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# Common Pediatric Eye Conditions

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**Akron Children's Vision Center**



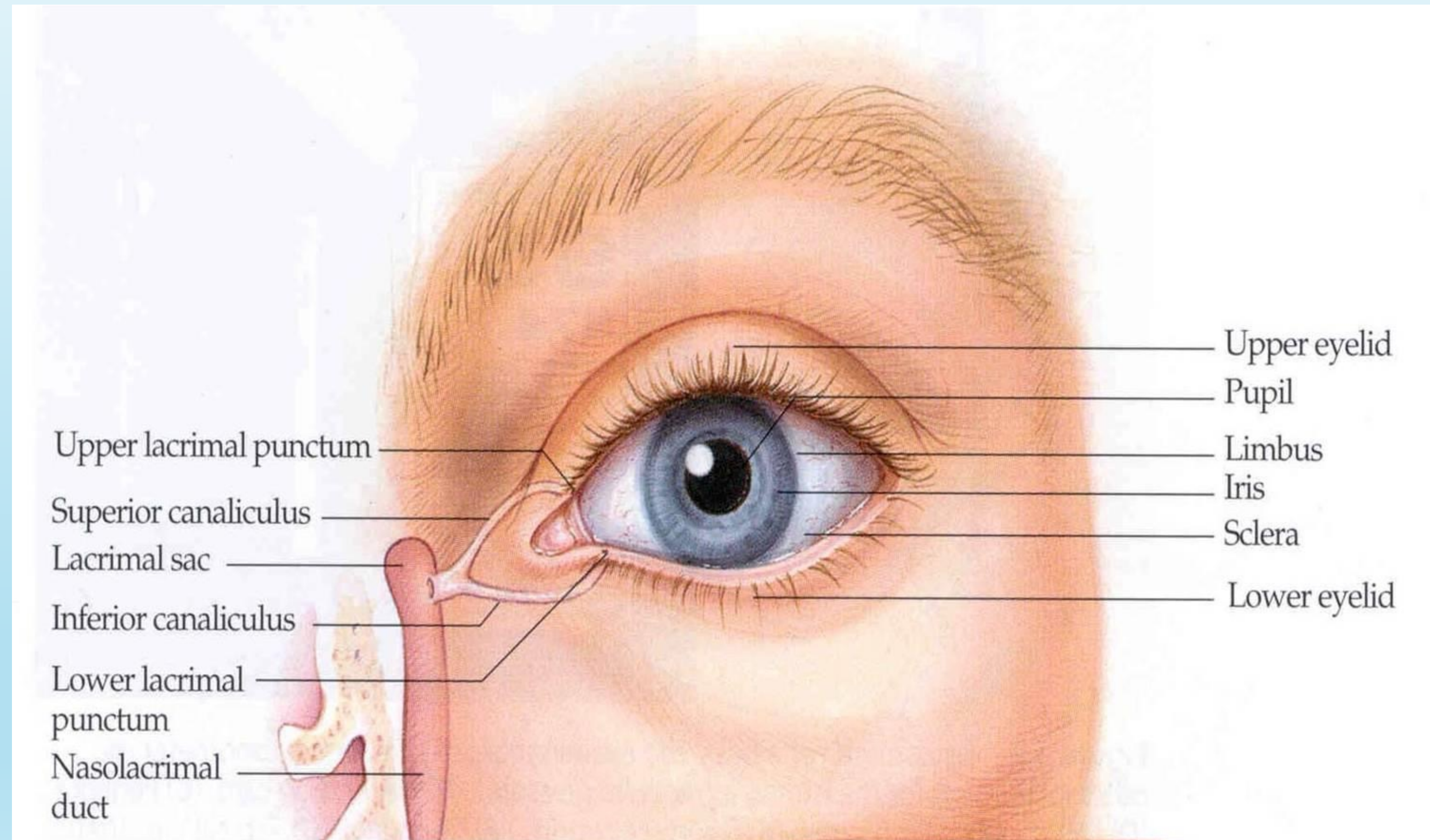
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# Vision Screening

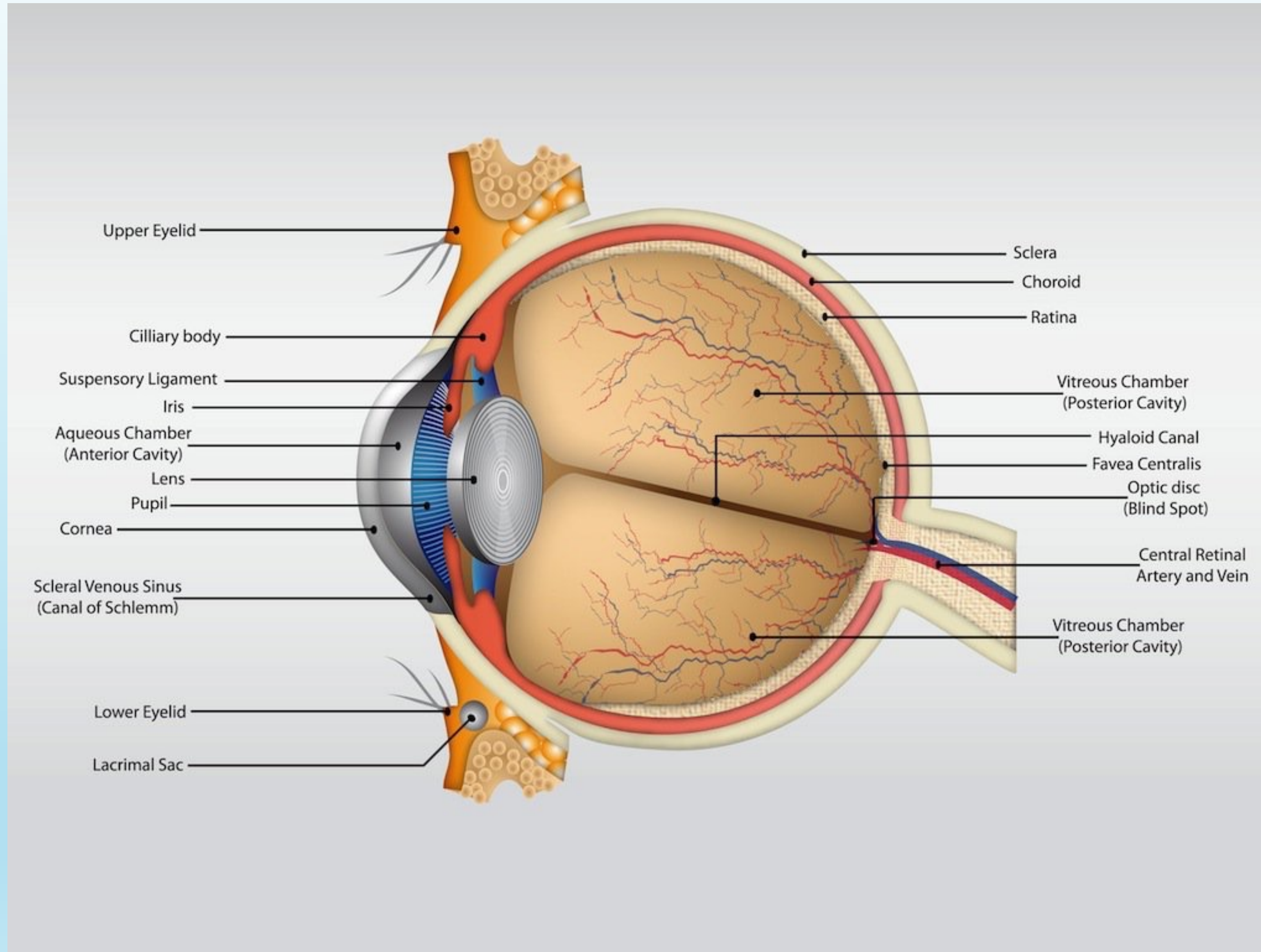




# ANATOMY

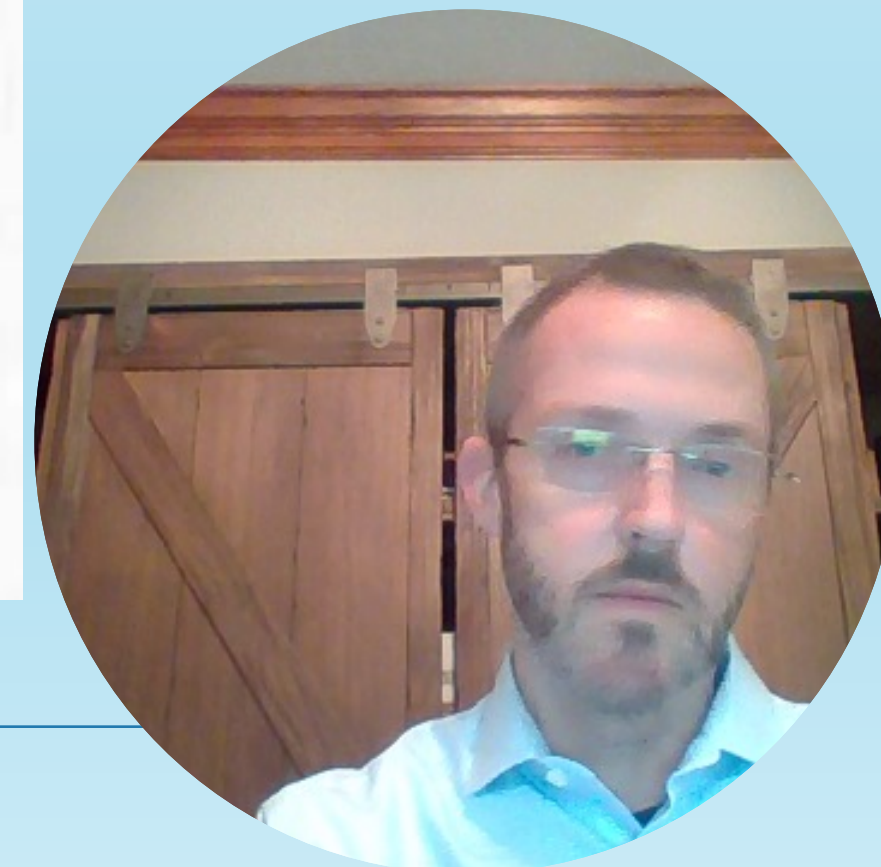
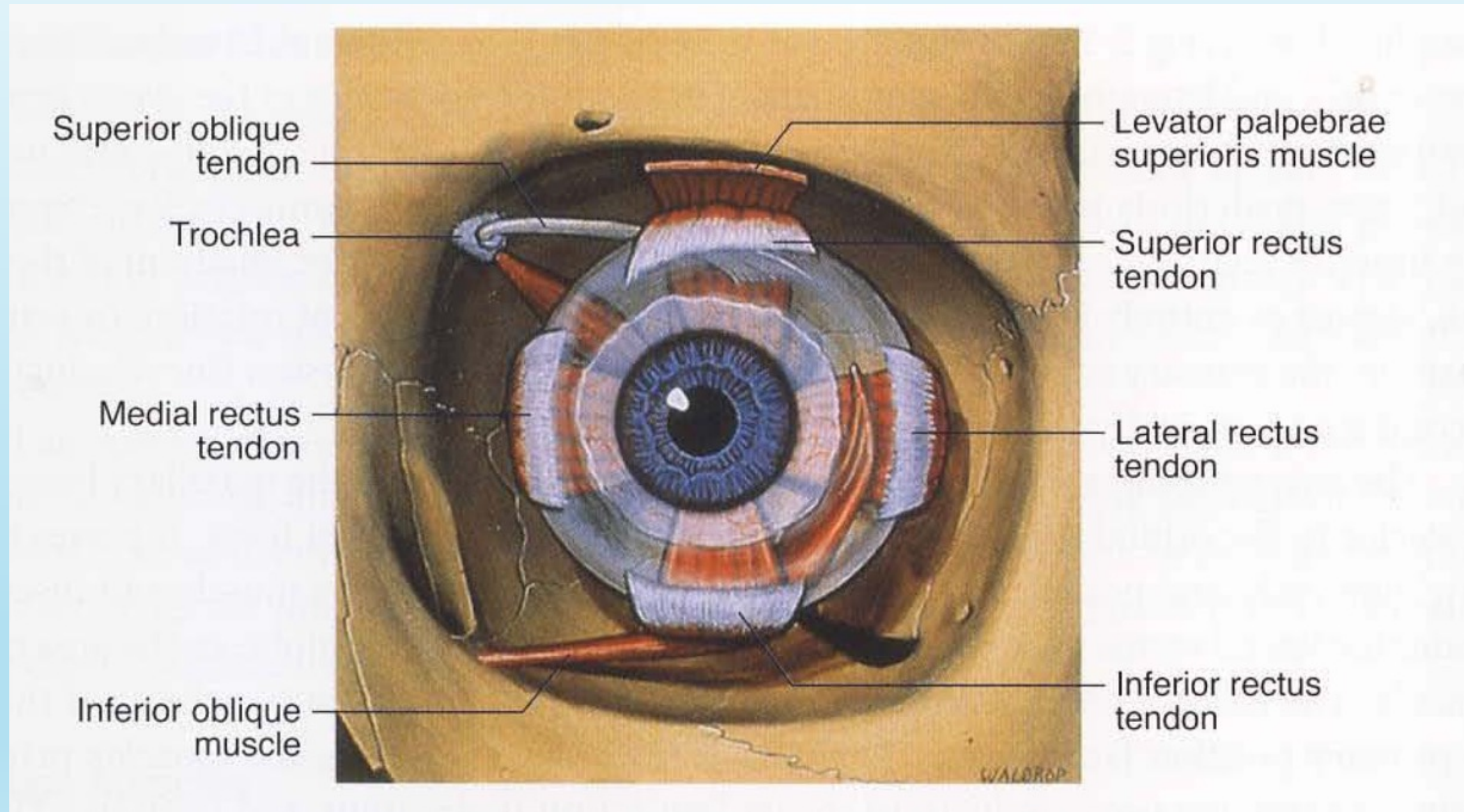








# ANATOMY





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# History





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# Parental Input

- Birth History
- Family History
- Past Medical History
- Milestones
- Photos/External Reports

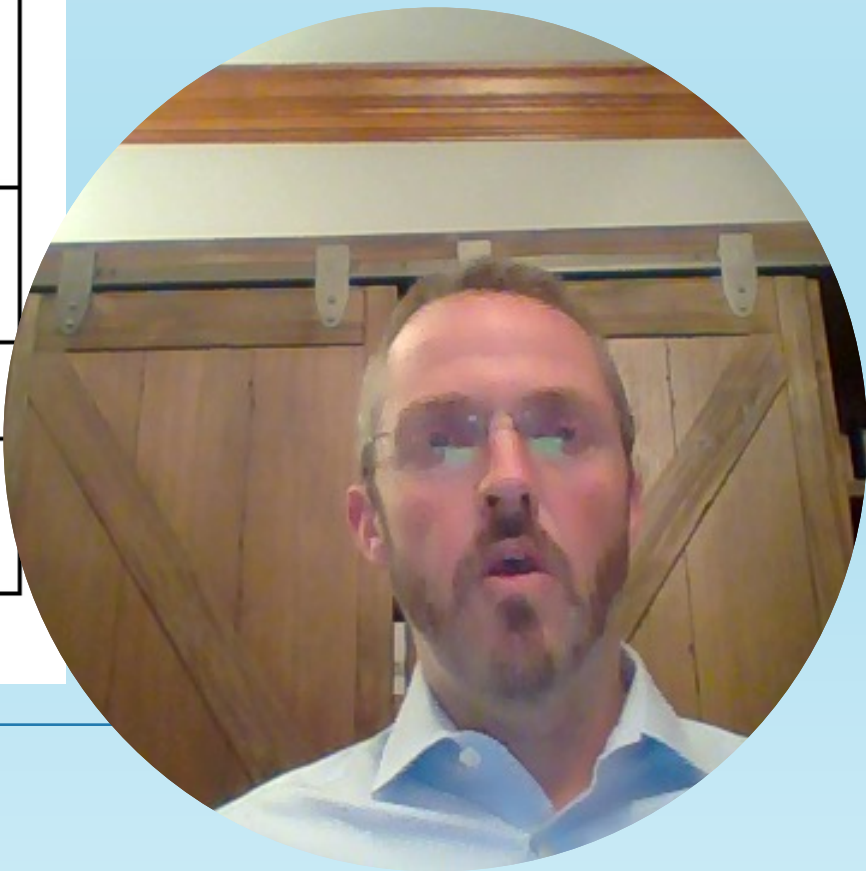




**Visual developmental milestones relevant to a pediatric ophthalmology examination in young children**

Age group	Fine motor-adaptive	Personal/social	Language (receptive and expressive)
0–4 weeks	Visual following from side to midline (90° arc)	Regards human faces with interest	
2 months		Smiles responsively	
3 months	Looks at object placed in hand Looks promptly at objects in midline Follows visually in 180° arc and in circular pattern		
4 months	Reach and grasp begin Looks at objects in hand	Excited when toys presented	
5 months		Distinguishes strangers from family	
6 months		Pushes adult hand away to reject	
8 months		Finger feeds	Responds to name when called (turns)
9 months	Explores pellet with index finger		
10 months		Imitates nursery tricks (modeled), e.g. pat-a-cake Bangs two cubes together in imitation	
12 months		Hands over toy on request with accompanying hand-out gesture	
24 months	Threads shoelace through hole		
48 months	Picks longer of two lines	Buttons up	Points to colors on request (red / blue, yellow / green)

Adapted from Goldbloom R. Pediatric Clinical Skills. 4th ed. Philadelphia, PA: Elsevier; 2011. With permission from Elsevier.





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# Examination



# Examination

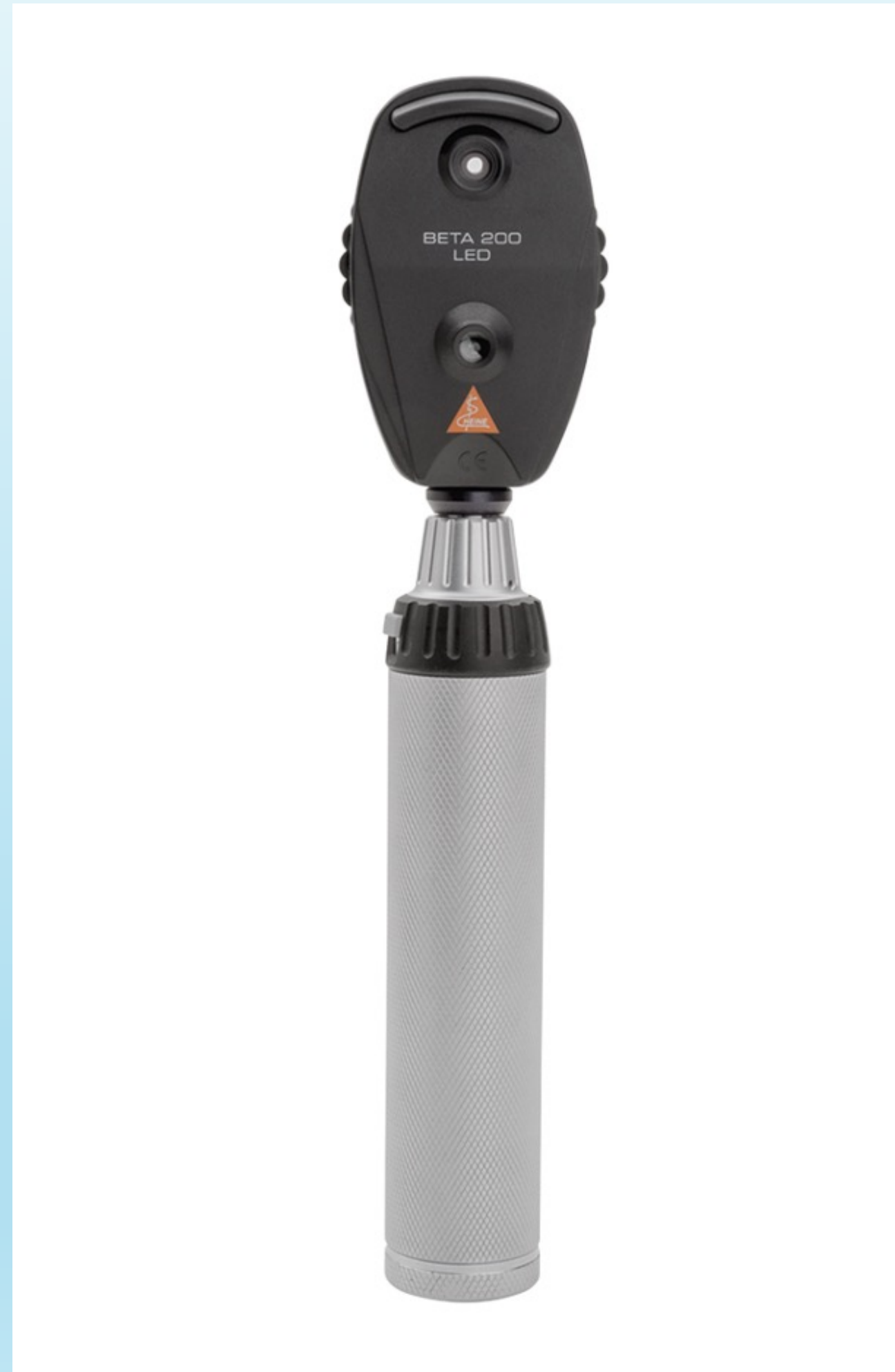
- Age
- Comorbidities
- Temperament
- Value of the Red Reflex
  - Direct Ophthalmoscope
- Toys
- Videos





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# Your Friend



# SYSTEMATIC APPROACH

- VISION
- VISUAL FIELDS
- PUPILS
- MOTILITY
- EXTERNAL
- LIDS/LACRIMAL
- CONJUNCTIVA/CORNEA
- IRIS/ANTERIOR CHAMBER
- RED REFLEX (LENS/VITREOUS)







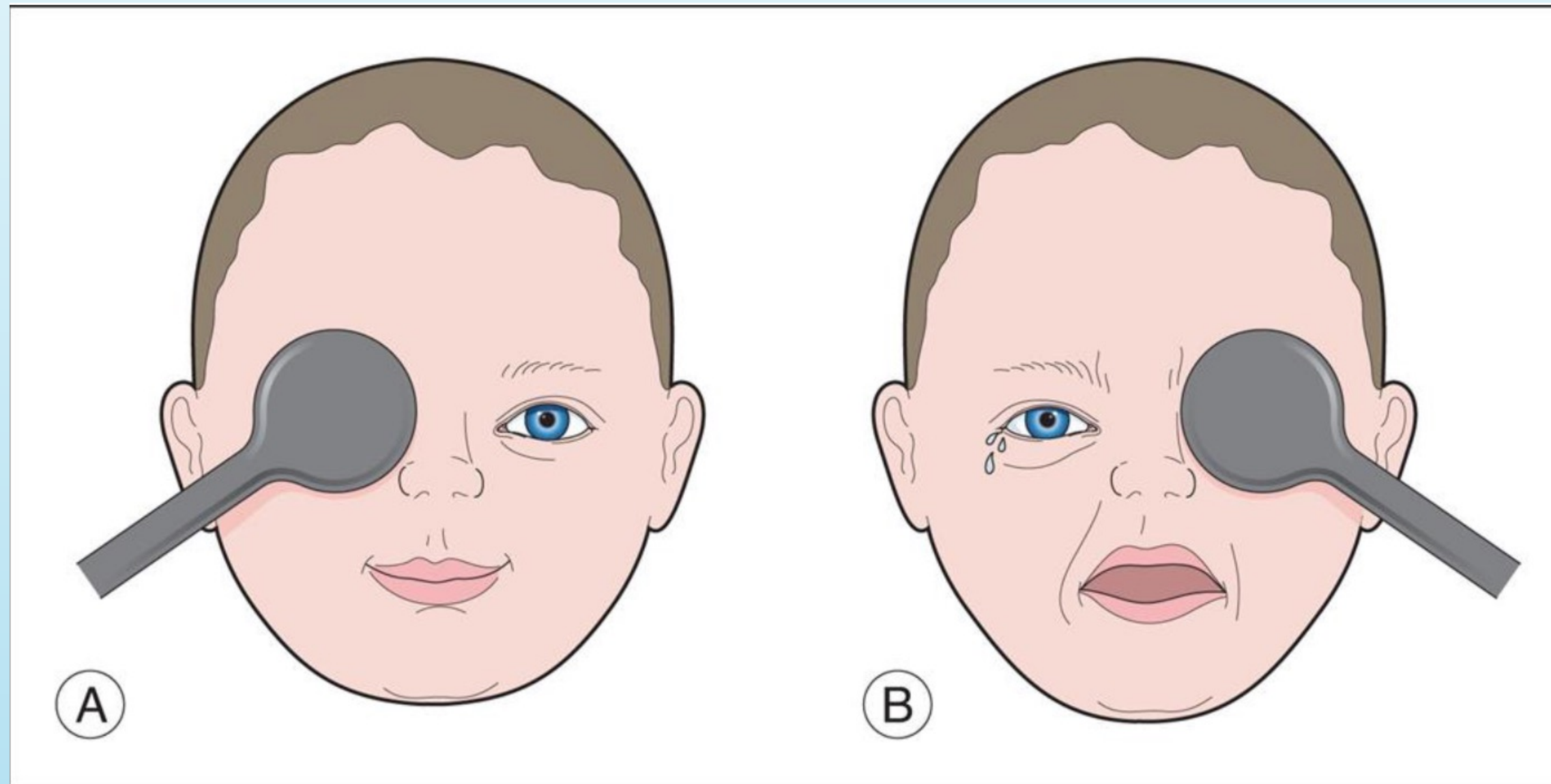
# TAKE HOME

- Before getting close to the child, sit back and observe
- LOOK FOR SYMMETRY
- Look at the eyelid position
- Look at the pupils
- Watch how the child observes the environment





# Vision



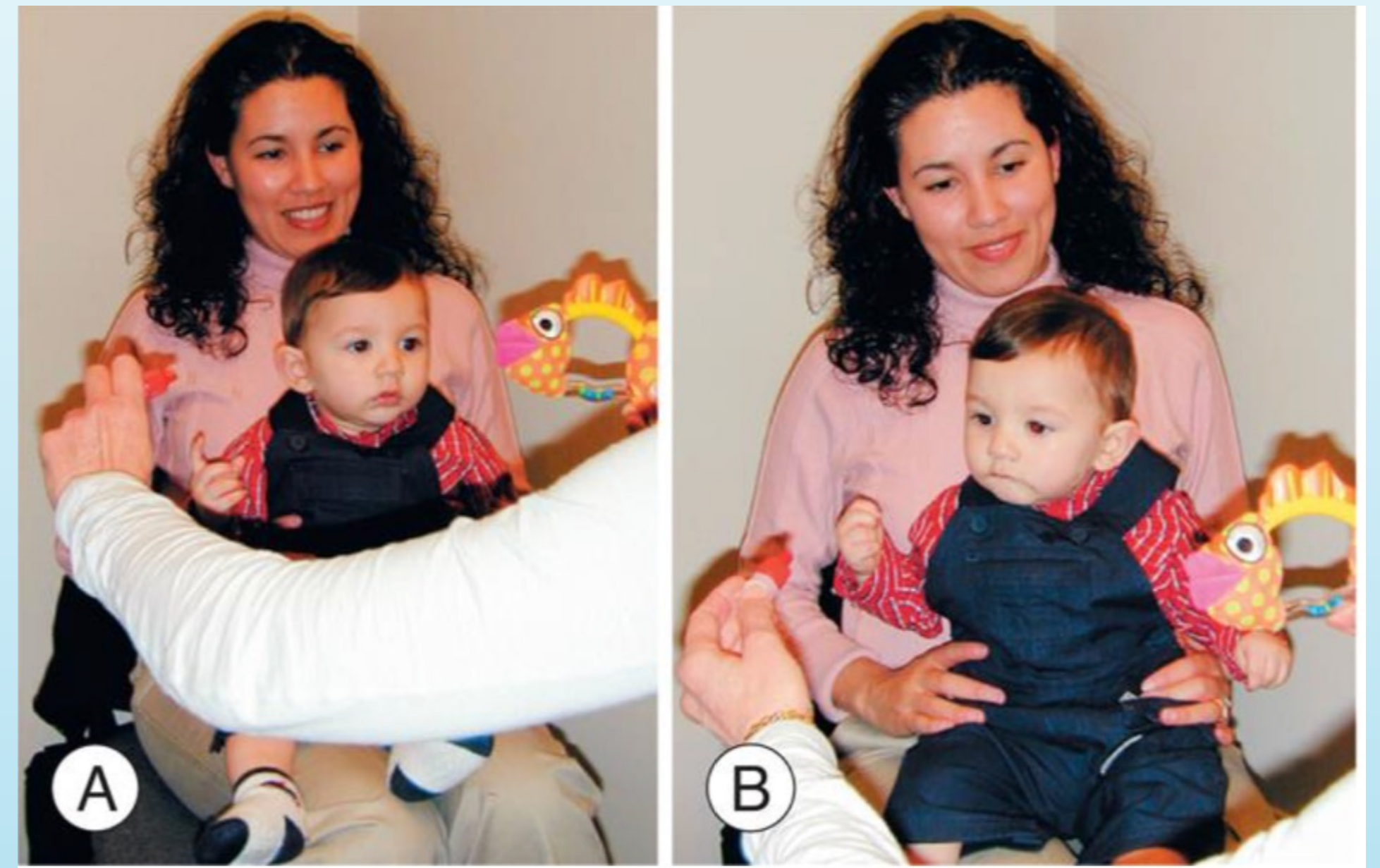
- Newborn - React to light
- 2 mo - Fixate
- Toddler - Fix and follow, Object to Cover
- PreK- Matching
- Kindergarten and beyond - Optotype (HOTV Snellen)





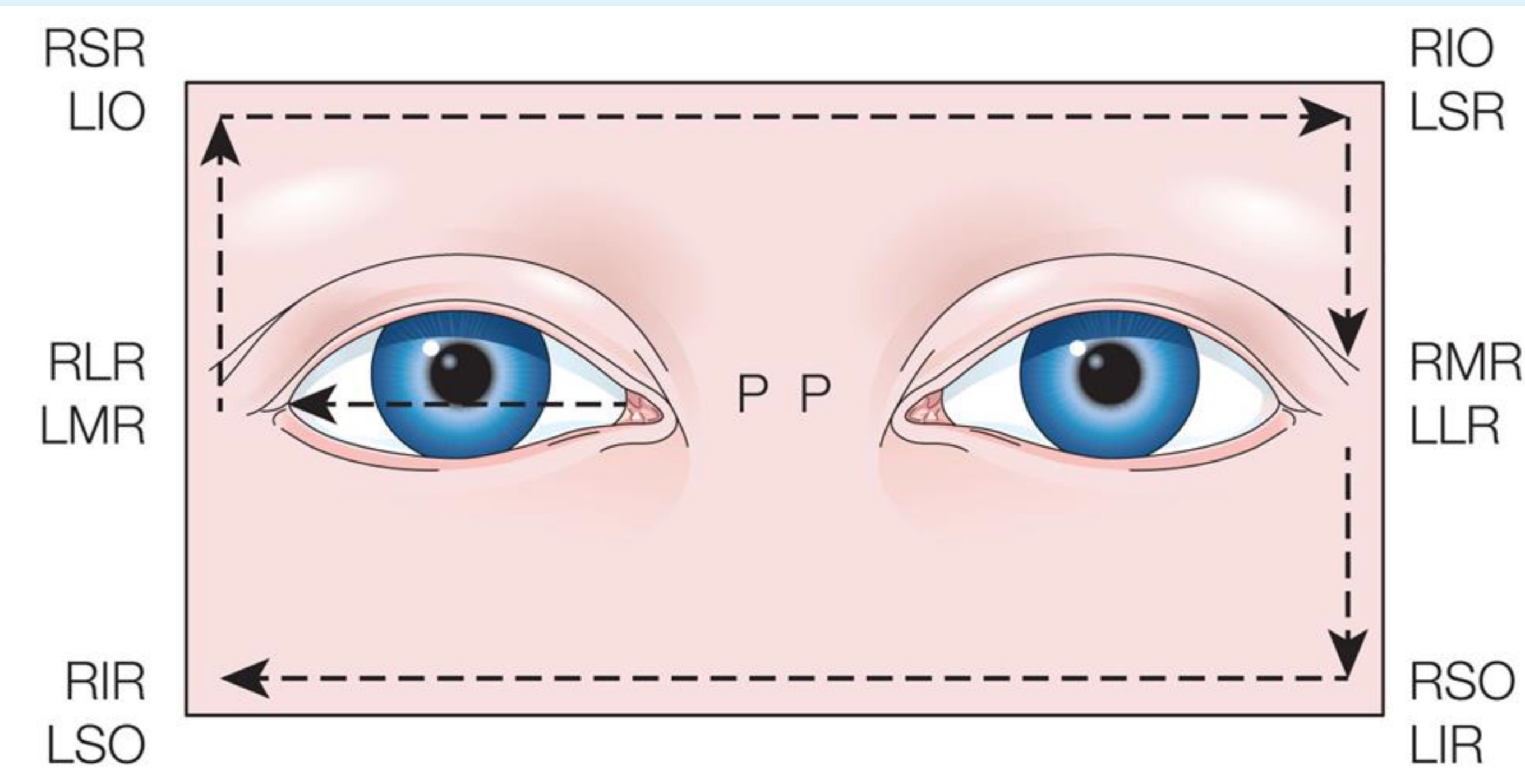








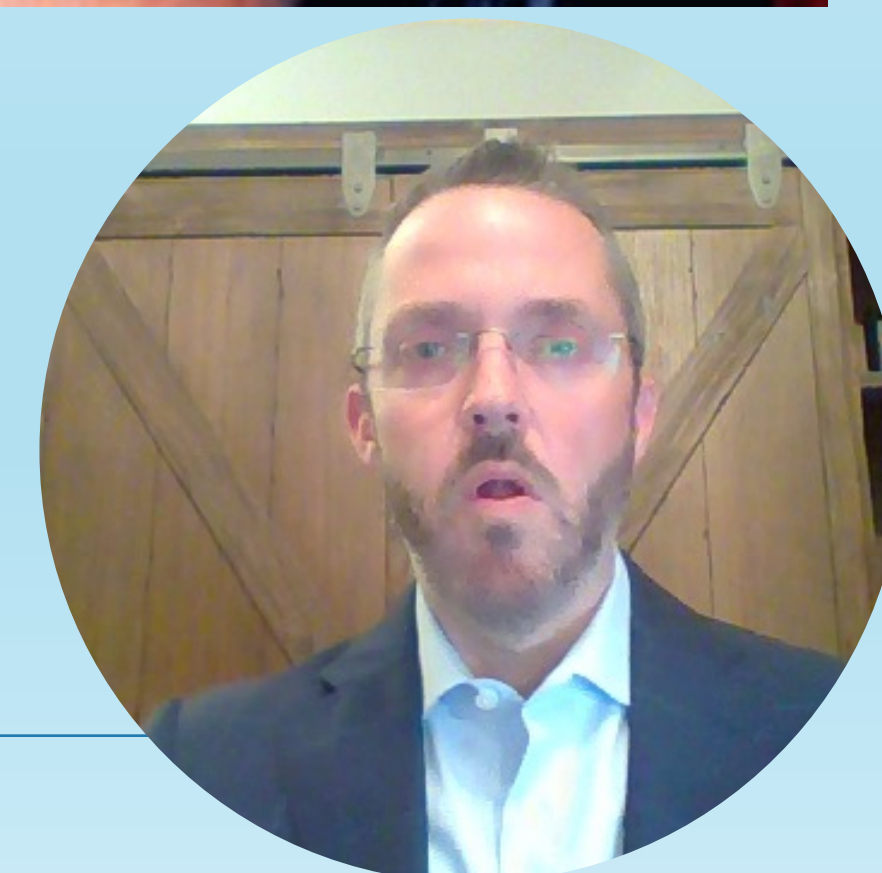
# Motility/Alignment



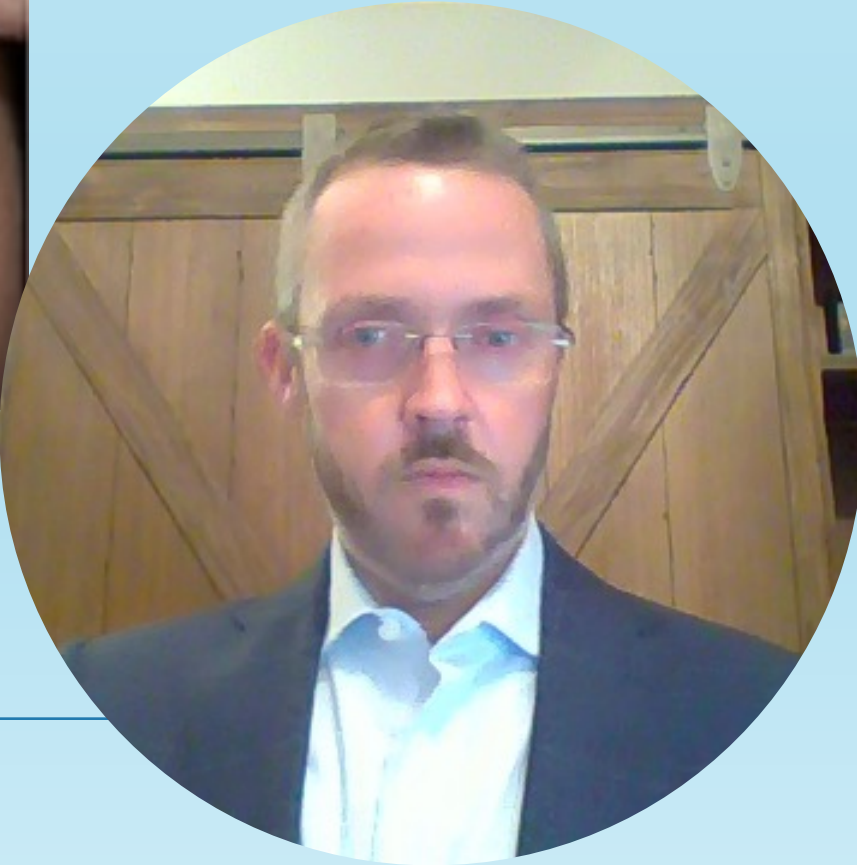
- Interesting target (flashing light, favorite show)
- Symmetry
- Persistence
- Penlight
- Practice
- VOR















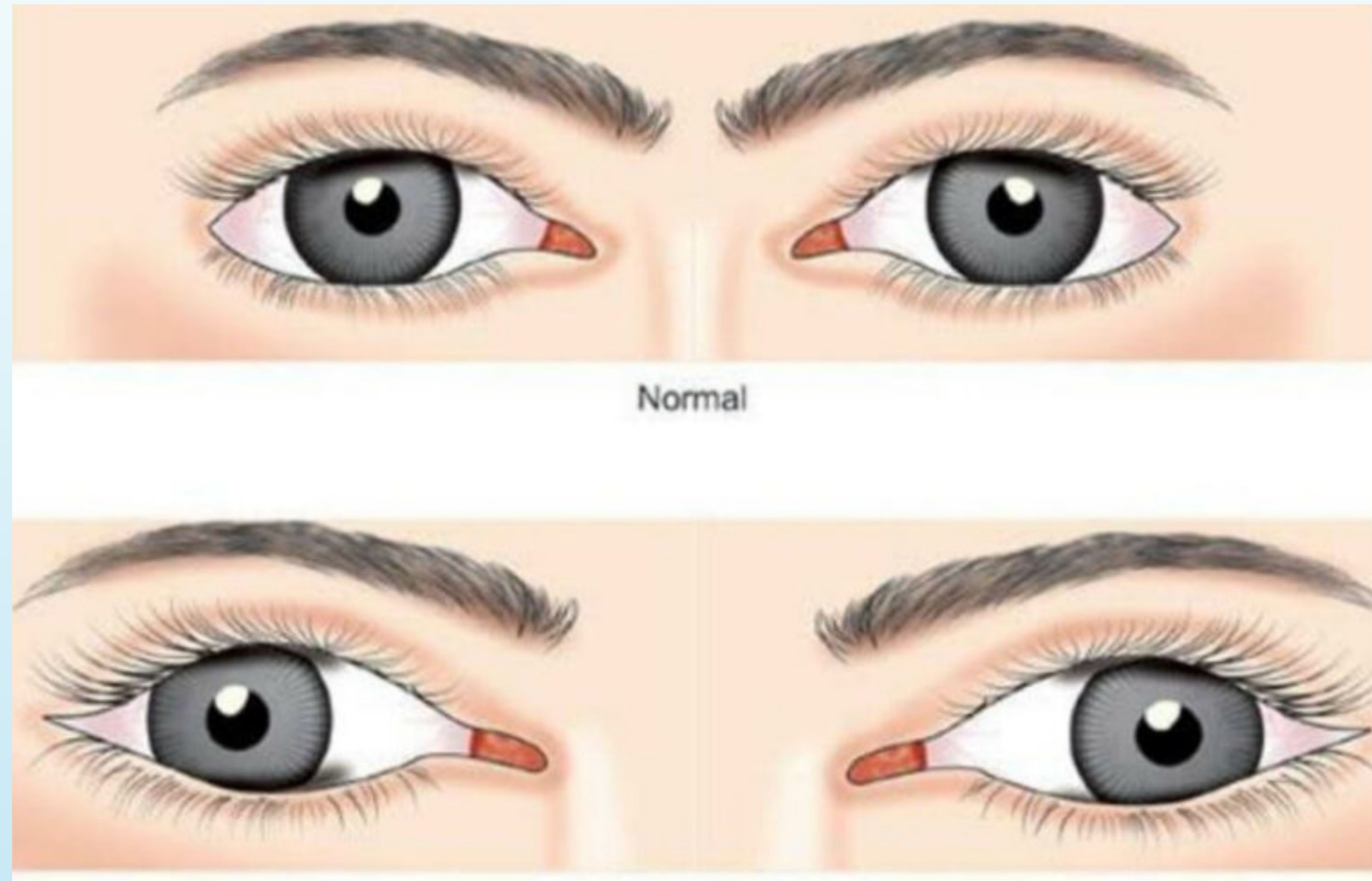
# External Appearance

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- Head Shape
- Birthmark/Lesions
- Orbit/Eyelid morphology/spacing
- Facial Deformities/Symmetry
- Clefting















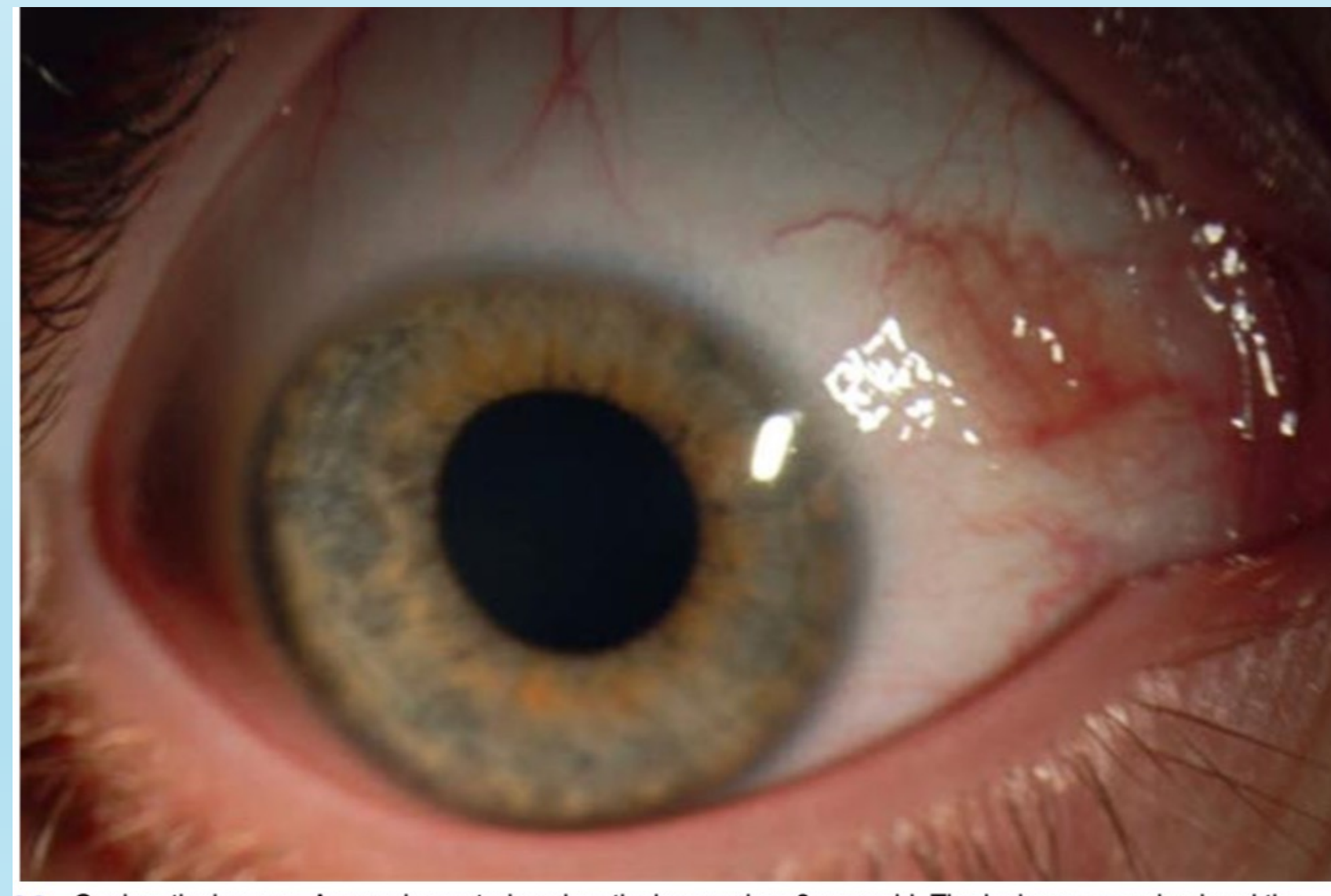
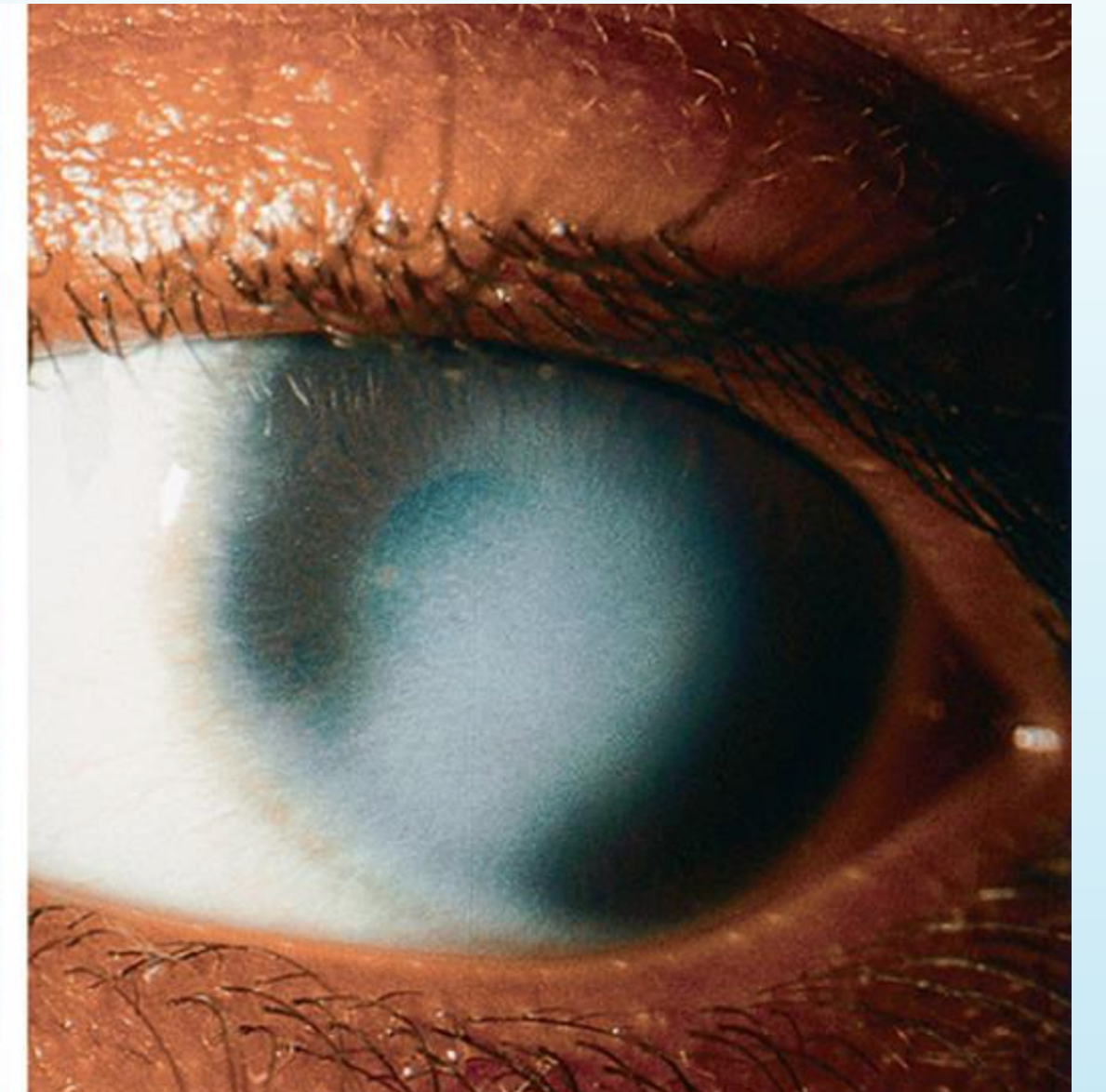
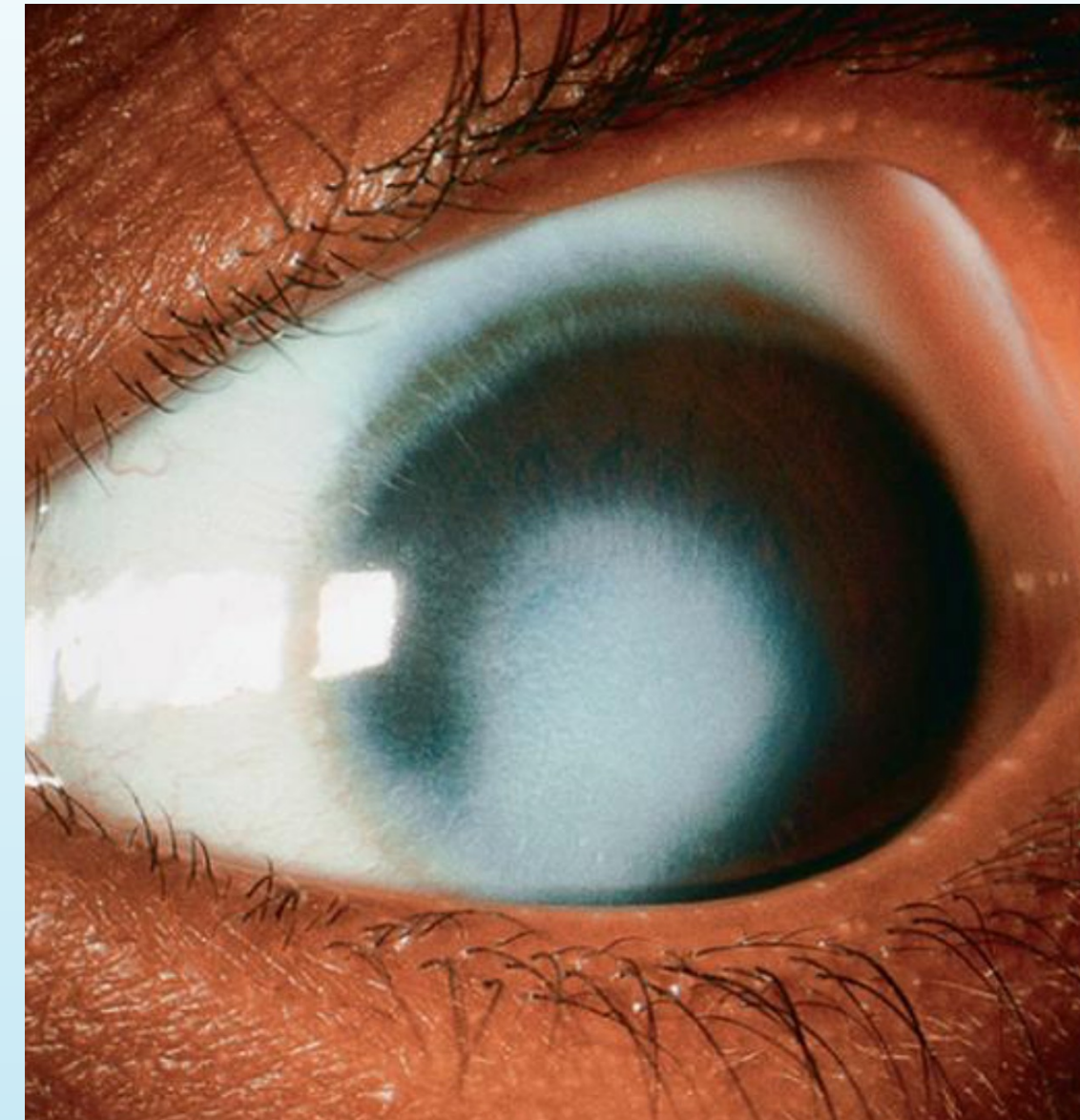
# Conjunctiva/Cornea

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- History
  - Maternal history/prenatal care
- Corneal Diameter
- Corneal Clarity
- Color
- Discharge







6.6 Orbicularis oculi. A non-pigmented orbital lesion in a 2-year-old. The lesion was excised and the











# Iris/Anterior Chamber

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- Color
- Vascularity
- Defects
- Eyelid Abnormalities







# Red Reflex

- Evaluation of Lens / vitreous / retina
- Clear
- Dull
- Absent
- Unable





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# Newborn Exam Techniques

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- **DIRECT OBSERVATION**
- Symmetry
- Penlight/Direct Oph
- RTL/BTL
- Red reflex





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# NEONATAL OCULAR ISSUES

- Intrauterine Infection
- Neonatal Conjunctivitis
- Anatomic Abnormality
- Delayed Visual Maturation





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# Intrauterine Infections

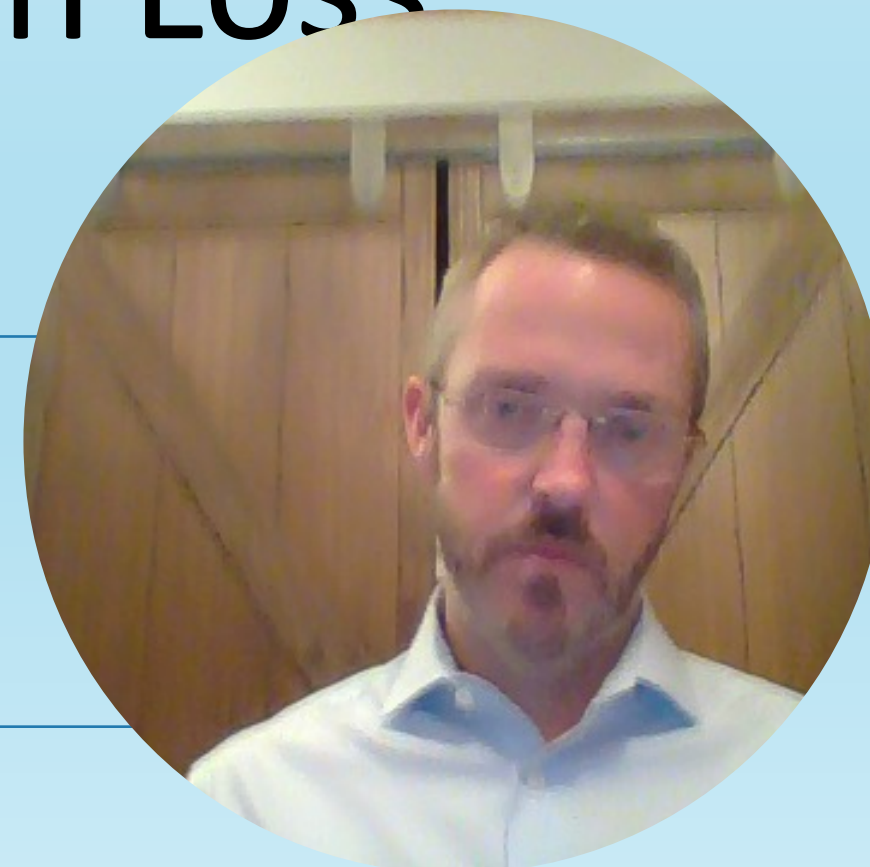
- Infectious Agents
  - Toxoplasmosis
  - CMV
  - Rubella
  - Syphilis
- All require immediate referral





# CMV

- Retinitis
- Optic Atrophy
- Mild Risk of Vision Loss





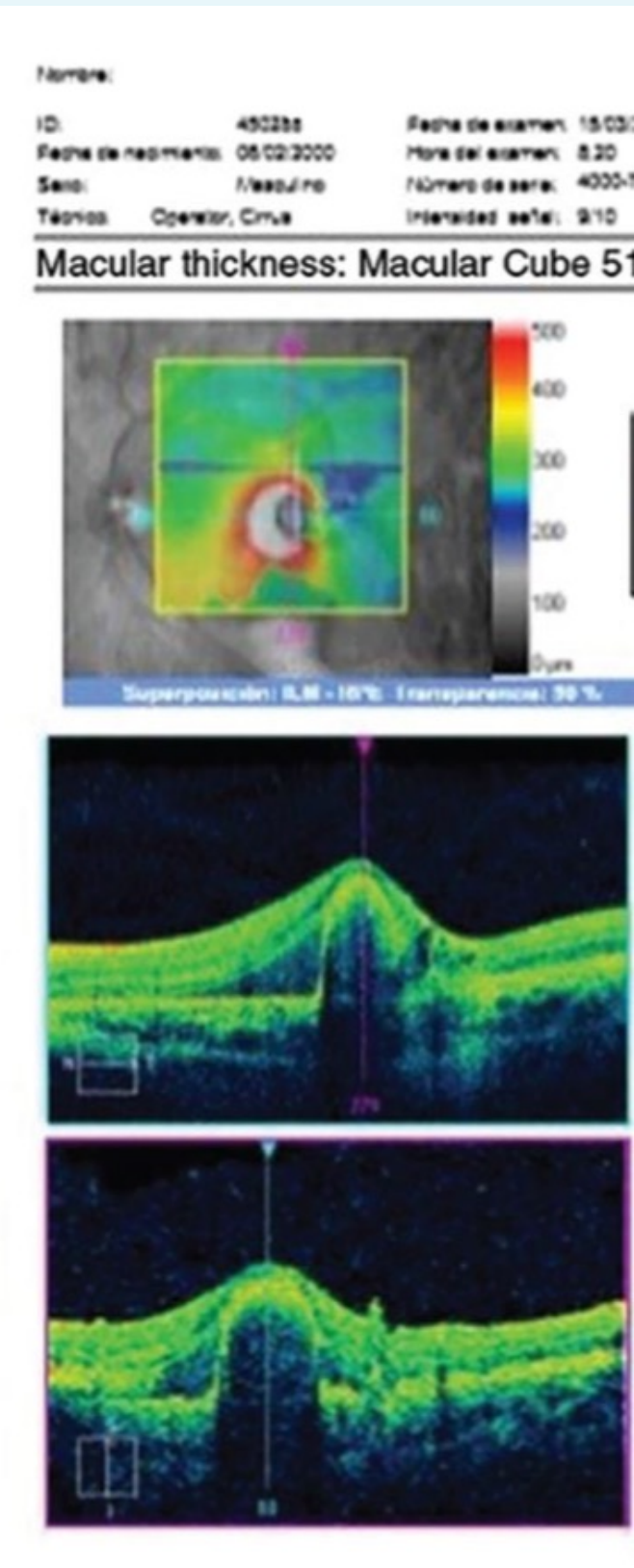
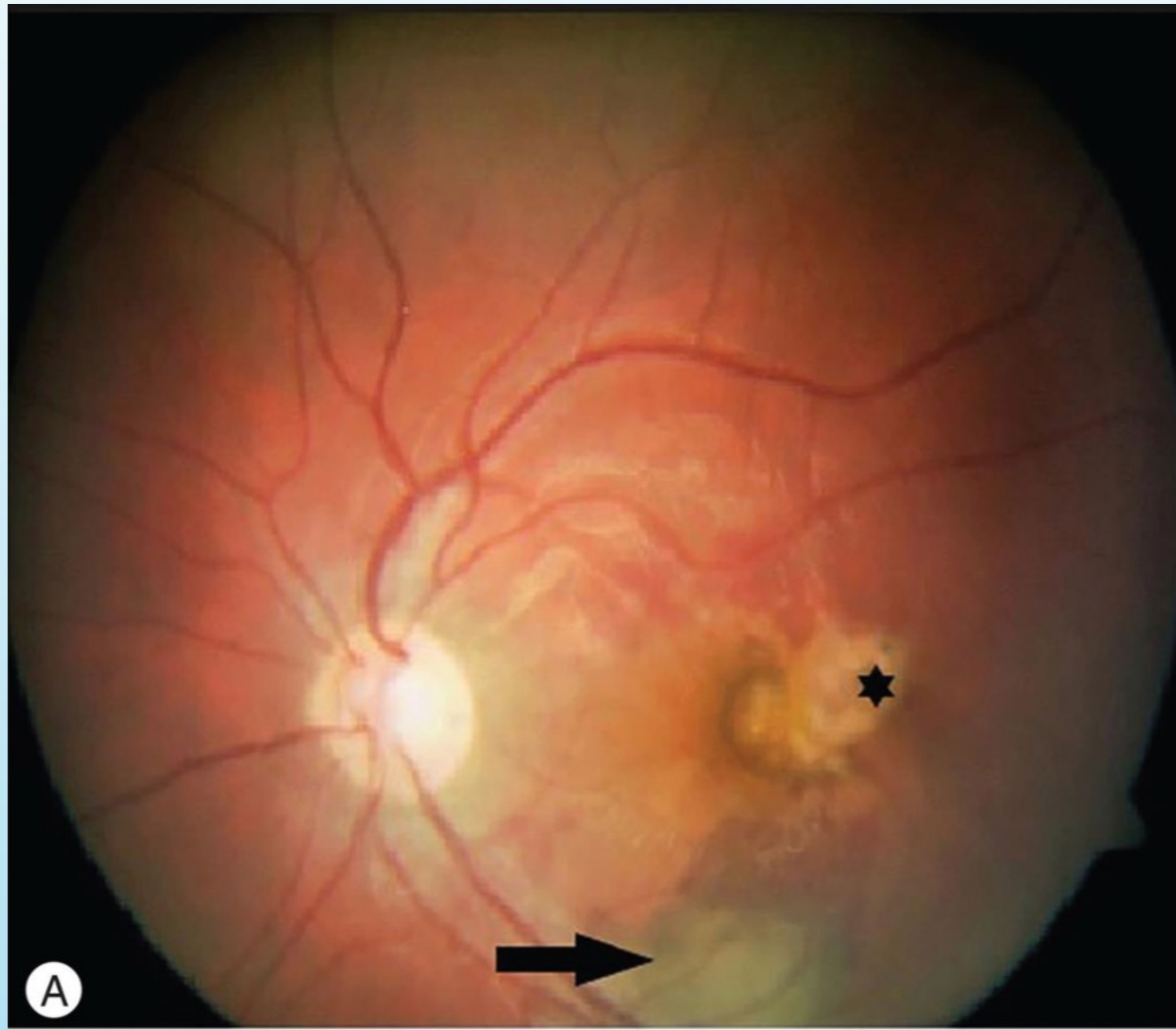


# Rubella

- Rash
- Cataract Formation
- Iris Hypoplasia







# Toxoplasmosis

- Intracranial Calcifications
- Retinochoroiditis







# Neonatal Conjunctivitis

- Chlamydia
- Bacteria
- HSV
- Gonorrhea

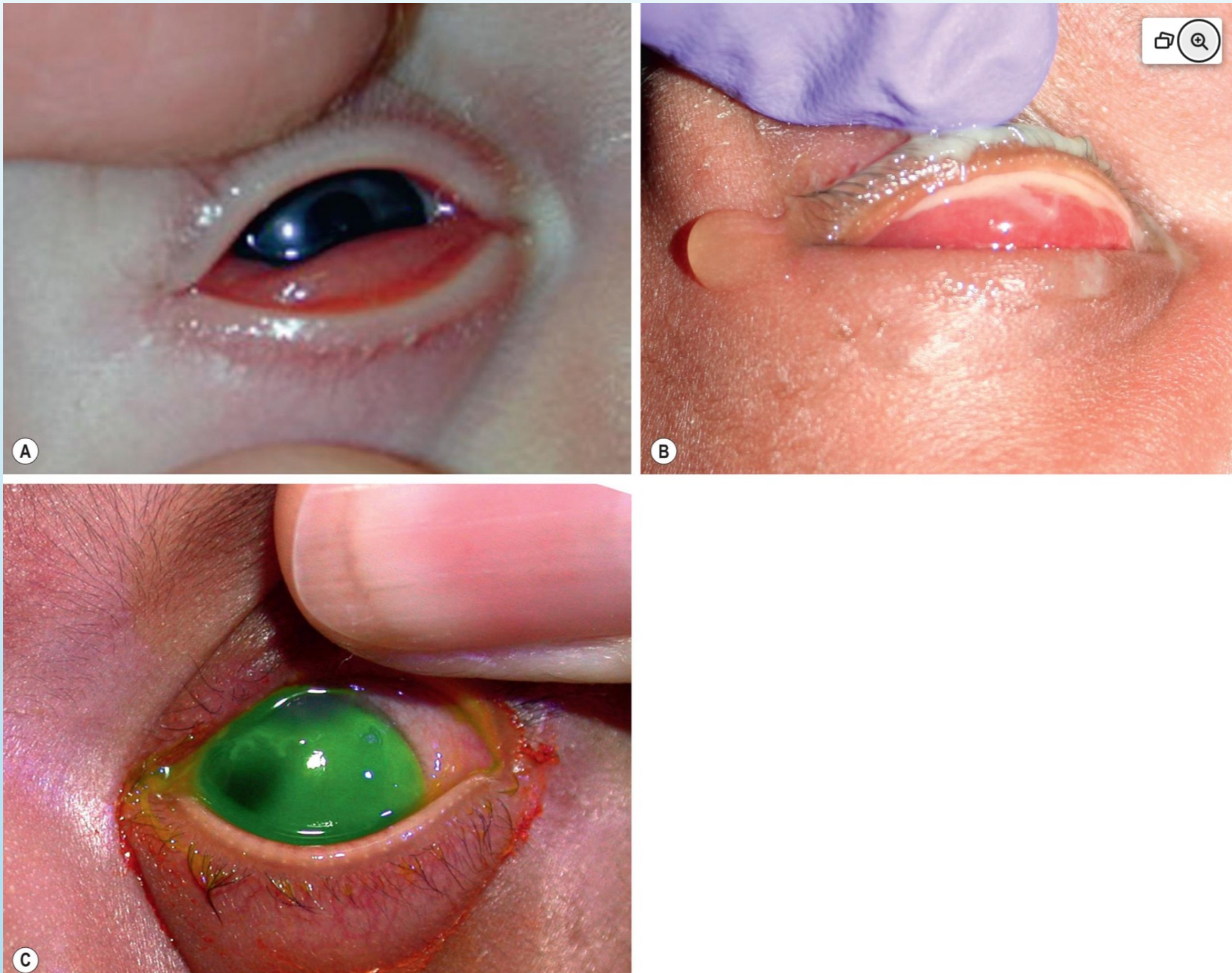
**Immediate referral**



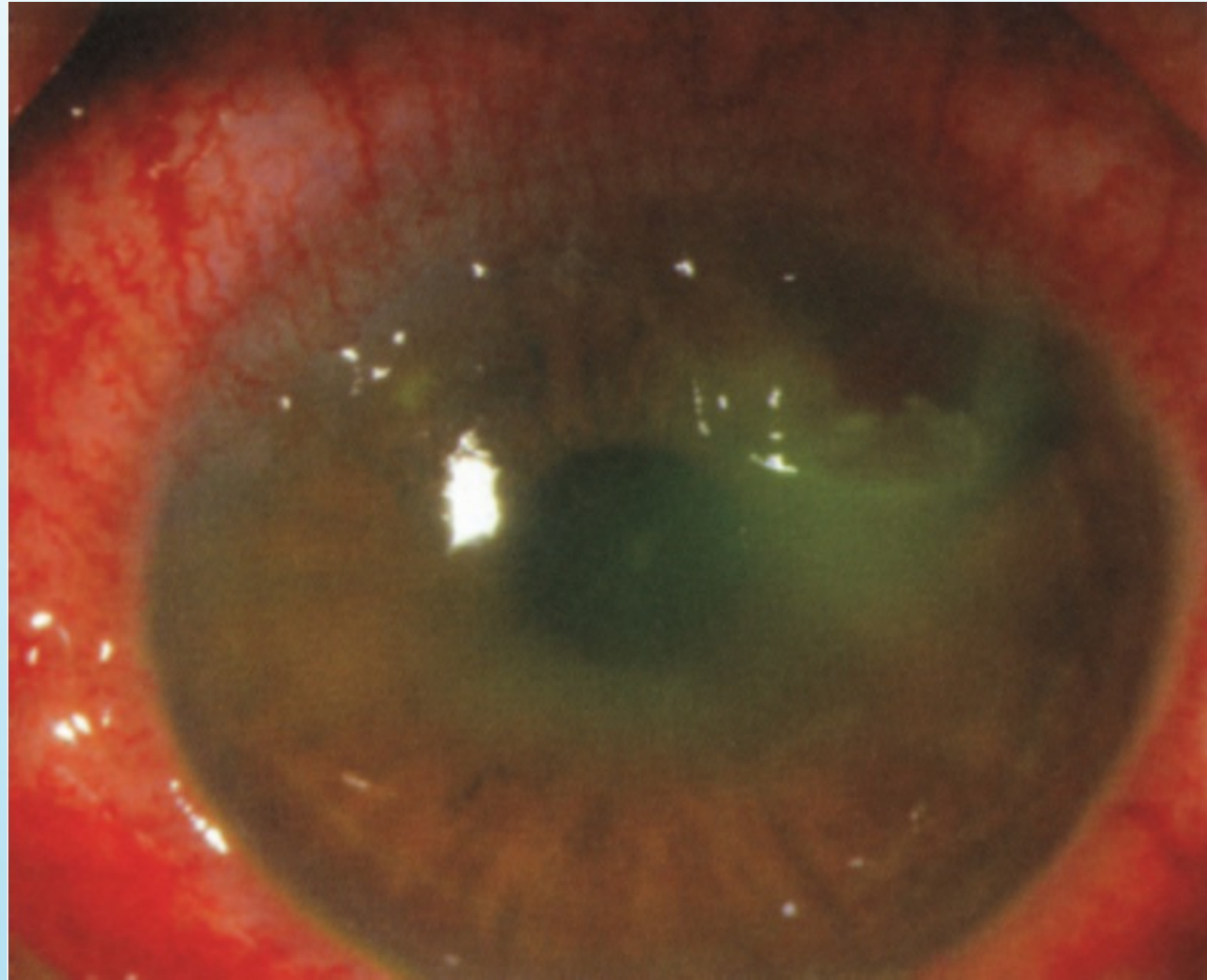


# Chlamydial Conjunctivitis

- Mucopurulent discharge
- Pseudomembranes
- Self resolving BUT scarring and blindness can occur
- Systemic treatment





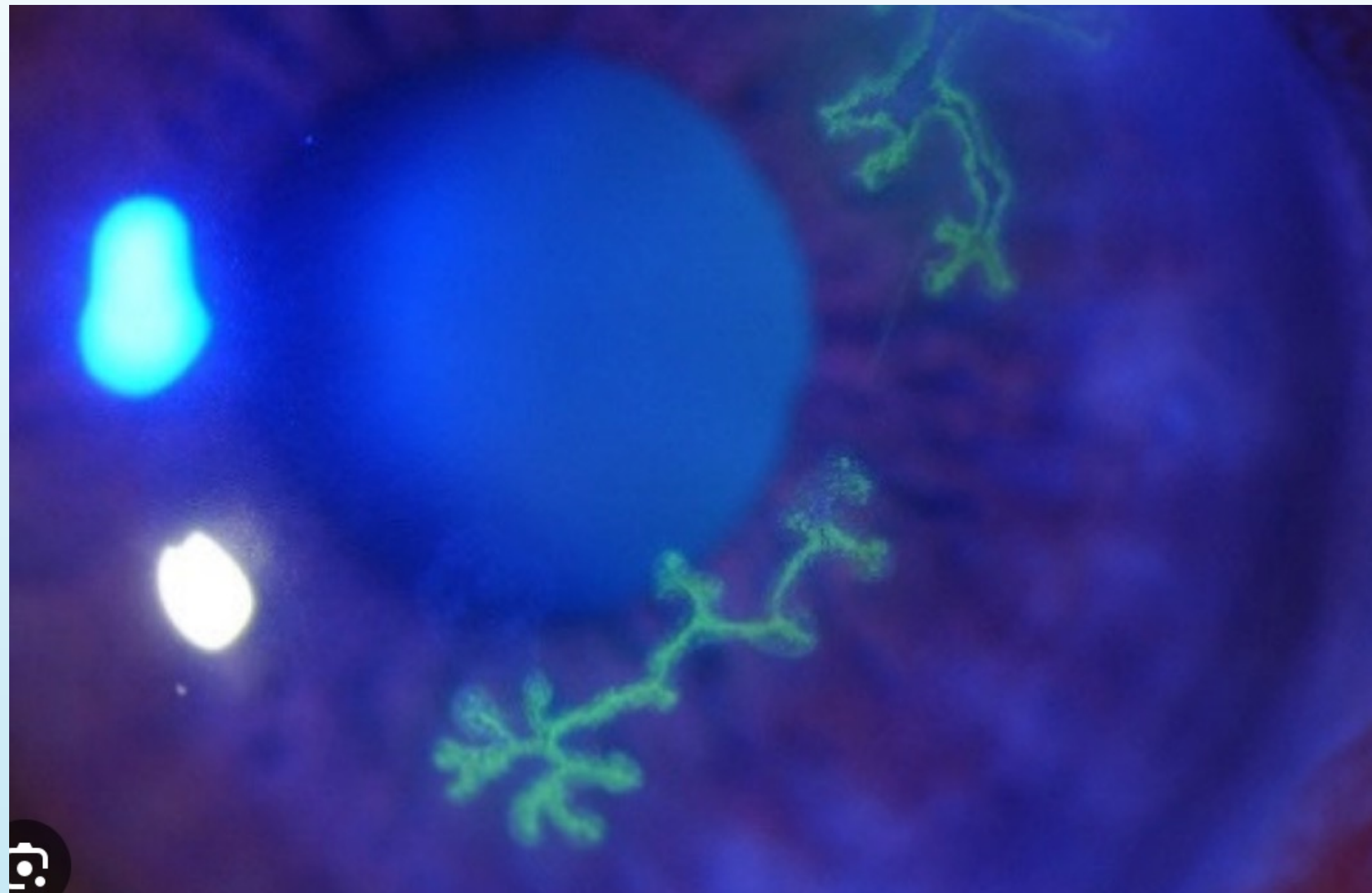


# Gonococcal Infection

- Severe ocular involvement with possible corneal involvement
- Profuse purulent discharge
- Can penetrate an intact cornea epithelium







## Herpetic Conjunctivitis

- Eyelid vesicular rash can often be absent
- Dendrite pattern on staining can progress to geographic ulcer
- Systemic treatment required







## Neonatal Anatomic Abnormalities

- Leukocoria
  - Opacity at any level of the visual axis
    - Cloudy Cornea
    - Cataract
    - Vitreous/Retinal Abnormality
- Urgent Referral





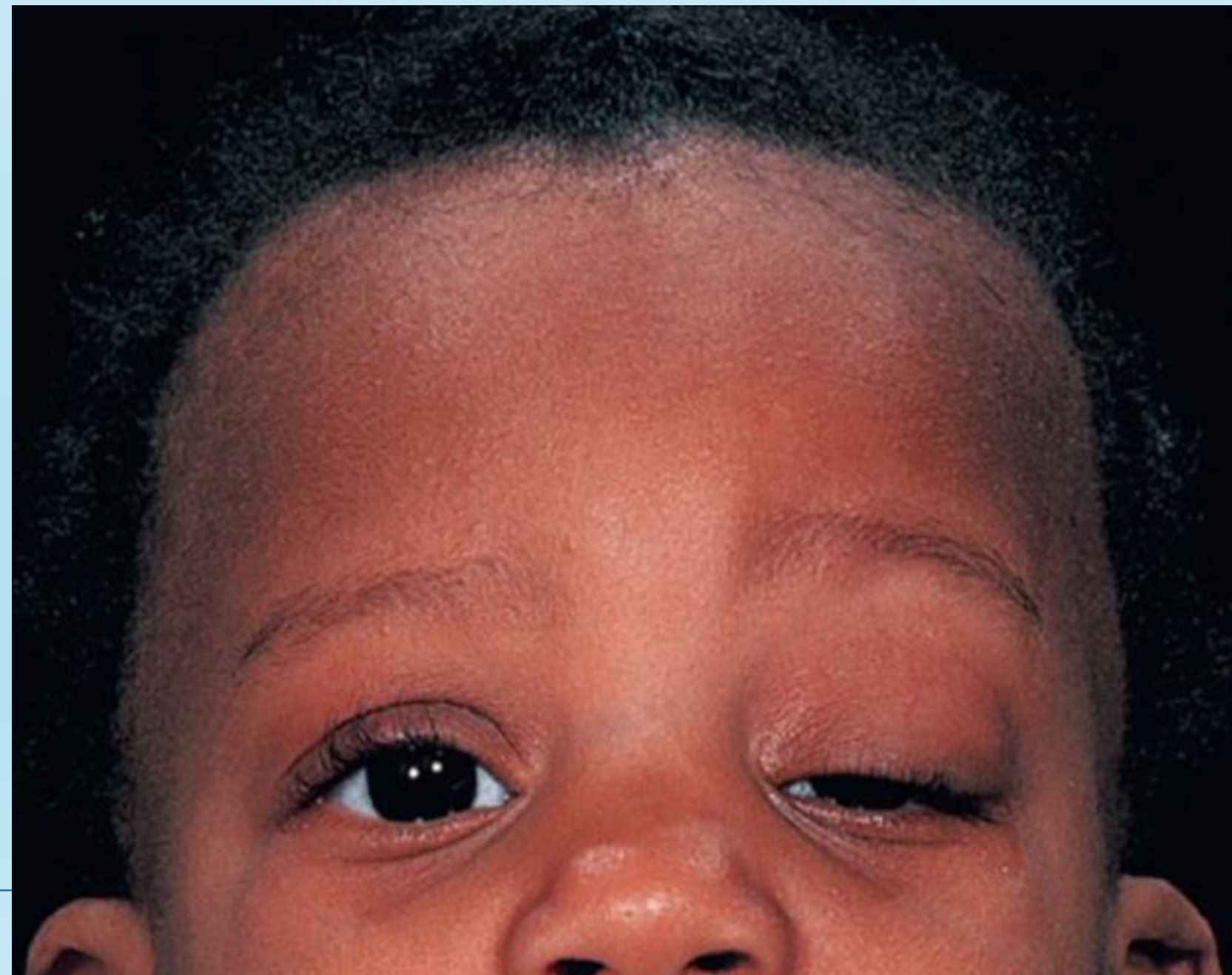


## Neonatal Anatomic Abnormalities

- Eyelid Deformity
- Iris Coloboma
- Ankyloblepharon
- Dacryoceles

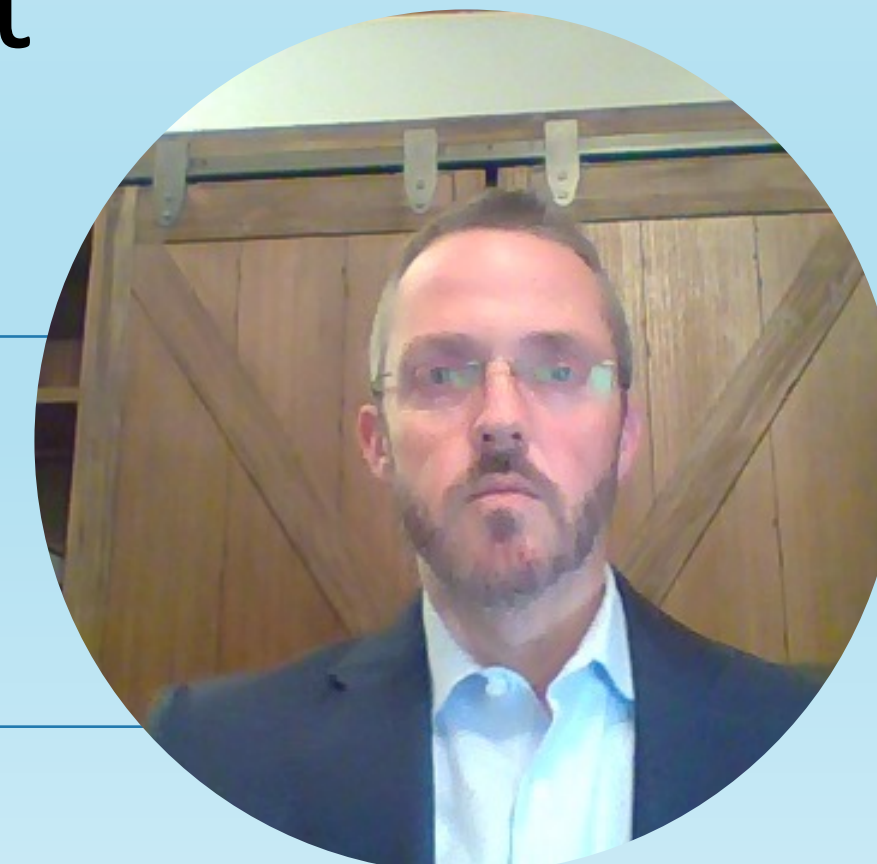






## Neonatal Anatomic Abnormalities

- Asymmetry of globe
  - Possible congenital glaucoma or microphthalmia
  - Urgent referral
- Ptosis
  - Severity important
  - Urgent referral







## Delayed Visual Maturation

- Behind in visual milestones
- Exam techniques
  - FACE not lights
- Differentiate DVM vs CVI (strong light)
- Refer if not responding to visual stimuli by 2 months of age





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# Common Ocular Issues

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# STRABISMUS

- *Inability to maintain binocular vision*

- Horizontal/Vertical
- Intermittent/Constant
- Comitant/Incomitant
- Mechanical/Restrictive
- Paretic







# Esotropia

- Can occur normally in the first few months of life
- Exam
  - ROM
  - Head turn/tilt
  - Acute vs Chronic
- Referral
  - If persistent past 3-4 months of age
    - \*(constant vs intermittent)







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# Exotropia

- Can occur normally in the first few months of life
- Exam
  - ROM
  - Head turn/tilt
  - Acute vs Chronic







# Exotropia

- Complaints
  - The eyes don't seem to move together
  - He's always squinting one eye
  - Looking past me
- Constant (congenital) vs intermittent
  - The silver lining
- Referral
  - If persisting past 4 months







# Amblyopia

- Reduction in best corrected visual acuity in a structurally normal eye with structurally normal posterior visual pathway
- Etiology - Anything that disrupts normal visual development
  - Deprivation
  - Refractive
  - Strabismic





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# Amblyopia

- Treatments
  - Patching
  - Glasses
  - Atropine
- Exam
  - Acuity
  - Red Reflex
  - Spot Screener





# SPOT SCREEN

- Improves Vision Screening Capabilities
- A piece of the puzzle
- Failure
  - Pupils
  - Refraction
  - Alignment
- CHECK QUALITY

Vision screening does not replace a complete eye examination by an ophthalmologist or optometrist.

**spot** Complete Eye Exam Recommended

**Vision Screening Summary**

SUBJECT ID: \_\_\_\_\_

SCREENING: 03/12/2018 10:20 am GENDER: \_\_\_\_\_ AGE: 3y-6y

FIRST NAME: \_\_\_\_\_

LAST NAME: \_\_\_\_\_

*Vision screening should be conducted regularly as eyes may change over time.*

POTENTIAL CONDITION

- Astigmatism (OD) [problem focusing]
- Anisometropia [unequal power]

6.2 11° 11° 54 6.5 11° 11°

OD -0.25 +1.00 OS +0.75 -2.25 @2° +1.25 -0.50 @11°

RIGHT EYE LEFT EYE BOTH EYES

OUT OF RANGE IN RANGE OUT OF RANGE

myopia hyperopia astigmatism gaze dev. anisocoria anisometropia gaze asymmetry





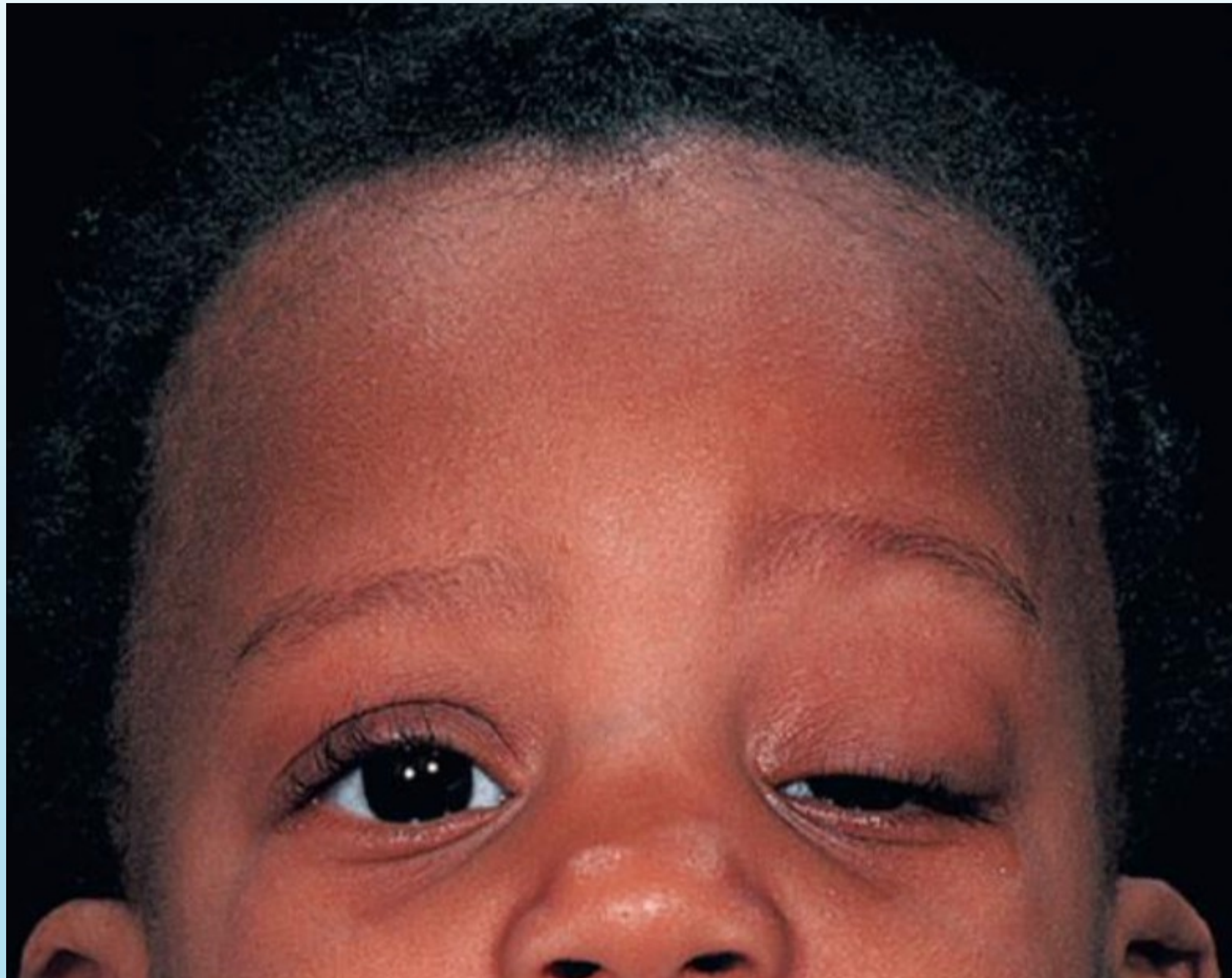


# Congenital NLDO

- First 1-2 mo of life
- Tearing, mattering
  - May fluctuate
- Conservative management
- Statistically unlikely to resolve after 8-10 months
- Refer for appointment in this time frame







# Ptosis

- Eyelid Malposition
  - Most commonly thought of as upper eyelid but both can be involved
- History
  - Congenital vs Acquired
- Exam
  - Amblyopia risk? (head tilt/covering pupil)
- Refer
  - Urgent vs Routine

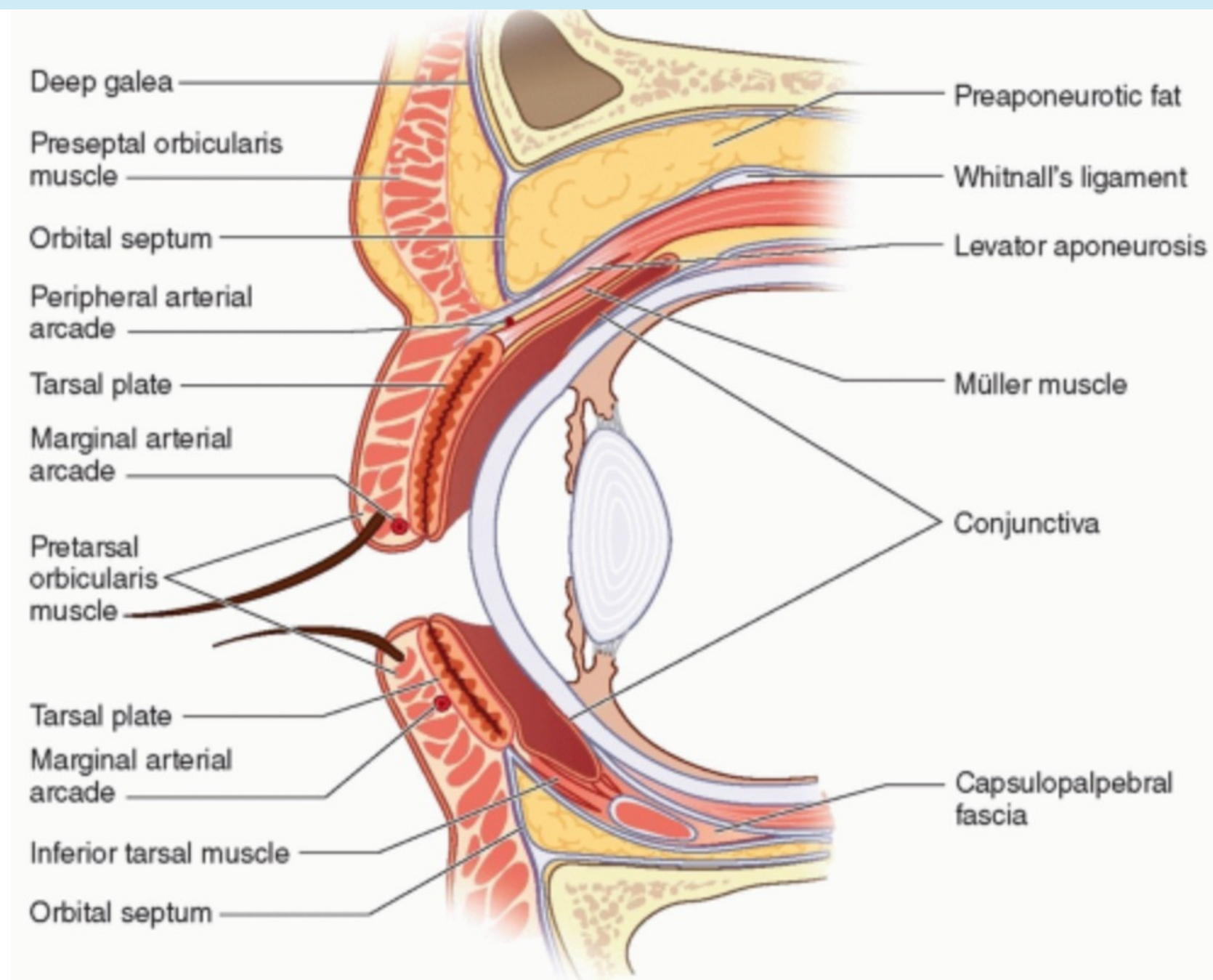






# Ptosis

- DDX:
  - Congenital
    - Hypoplastic mm
    - Paretic
    - Horner's
  - Acquired
    - Paretic
    - Trauma
    - Reactive
    - Horner's





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# RED EYE



- History
- POHx
- PMHx
  - Allergies (meds/seasonal)
  - CTL
  - Previous Episodes
- Exam
  - VISUAL ACUITY/PAIN/DURATION





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# RED EYE

- Infectious
  - Anterior (conjunctiva/cornea)
  - Posterior (orbit/sclera/vitreous/retina)
- Trauma
  - Abrasion/Foreign Body/Subconjunctival Hemorrhage
- Inflammatory
  - Allergic (Broad Spectrum)/Uveitis
- IOP
  - Angle Closure, Acute Change in IOP





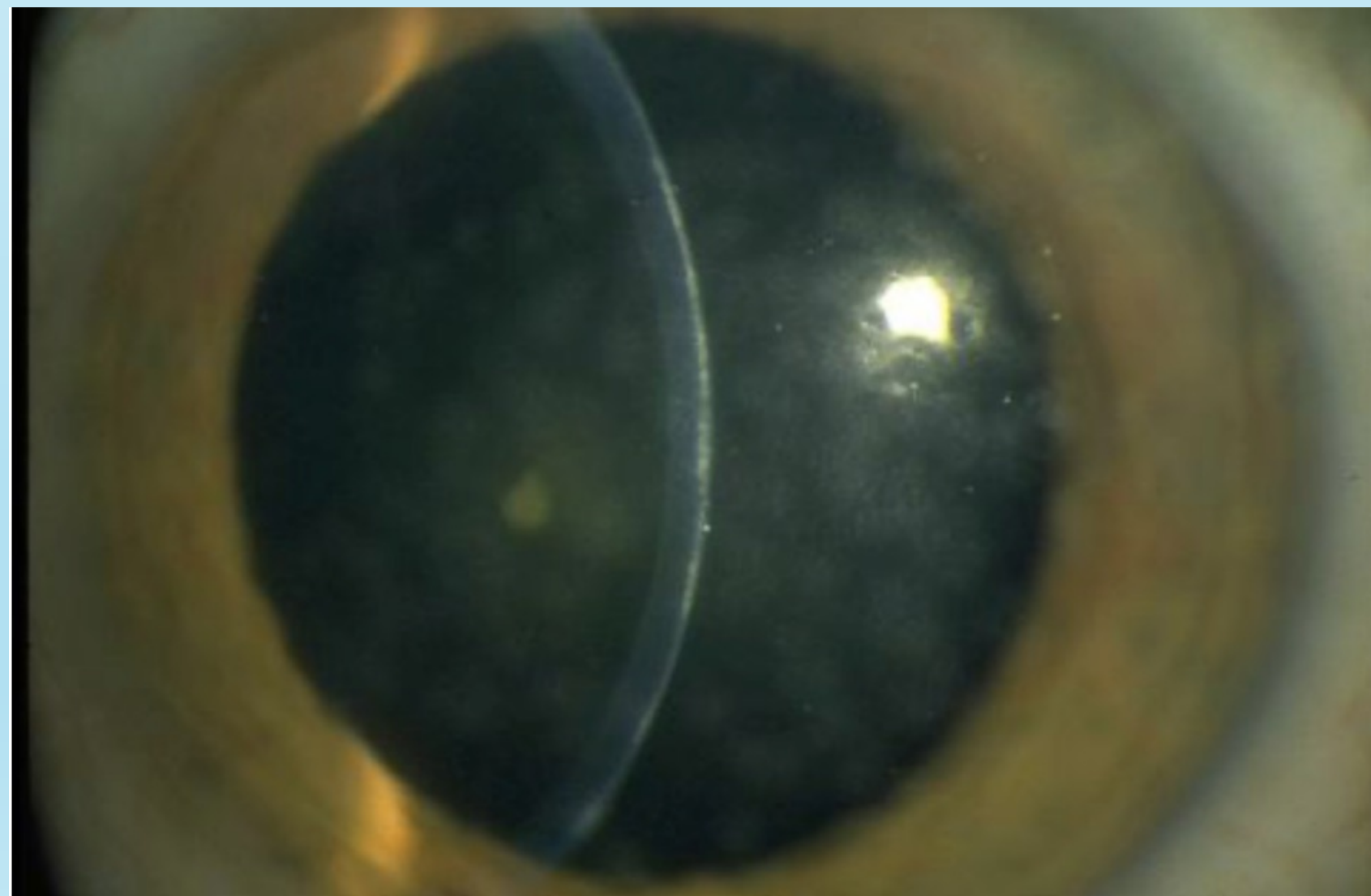
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# RED EYE

- Systemic Infection
- Lacrimal
- Referral
  - Expedited- trauma/increased pain/decreased vision/failure of therapies
- MAIN TAKE HOME – THINK BEYOND SIMPLE CONJUNCTIVITIS







# Viral Conjunctivitis

- Roughly 80% of total cases are viral
- IN PATIENTS LESS THAN 4 YEARS OLD, MIMICKS MANY THINGS
- Self limited
- Redness/itching/watery
- May have URI/fever
- Highly contagious
- Supportive Treatment





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# Viral Conjunctivitis



- Misdiagnosed as preseptal cellulitis







# Bacterial Conjunctivitis

- H. Flu/Step/Staph
- Rapid Onset
- Purulence discharge, erythema, chemises
- Topical broad spectrum (polysporin or polytrim)
- Expedited Referral
- Contact Lens Use - 24 hour referral
  - Pseudomonas
  - Moxifloxacin

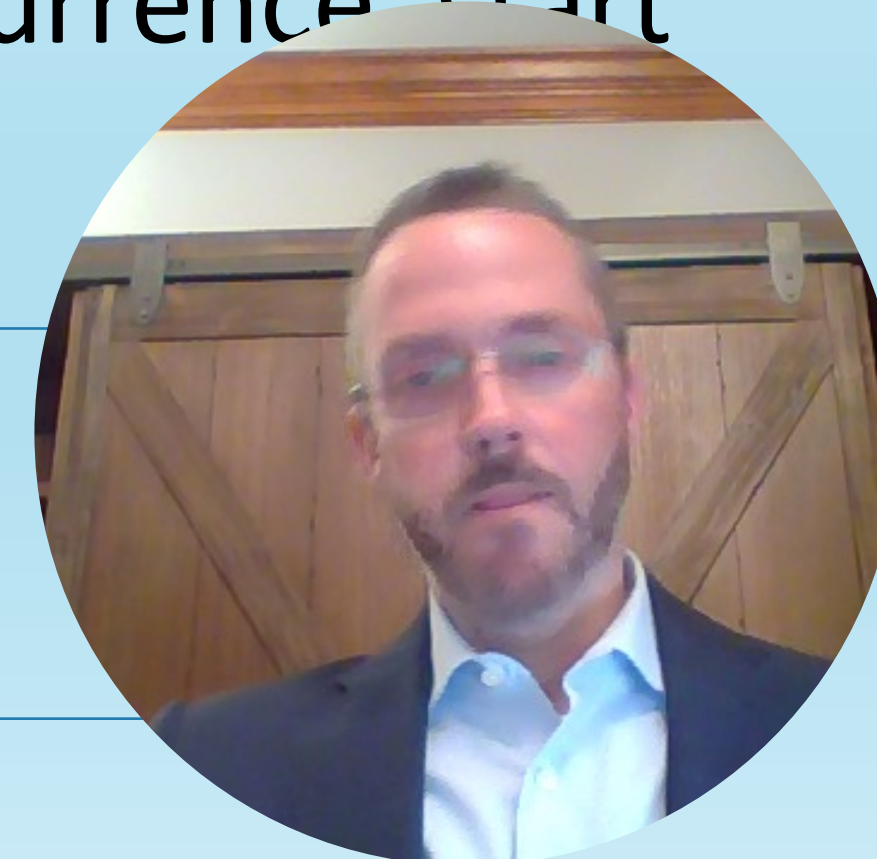




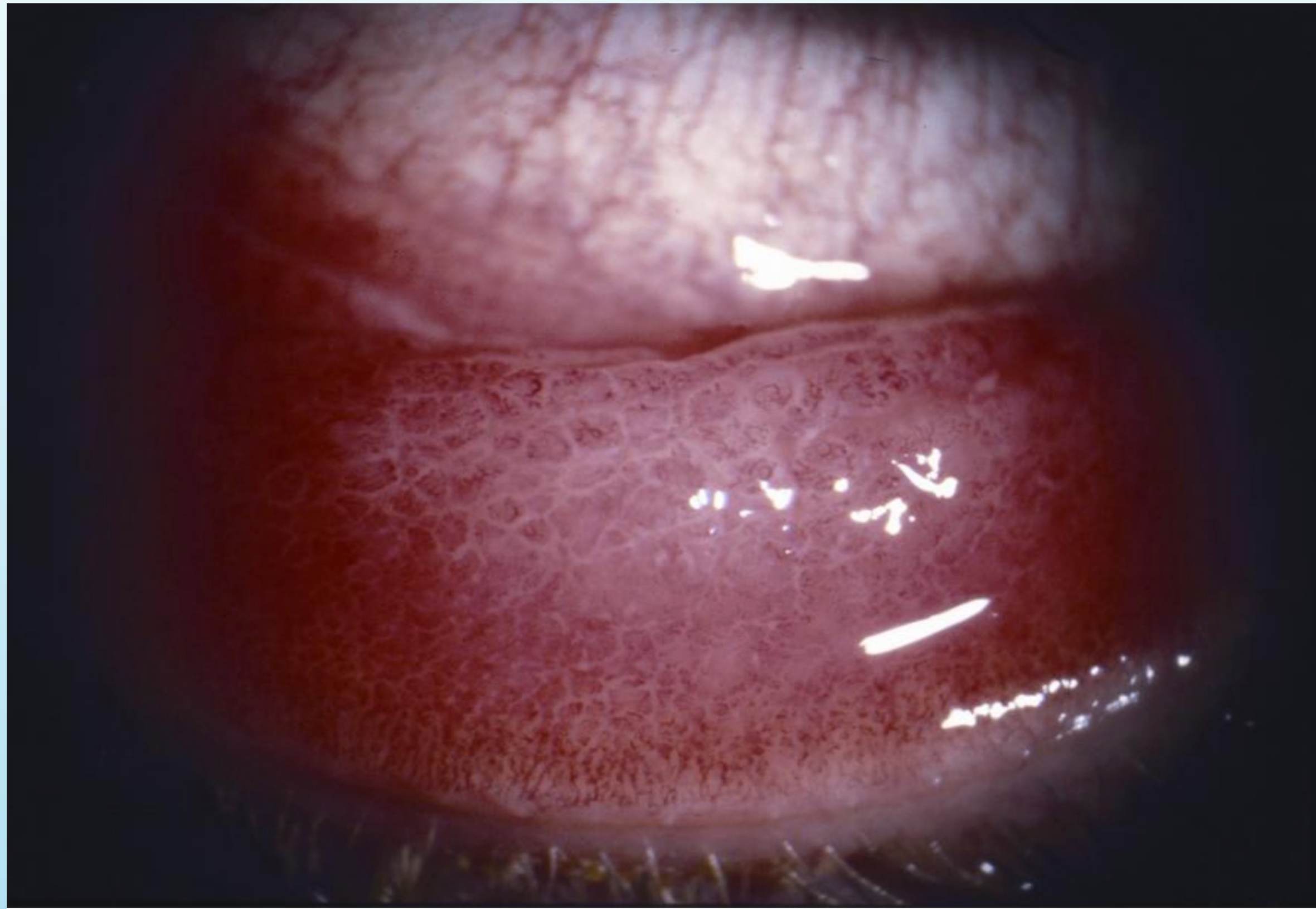


## HSV Conjunctivitis

- Can be associated with eyelid/skin involvement (<50%)
- Can affect all layers of the eye
- Corneal involvement - dendritic pattern on stain
- Recurrent infections sometimes difficult to diagnose for patient and PCP (neurotrophic cornea)
  - When unsure of a recurrence, start PO acyclovir/refer
  - REFER WITHIN 24 HR





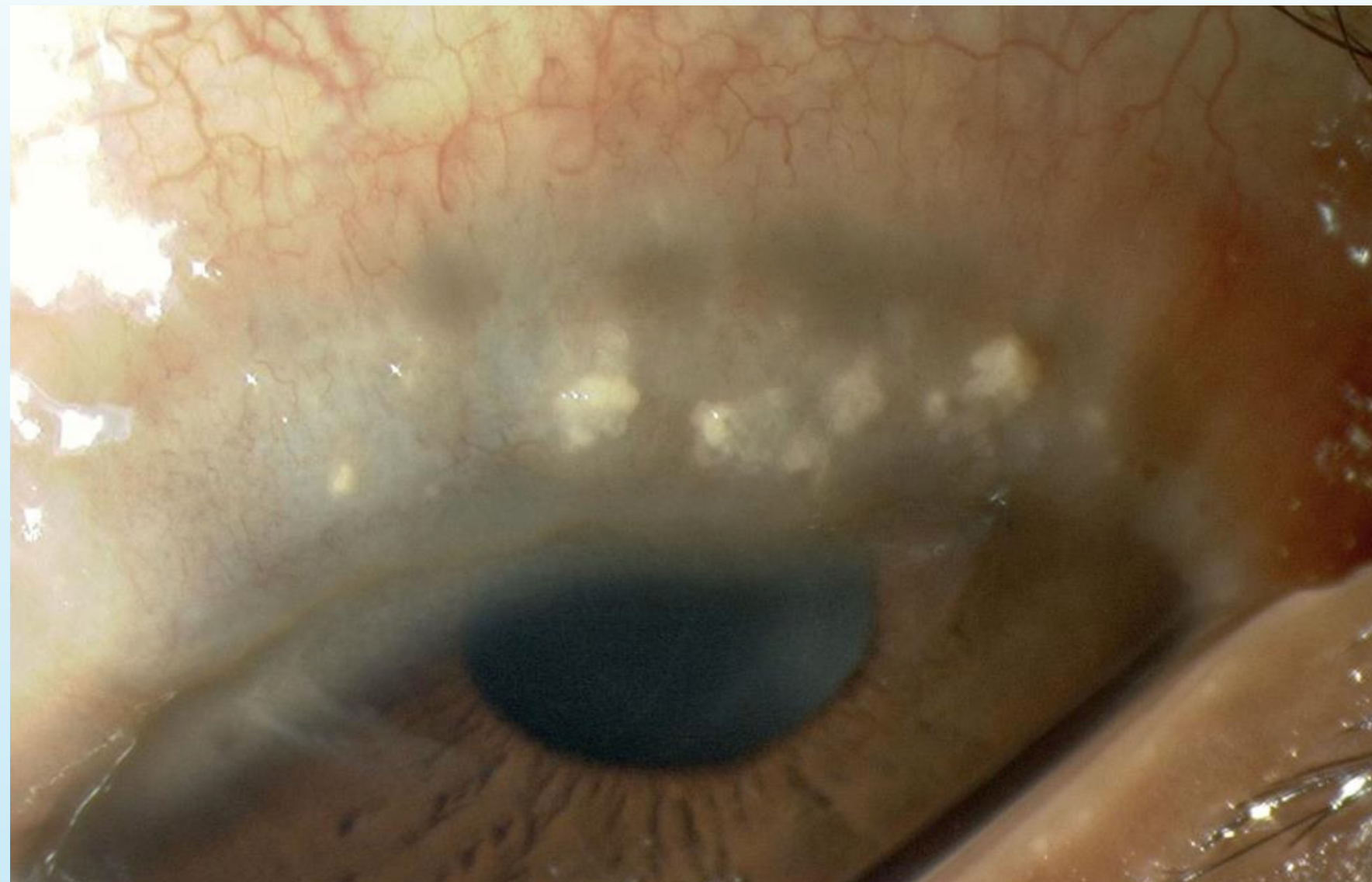


# Allergic Conjunctivitis

- Immune mediated conjunctivitis
  - Atopic
    - Associated with atopic dermatitis
    - Topical/PO meds
  - Refer when symptoms persist through baseline treatments (mild) or Immediately if symptoms severe

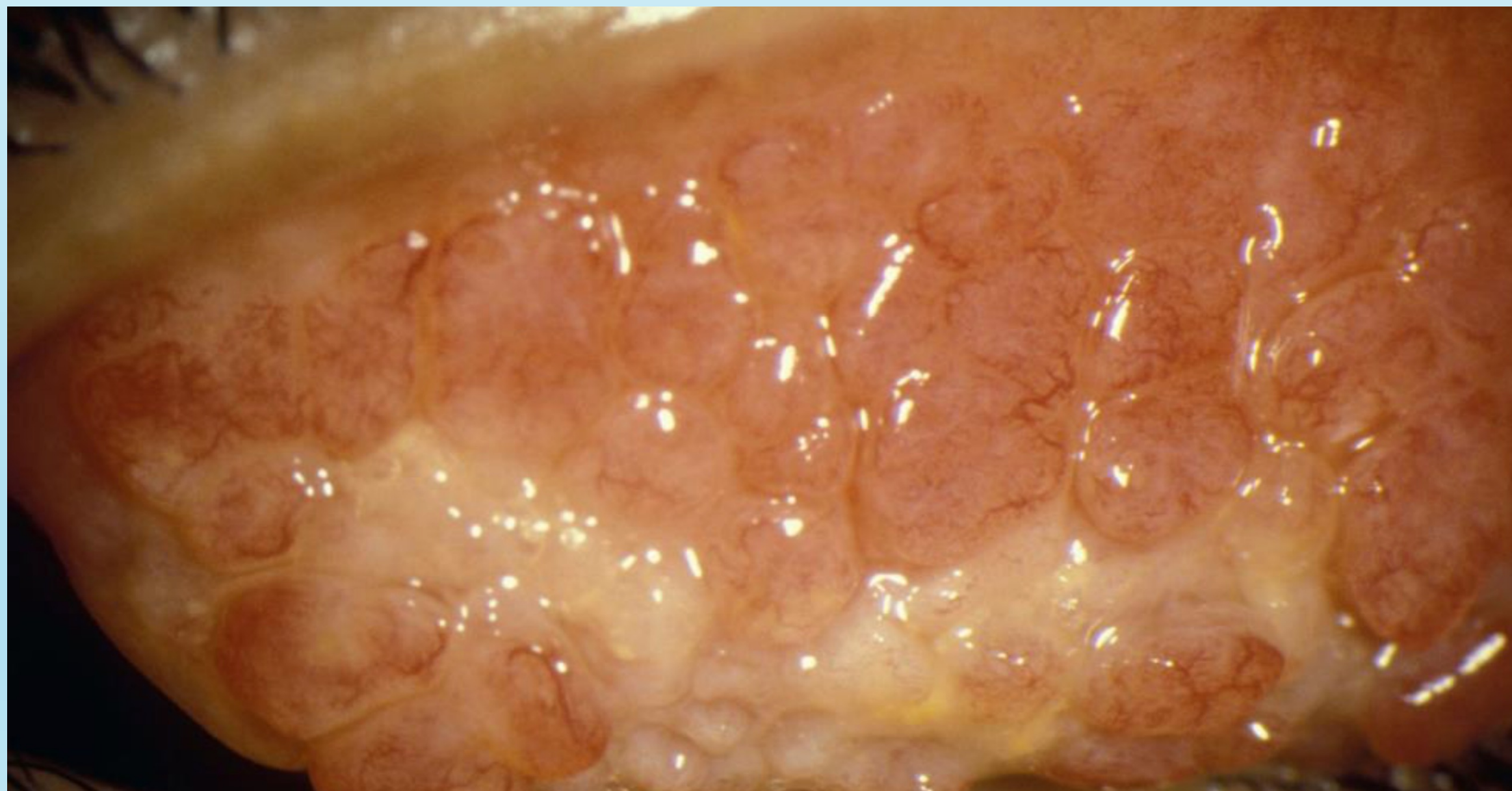






# Vernal Conjunctivitis

- Season conjunctivitis
- Higher incidence in patients of Asian/African/Mediterranean descent
- Chronic redness/pain/tearing unresponsive to traditional allergy meds
- Commonly misdiagnosed as “recurrent pink eye” with no response to topical antibiotics







# Molluscum

- Highly contagious poxvirus
- Usually resolves spontaneously
- Periocular involvement benign unless near lid margin or on conjunctiva
  - Can result in a chronic conjunctivitis
- Routine referral







# CORNEAL ABRASION

- History!
  - MOI important (perforating risk)
- Diagnose with fluorescein and cobalt blue light
- Refer within 24-48 hours
- Broad spectrum ointment or drop
- Acetaminophen/Ibuprofen
- Critical Features - CTL, cent possible FB

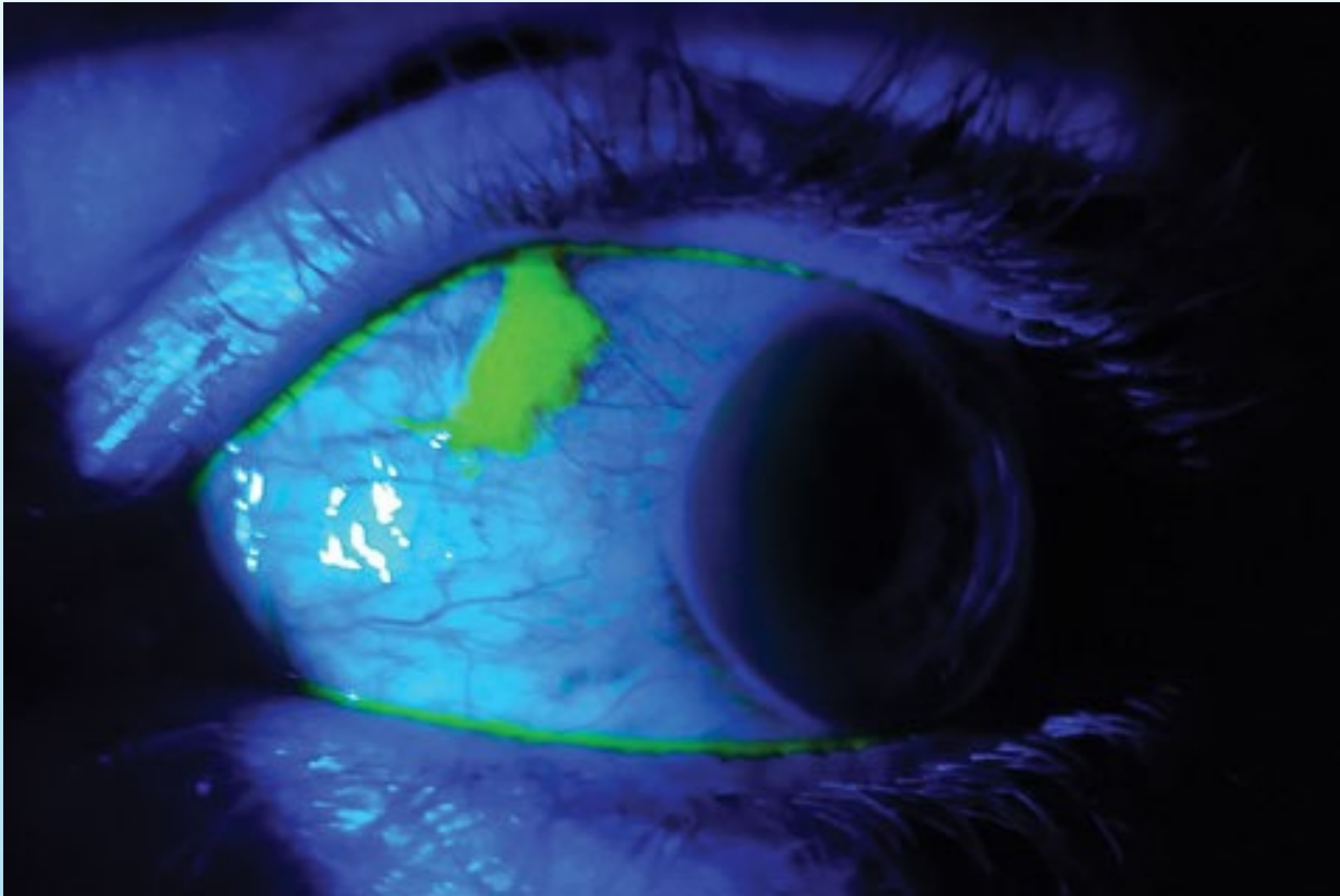




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# CONJUNCTIVAL ABRASION

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- HISTORY
- Result from direct trauma to conjunctiva
- Rarely clinically significant
- Broad spectrum ointment / Reassurance
- No referral needed if mild ;

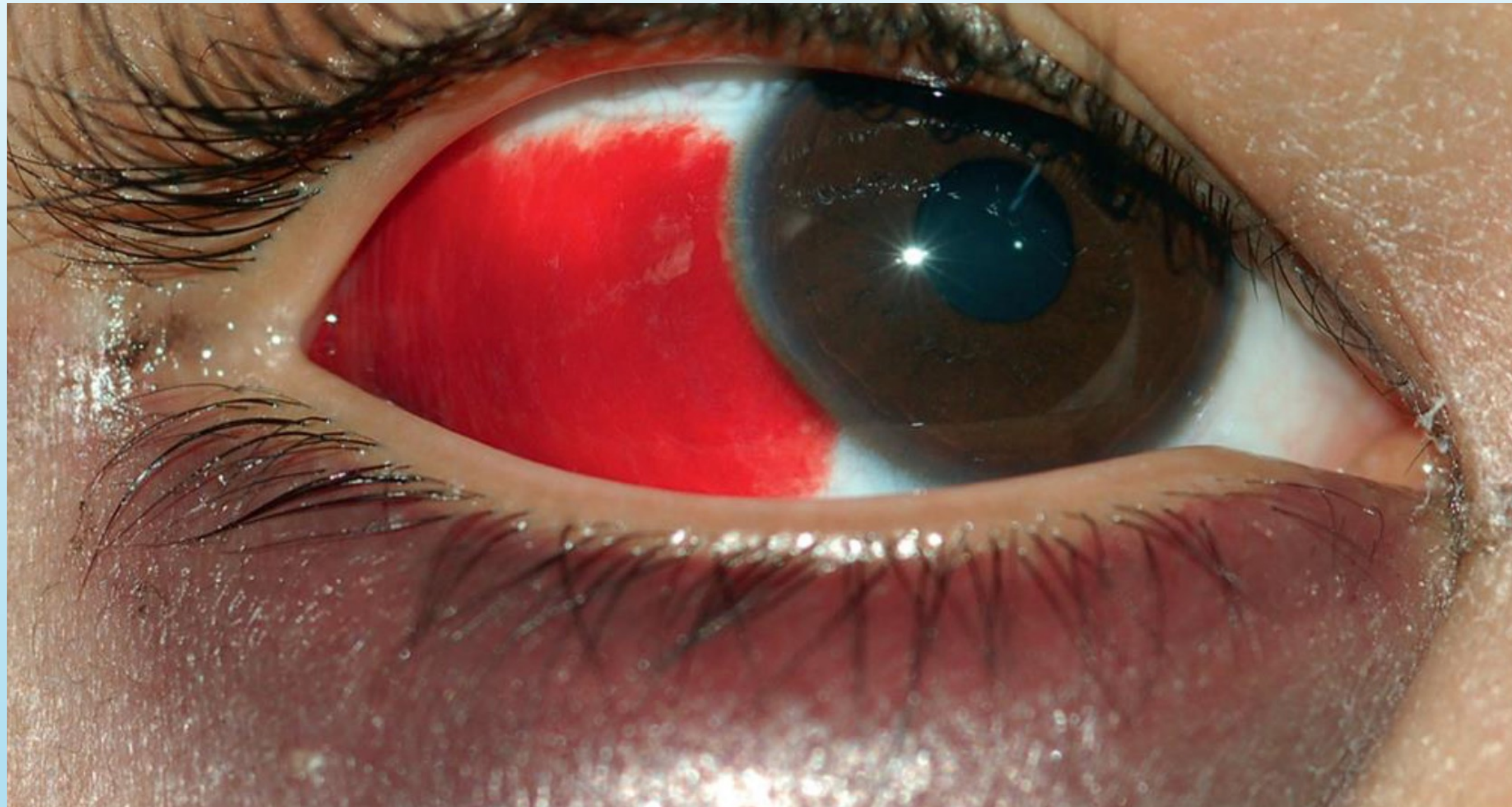




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# Subconjunctival Hemorrhage

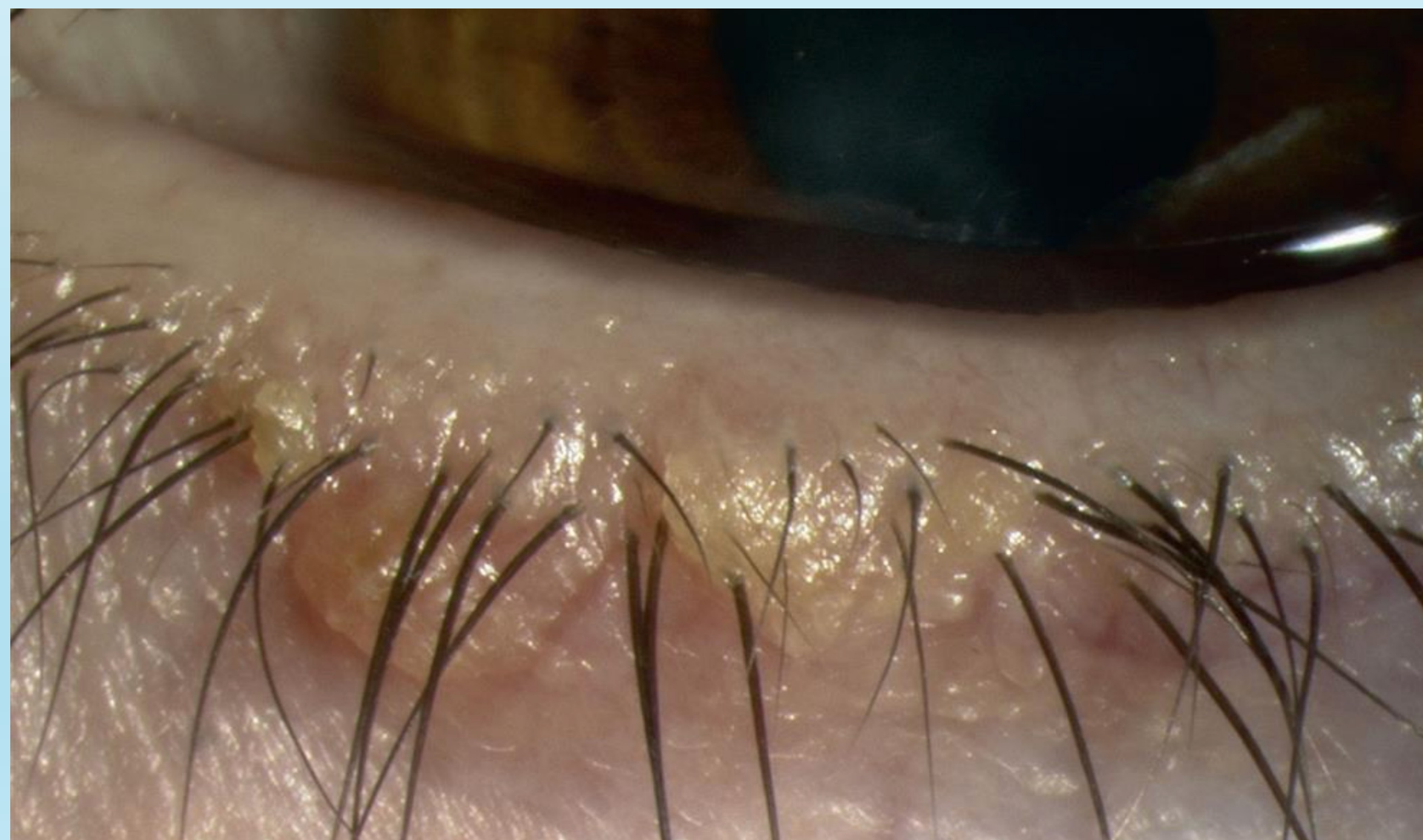
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- HISTORY
- Etiology
  - Trauma
  - Valsava/Cough
  - Spontaneous
- Rarely clinically significant
- Non-urgent referral







# Blepharitis

- Lid disease associated with ocular surface inflammation
- Hypersensitivity reaction of ocular surface with lid bacteria
- Conjunctivitis/Keratitis/Scarring/NV
- Can Wax/Wane - commonly misdiagnosed
  - “My child had pink eye 6 times last year”
- Often will have recurrent chalazions
- Routine referral if mild, urgent referral if flaring with red eye/pain



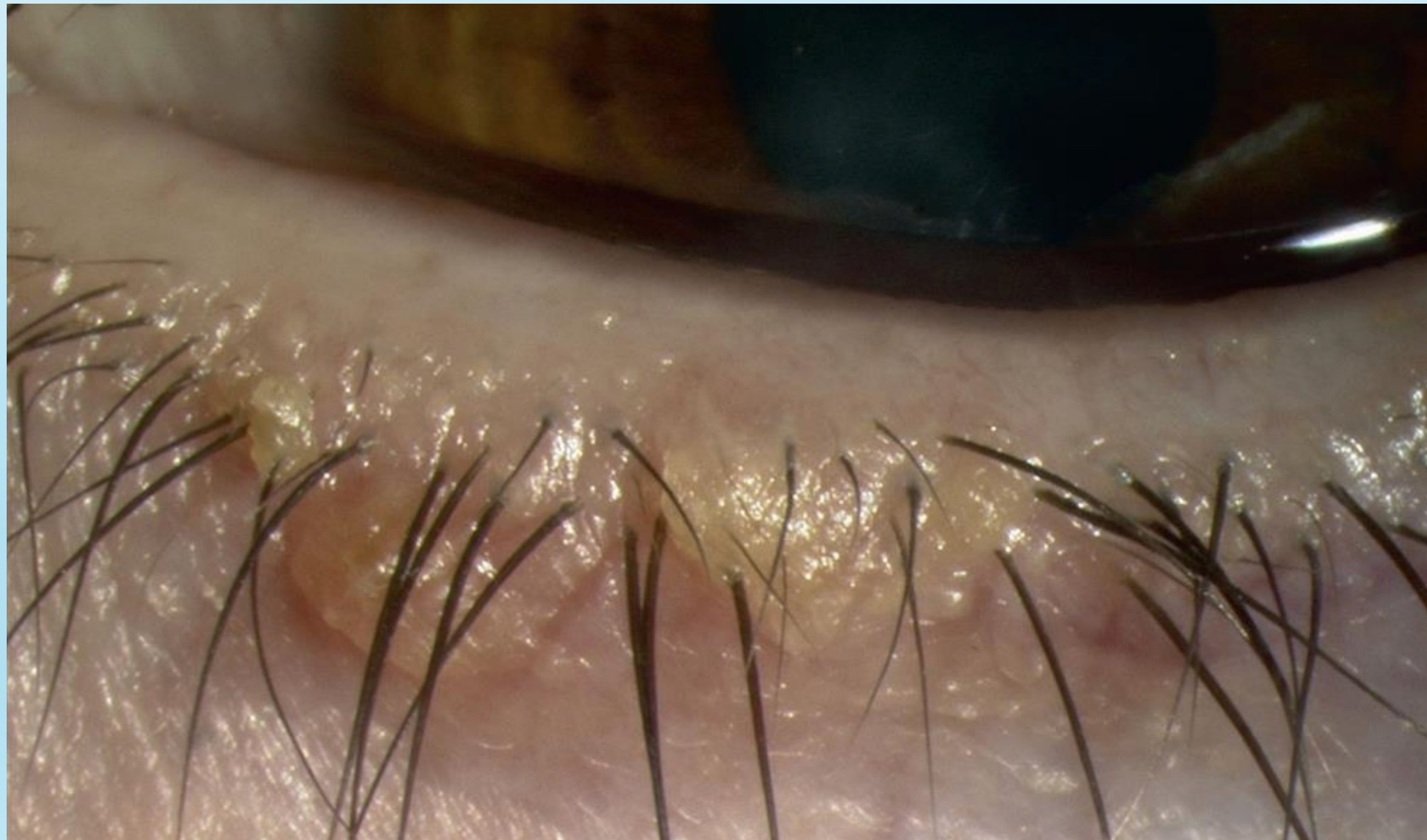


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# Blepharconjunctivitis with Corneal Scarring







# Blepharitis

- Treatments
  - Baby soap scrubs
  - Fish Oil
  - Topical (ABx/Steroid)
  - PO
    - Azithromycin
    - Doxycycline
    - Erythromycin





# Chalazion



- Meibomian or Zeiss/Moll gland occlusion with resultant inflammatory reaction
- Secondary bacterial infection of the gland (hordeolum) or eyelid (preseptal cellulitis) may occur
- Treatment
  - Warm compresses
  - Baby soap lid scrubs
  - Topical antibiotic/steroid
  - PO Antibiotics
    - Azithromycin or doxycycline





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# Preseptal Cellulitis

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- Infection of the eyelid anterior to the orbital septum
- There is a source!
  - Trauma/chalazion/acne
  - If there isn't a source, consider other causes (adeno)
- Normal motility, visual acuity
- Antibiotic ointment/PO
- Refer urgently





# Orbital Cellulitis



- Retro-orbital infection
  - Most commonly from adjacent sinus
- Rapid onset
- Pain/Edema/Fever/Poor ocular motility
- CT findings showing sinus disease with extension into the orbit
- Emergency referral to ER
- Admit
  - IV antibiotics
  - Possible surgical I&D







THANK YOU!!

