one day prior from an **unwitnessed injury** with a coat hanger to the left eye.
- On exam:
  - Left upper and lower eyelid **moderate** edema, temporal tenons visible with large **bullous subconjunctival** hemorrhage/no obvious foreign body
  - Anterior chamber formed and pupil appears circular. **Difficult exam** and unable to determine extent of injury.
- A/P: Concern for Open Globe LE→ To OR for globe exploration LE

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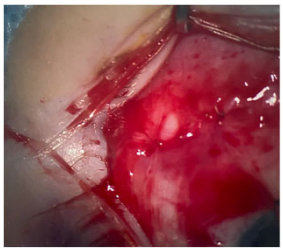
CD to OR same day
A/P: Conjunctival laceration LE



- 2 CM temporal circumferential **conj laceration** from 2-6:30 clock hours
- Extruded/dried tenon's removed
- Extended tenon's incision and hooked IR/LR to ensure **no globe violation**
- Closed with four interrupted 7-0 chromic

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CD Post-Op

- Regimen:
  - Moxifloxacin QID and Maxitrol QID LE for 7 days
- POW #1:
  - Conjunctival Laceration healing well LE
- POW #2:
  - **Left eye with limited elevation**

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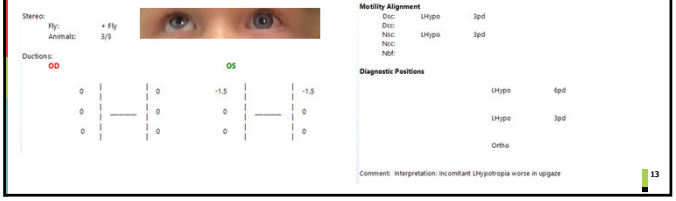
CD Post-Op

- POW #2/4:
  - Left eye with motility deficit- **limited elevation**
- Work-up→ Ordered CT Head/Orbits thin cuts w/ and w/o contrast



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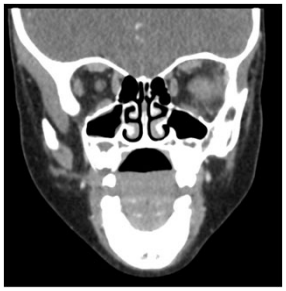
CD Imaging: CT ORBITS WO W CONTRAST ACCESSION

CT orbits:

Imaging was performed both before and after the administration of IV contrast material. There is no evidence of a radiopaque foreign body. No orbital hematoma is identified. There is no evidence of CT globe rupture. No fractures are identified. Right maxillary sinus mucosal thickening is present.

IMPRESSION:

1. Right maxillary sinus mucosal thickening.
2. No other abnormal findings.



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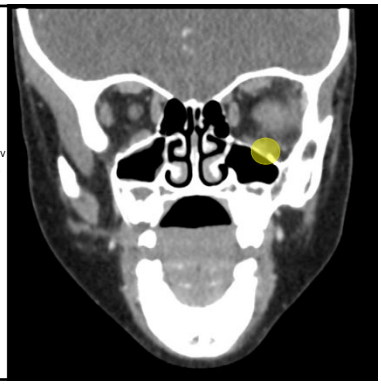
IMPRESSION:

1. Right maxillary sinus mucosal thickening.
2. No other abnormal findings.

REVIEWED W/ Oculoplastics: small focal disruption in bone: orbital floor LE



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CD To OR With Oculoplastics

A/P:

*Inferior Orbital Floor Puncture with adhesions LE

*Released adhesions

POST OP COURSE

- POW#2: Improvement in head position and motility/alignment
- POM#4: Complete **RESOLUTION**

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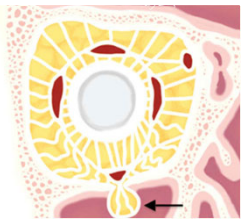
Orbital floor fracture with entrapment: Imaging and clinical correlations in 45 cases

Nora Silverman[a], Jordan Spindle[a], Sunny X. Tang[a], Andrew Wu[a], Bryan K. Hong[b], John W. Shore[c], Sara Wester[d], Flora Levin[e], Michael Connor[f], Benjamin Burt[g], Tanuj Nakra[c], Todd Shepler[h], Eric Hink[i], Tarek El-Sawy[j], and Roman Shinder[a,c]



- Retrospective Study 45 patients with OFF and entrapment
- 47% (21 cases) had radiologic evidence of orbital CT with commentary on entrapment
- 53% (24 cases) no commentary on entrapment
- A key concept is that entrapment occurs when any orbital tissue (muscle or fat) is trapped in the fracture site.
- HIGH CLINICAL SUSPICION of ENTRAPMENT

Nora Silverman, Jordan Spindle, Sunny X. Tang, Andrew Wu, Bryan K. Hong, John W. Shore, Sara Wester, Flora Levin, Michael Connor, Benjamin Burt, Tanuj Nakra, Todd Shepler, Eric Hink, Tarek El-Sawy & Roman Shinder (2017) Orbital floor fracture with entrapment: Imaging and clinical correlations in 45 cases, Orbit, 36:5, 331-336, DOI: 10.1080/01676830.2017.1337180

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Injury with motility deficit? *review orbital imaging!

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Case 3 DE

- 3-year-old male with presented with **bilateral upper and lower eyelid chalazia** and "**whitish film** over LEFT eye" for 6 months per mother. Recurrent chalazia since 18 months.
- **Failed** intermittent treatment with Maxitrol ungfor 6 months
  Difficult Exam in clinic → Send to OR for Exam Under Anesthesia
  - A/P: possible ulcer LE→ cover with Moxifloxacin QID OS for 1 week

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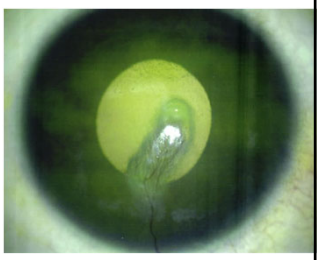
DE EUA: Exam RE

- MGD/blepharitis moderate/severe with injection on the eyelid margins: 4 eyelids
- Fluress→ no staining
- **Corneal scar** 3mm linear @ 6oclock, inferior to visual axis, stromal vascularity, no stromal infiltrate/edema



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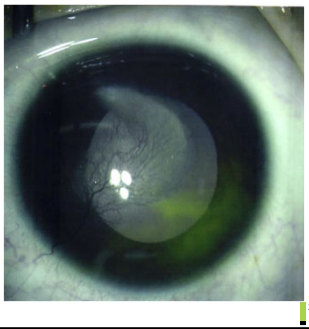
DE EUA: Exam LE

- MGD/blepharitis moderate/severe with injection on the eyelid margins: 4 eyelids
- Fluress→ no staining
- Central curvilinear **corneal scar visually significant**, stromal vascularity, no stromal infiltrate/edema



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DE EUA: Complete Exam

- IOP:
  - Normal
- Indirect Ophthalmoscopy:
  - Cup-to-disc: 0.25 RE and 0.3 LE
  - Normal posterior exam
- Cycloplegic Refraction:
  - +2.50+1.25x110 RE and +4.50+0.50x075 LE
  - gave CRX for monocular precautions: cut plus—1.50 sphere OU

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DE Assessment/Plan

- **Blepharokeratoconjunctivitis (BKC) with corneal scarring OS>OD**
  - Stop Moxifloxacin as no epithelial defect
  - **Lid hygiene** (warm compresses/lid scrubs)
  - Start Erythromycin ung qhs OU
  - Start FML TID OU
  - **Start Erythromycin Ethylsuccinate 200mg/5mL PO 5mL BID** d/t severity

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Case DE

- 2 months post-EUA: **Resolution** of active vascularity
  - Tapered FML to qdaily OU
  - Continued lid hygiene/erythromycin ung/PO erythromycin
- 3 months post-EUA: **Residual** corneal scar
  - d/c FML OU IOP stable with iCare at 11 OU
  - Continued care otherwise
- 6 months post-presentation: **Stable**
  - Continue with blepharitis management/medications

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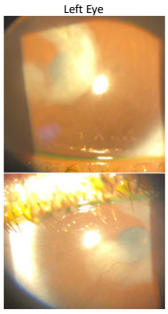
Case 3 DE Future Plan

- Vision RE: 20/30 and LE: Hand Motion
- Controlled blepharitis and inactive corneal NV, now?
  - Unable to comply with patching OD d/t complete opacification in visual axis OS
- Mom would like additional options, future plan?
  - Eval with cornea specialist → transplant candidate?

Left Eye



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BKC Highlights

- Primary prevention is **KEY** to prevent severe vision threatening disease:

  INTERVENE EARLY!
- Prevalence: Asian/Middle Eastern, female slightly greater than male
- Most common age of onset: 4-5 years old (6 months to teenage yrs)
- Main differential diagnosis (**HSV/VKC/AKC**):
  - Herpes Simplex Virus Keratitis: unilateral/dendrites
  - Vernal Keratoconjunctivitis: early childhood/self-limited/upper tarsal conj/limbal
  - Atopic Keratoconjunctivitis: adolescence/chronic/lower tarsal conj
  - Consider: Demodex/ocular rosacea

Rousta ST. Pediatric blepharokeratoconjunctivitis: is there a 'right' treatment? Curr Opin Ophthalmol. 2017 Sep;28(5):449-453. doi: 10.1097/ICU.0000000000000399. PMID: 28696955.
Hammersmith KM. Blepharokeratoconjunctivitis in children. Curr Opin Ophthalmol. 2015 Jul;26(4):301-5. doi: 10.1097/ICU.0000000000000167. PMID: 26058029.

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BKC Features

- Often **misdiagnosed** and **sight-threatening**
- D/t **bacterial overgrowth/meibomian gland dysfunction**
- Recurrent chalazia, anterior/posterior blepharitis, and follicular conjunctivitis
- Goal of treatment: Decrease bacterial load/inflammation

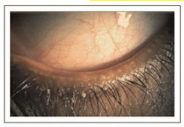

FIGURE 1. Anterior blepharitis: visible flaking on eyelash margin. Reproduced with permission from [11].

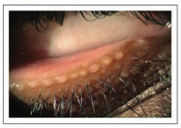

FIGURE 2. Posterior blepharitis: inspissated meibomian gland openings. Reproduced with permission from [11].

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BKC Treatment: Conservative

- **Lid Treatment**
  - Warm Compresses
  - Lid scrubs (ocusoft, briotech, baby shampoo, if demodex→tea tree oil/ointment)
  - Flaxseed oil or Omega 3 gummies

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https://eyewiki.aao.org/Blepharokeratoconjunctivitis_(BKC)_of_Childhood

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BKC Treatment: Antibiotics

- **Topical Antibiotics**
  - Erythromycin/bacitracin ung: aids with staphylococcal aureus colonization of eyelids
- **Systemic Antibiotics**
  - Macrolide antibiotic may be used in children of any age and is the best choice in a younger child <8 years old: *known to be bactericidal/anti-inflammatory*
    - Erythromycin ethylsuccinate 200 mg/5 mL
      - 12.5 mg to 40 mg/kg/day divided into two doses
      - average 3-year-old use 5mL PO BID
    - Azithromycin: 5mg/kg/day divided into twice daily dosing vs. 15 mg/kg/day daily
  - Tetracycline such as doxycycline contraindicated in children d/t dentition staining
  - Long term ABX: 3-6 months with taper

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BKC Treatment: Other

- **Steroids**
  - Fluorometholone (FML 0.1%)
  - Loteprednol (Lotemax 0.5%)
  - Issues with insurance? Try Maxitrol/Tobradex
  - Slow taper
- **Secondary Dry Eye**
  - Preservative free artificial tears
  - Lubricating ointment at night

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Blepharitis severe:
corneal scarring?

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Review Highlights

1. Nonhealing conjunctival laceration: foreign body?
2. Injury with motility deficit: review orbital imaging!
3. Blepharitis severe: corneal scarring?

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Thank you!

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Questions?

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