

THE RED EYE: TO WORRY OR NOT TO WORRY?

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(with thanks to Gail Feinberg, DO and Nina Ni, MD)*

OBJECTIVES

- Discuss differential diagnosis of the red eye
- Identify eye conditions appropriate for primary care management vs. those requiring referral to an ophthalmologist

RED EYE: THE USUAL SUSPECTS

Adnexa

- Preseptal cellulitis
- Blepharitis / ocular rosacea

Conjunctiva

- Foreign body
- Conjunctivitis: viral, bacterial, allergic, chemical, medicamentosa
- Subconjunctival hemorrhage
- Pingueculitis

Cornea

- Abrasion
- Foreign body
- Dry eye
- Contact lens overwear

These should be able to be initially managed by a non-ophthalmologist with knowledge covered in these lectures

RED EYE: A CALL TO YOUR LOCAL OPHTHALMOLOGIST

Adnexa

- Trichiasis from lid malposition
- Floppy eyelid, entropion/ectropion, lagophthalmos
- Chronic blepharitis
- Nasolacrimal system: canaliculitis, dacryocystitis

Conjunctiva

- Foreign body, concretions
- Purulent or chronic conjunctivitis, any pediatric conjunctivitis
- Giant papillary conjunctivitis
- Superior limbic keratoconjunctivitis
- Scarring conditions such as **OCP, chemical injury, Stevens-Johnson/TEN**
- Neoplasia

Cornea

- Foreign body that you are unable to remove
- Chronic dry eye
- Infectious or inflammatory keratitis
- Recurrent erosion
- Photo / **chemical burns**

Other

- Episcleritis, **scleritis, uveitis**
- Post-operative
- Orbital congestion: thyroid eye disease, tumors, vascular occlusion/fistula

Toxic Epidermal Necrolysis = TEN. For these diagnoses you may want to confer with an eye care provider, especially the highlighted issues where appropriate initial management may be vision saving

RED EYE: WHO'S THE ON CALL OPHTHALMOLOGIST?!

Adnexa

- Orbital cellulitis

Conjunctiva

- Trauma / full thickness laceration

Cornea

- Trauma / ruptured globe
- Alkaline chemical injury
- Infectious keratitis

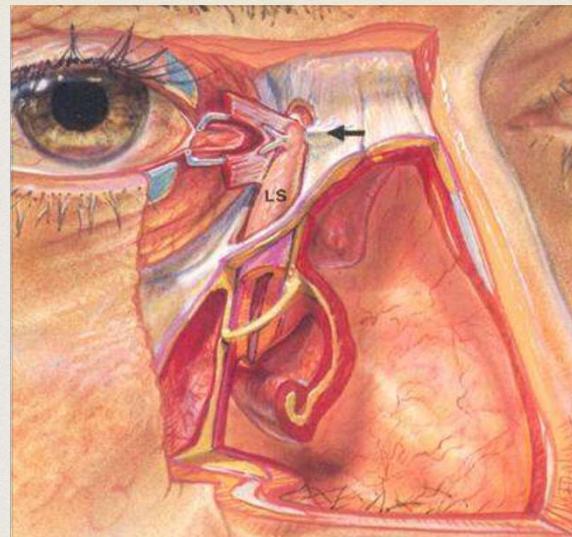
Other

- Angle closure glaucoma
- Endophthalmitis
- Retrobulbar hemorrhage
- Intraocular foreign body

Prompt recognition of these diagnoses are essential to treating and advocating for your patients to preserve vision

RED EYE: ADNEXA

Adnexa



Your on call ophthalmologist will love you if you can accurately describe your office eye exam.
That starts with anatomy!

PRESEPTAL CELLULITIS

No orbital signs:

- Normal vision
- Normal pupils
- No chemosis
- No restriction of motility
- No pain with ocular movement

Treat with oral antibiotics outpatient



septum is skin maybe some muscles but behind septum is orbital
if can open eye and get crusting off with no pressure on eye

some Er docs use a opened up paperclip
Dr. phung uses fingers and pull toward bone to see eyeball

ORBITAL CELLULITIS



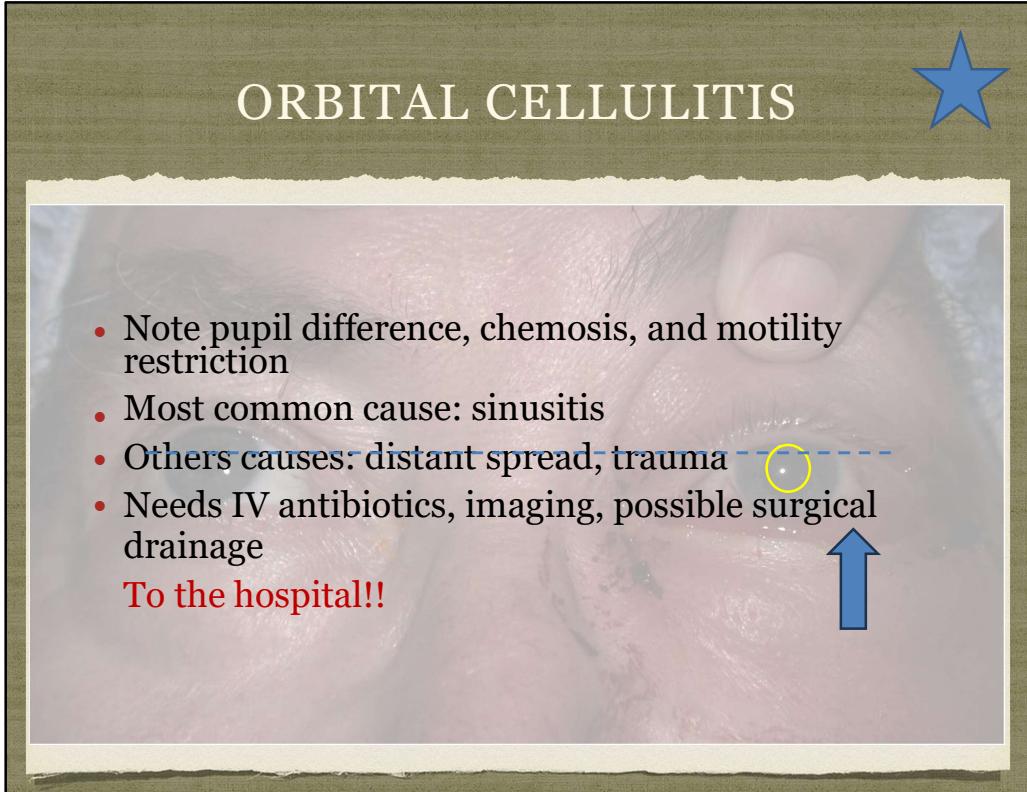
- Note pupil difference, chemosis, and motility restriction
- Most common cause: sinusitis
- Others causes: distant spread, trauma
- Needs IV antibiotics, imaging, possible surgical drainage

To the hospital!!

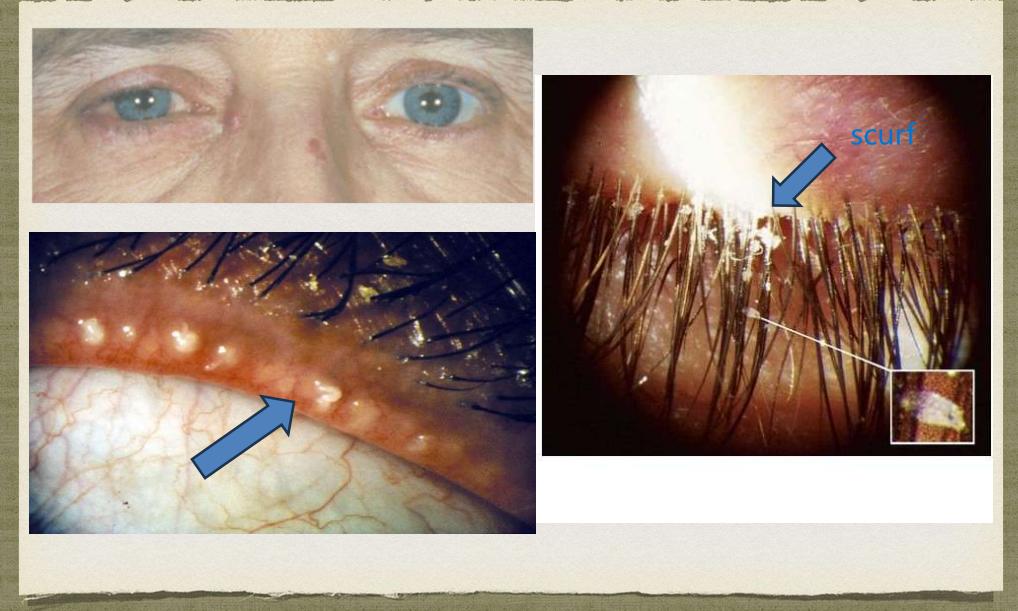


chemosis and
pupil diff
restriction of
ocular motility -
cannot lift same
amount

The swollen, hyperemic conjunctiva seen below the iris is described as chemosis. Note also the mid-dilated pupil on the affected left side



BLEPHARITIS



a lot of times is not infectious just clogged up

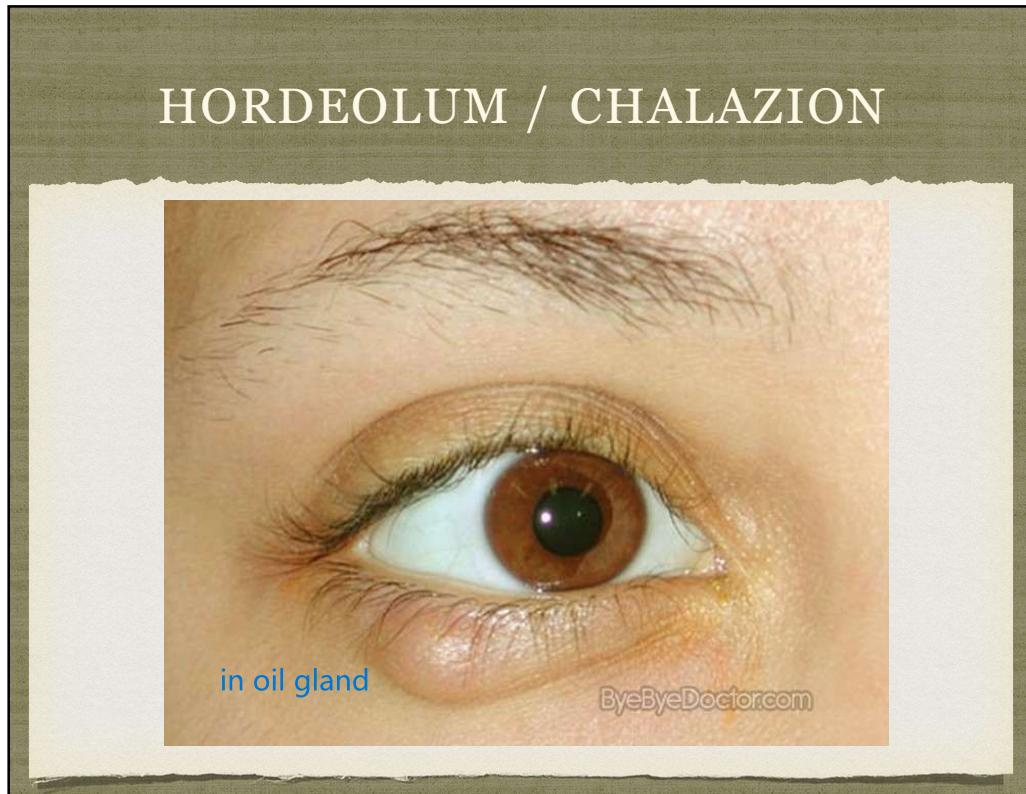
Red rimmed eyes on external exam especially on the right eyelids. Scurf caught on the lashes.

Clogged, pointing meibomian glands shown on the lid margin. Treatment is lid hygiene, sometimes topical antibiotics. If not responding, consider referral to eye care provider.

soak a warm washcloth and gently wipe away
baby shampoo

outside in for eye exam

nexa, lids, lashes, conjunctiva, and move



A chalazion is a swollen bump on the eyelid. It happens when the eyelid's oil gland clogs up. It may start as an internal hordeolum (stye). At first, you might not know you have a chalazion as there is little or no pain. But as it grows, your eyelid may get red, swollen, and sometimes tender to touch. If the chalazion gets large, it can press on your eye and cause [blurry vision](#). Rarely, the whole eyelid might swell.

A stye (also called a hordeolum) is a small, red, painful lump that grows from the base of your eyelash or under the eyelid. Most styes are caused by a bacterial infection.

There are two kinds of styes: [or clogged oil gland](#)

External hordeolum: A stye seen on the eyelid skin surface as shown on this slide.

Internal hordeolum: A stye inside your eyelid, best seen with eyelid eversion although if large enough the swelling may be visible externally. Most styes are caused by a clogged oil-producing gland in your eyelid.

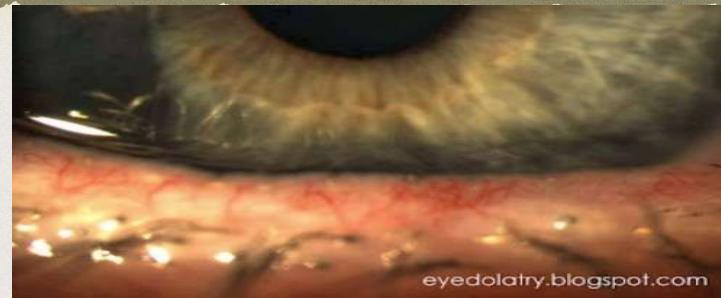
You can also get a stye if you have [blepharitis](#). This is a condition that makes your eyelids at the base of the eyelashes red and swollen.

When you first get a stye, your eyelid is probably red and tender to the touch. Your eye may also feel sore and scratchy.

Conservative treatment is warm compresses, possibly oral antibiotics if very large and painful and inflamed. The warm compresses may break down the skin, so adding a layer of ointment will help prevent painful dermatitis from the constant moisture.

a good amount of these are not infective do not need antibiotics just do warm compresses
if has erythema and looks like preseptal cellulitis treat it like so
chalazion gets bigger and smaller is still active

OCULAR ROSACEA



Initiate treatment with warm compresses, baby shampoo scrub, fish oil supplement, Doxycycline monohydrate 40-50mg daily or minocycline 50mg qD-BID x 1 Month.

Can use metrogel if cheeks involved but not on eyelids themselves

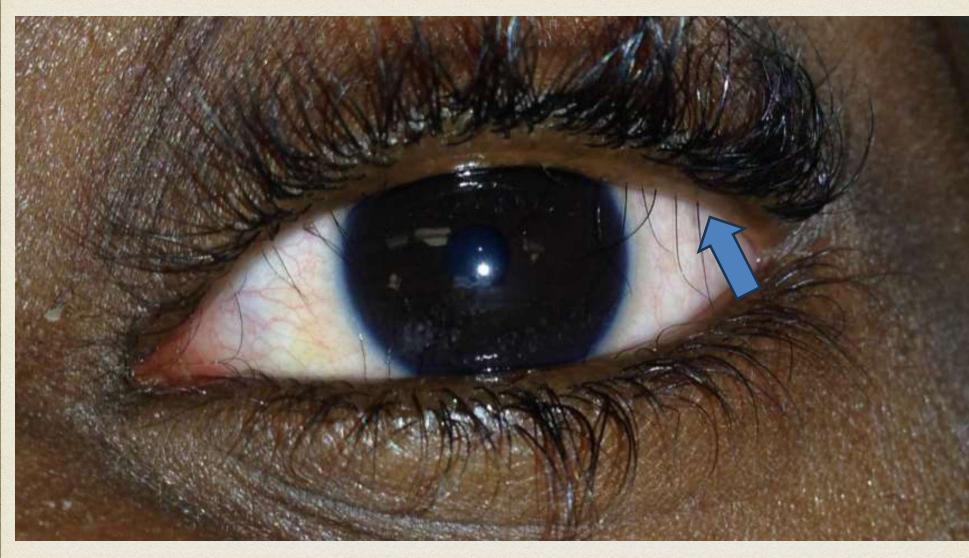
Refer if severe or chronic

brand: oracea
40mg
generic is 50 mg

fine telangiectasia on eyelid margin

minocycline can be used but has fallen out of use
low dose doxy - increased risk of sunburn

TRICHIASIS, DISTICHIASIS

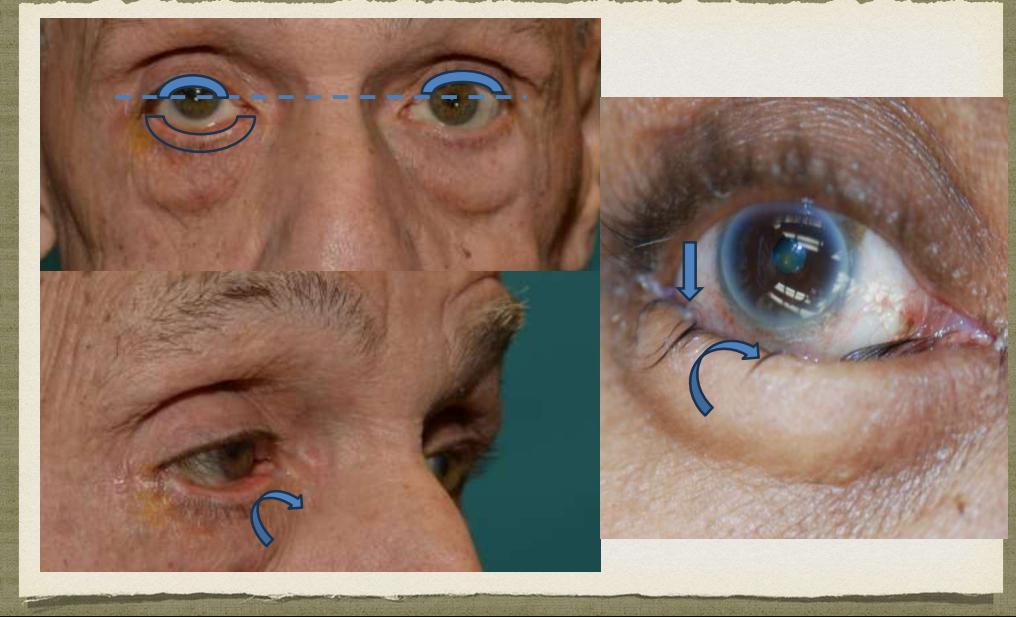


distichiasis

more you pluck them the softer they get

Trichiasis is when the lashes turn inwards and abrade the ocular surface, better example on the next slide. Distichiasis is when the lashes emanate from an abnormal site, for example the long lashes seen on the upper eyelid margin especially obvious on temporal third of the eyelid rubbing on ocular surface

LID MALPOSITION



Top left: right lower eyelid senile ectropion, also right upper lid ptosis

scleral show

Bottom left: same patient, side view of the right lower eyelid ectropion showing loss of normal palpebral conjunctiva/tarsal plate position against the globe not normal tear spread, dry eye, epiphora

Right: right lower eyelid entropion

inward rotation of eyelid with trichi

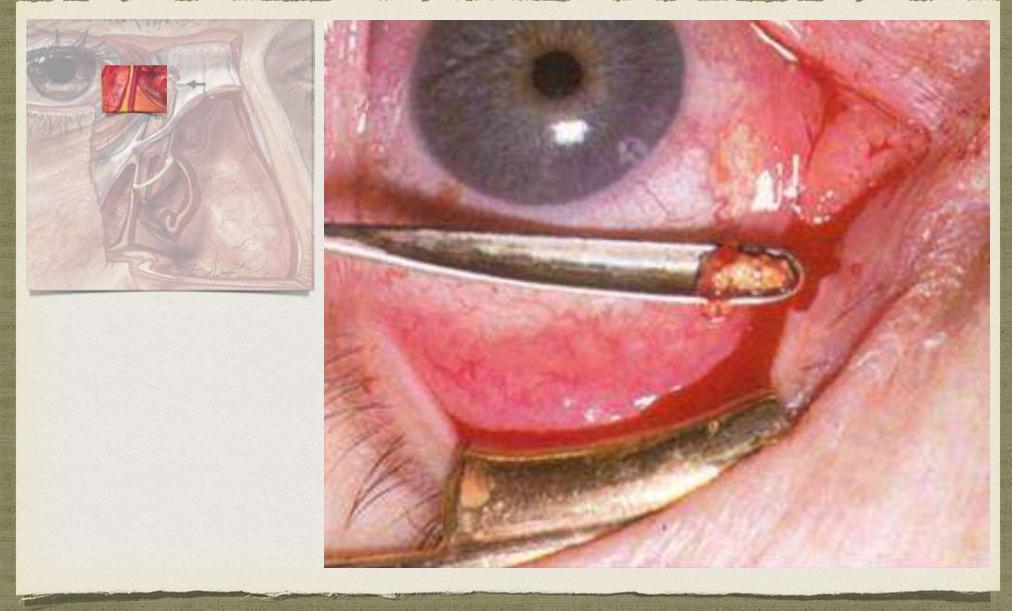
FLOPPY EYELID SYNDROME: BEWARE OF SLEEP APNEA

Superior
extensis



Can be very symptomatic (chronic red, irritated eyes with foreign body sensation +/- discharge). May respond to conservative treatment such as lubricants, tape, antihistamines. May require surgery such as horizontal lid tightening. Strong correlation with OSA but unknown link, although it is theorized that OSA may contribute to development of FES due to poor oxygenation of eyelid tissues

CANALICULITIS



inflammation of the canalicula

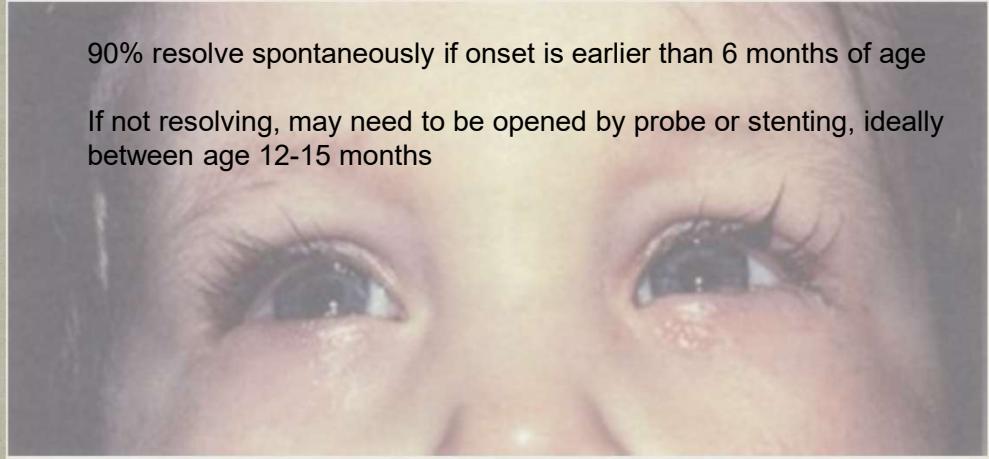
The slide shows canaliculotomy (surgical treatment after initial treatment of acute inflammation/infection) with removal of concretions causing obstruction of the canaliculus and therefore predisposing to infection/inflammation

DACRYOSTENOSIS

Partial nasolacrimal duct stenosis, usually but not exclusively seen in infants and children

90% resolve spontaneously if onset is earlier than 6 months of age

If not resolving, may need to be opened by probe or stenting, ideally between age 12-15 months



Nasolacrimal Duct Blockage (NDB) may lead to infection (dacryocystitis)

NEEDS TIMELY OPHTHO CONSULT

weepy eye

diaper rash around eye from chronically wet:

petroleum jelly if not on upper lid - corners is:

DACRYOCYSTITIS



In children the most common acute infectious causes are Staph aureus, beta hemolytic strep (e.g. pyogenes), and H. flu

treat systemically to keep it from becoming significant
differs from area to area, consult with infectious disease to see what's been around

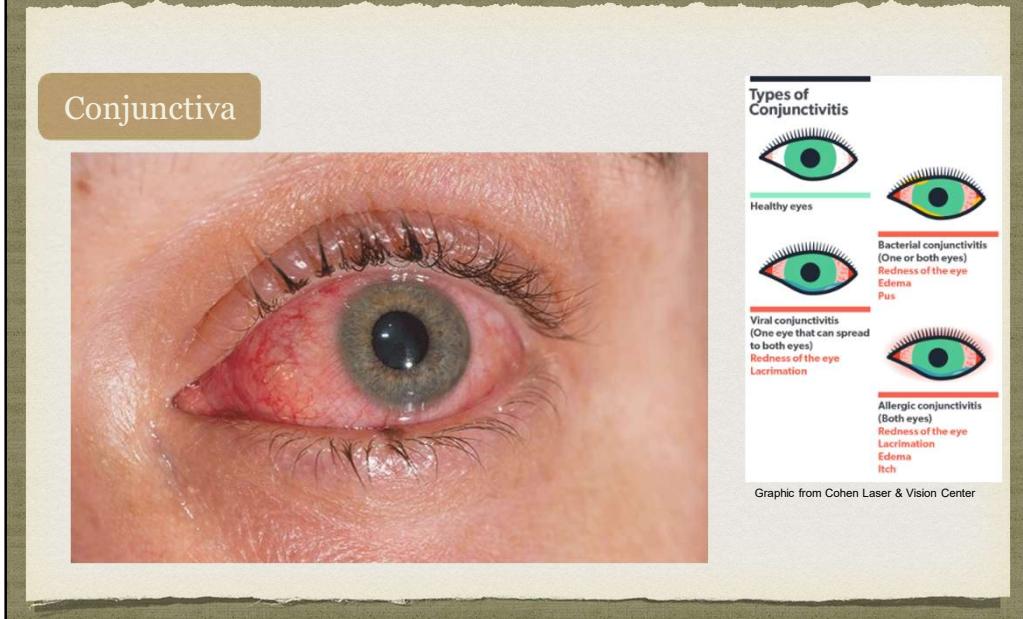
DACRYOCYSTITIS



In adults, most common acute infectious agents are Staph aureus, Strep pneumo, and pseudomonas aeruginosa

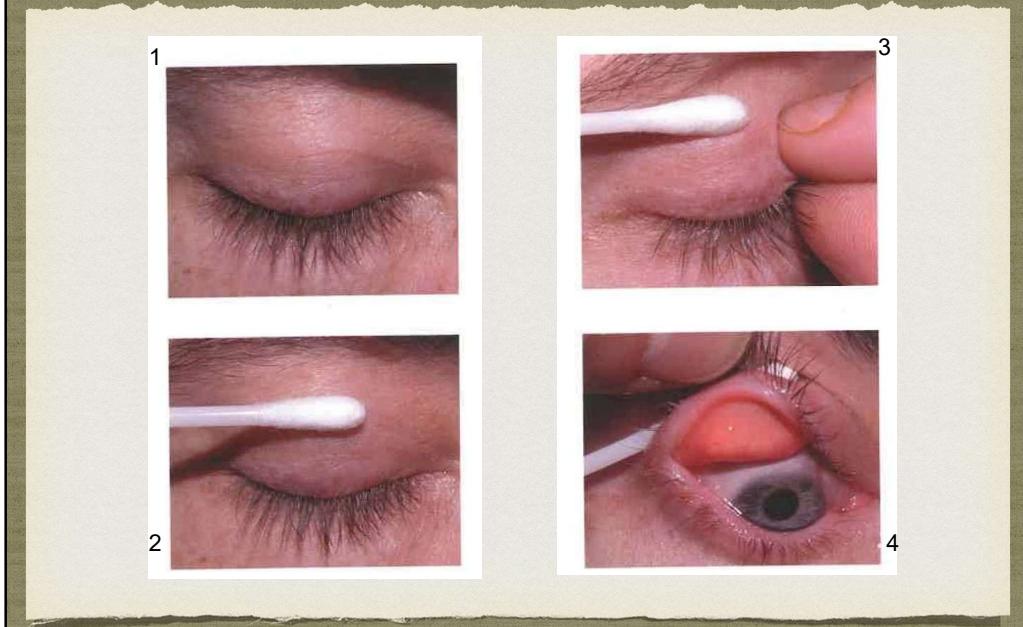
Inflammation of the lacrimal sac caused primarily by obstruction. Acute typically requires Abx prior to surgery, in children most common etiologies are Staph aureus, Beta hemolytic Strep (ex: pyogenes), and H. flu. In adults most common culprits are Staph aureus, Strep pneumo, and pseudomonas aeruginosa. Chronic typically from repeated infections or trauma causing scarring. Congenital typically from NLDO. Acquired can be from aging, trauma, scarring with repeated dacryoliths/infection, systemic disease (Wegeners, SLE, sarcoid), or medication (including common glaucoma meds like timolol and dorzolamide). In adults may require DCR (dacryocystorhinostomy), but NLDO in children often resolves with time (90-95% by age 1) Devastating complications are rare (lacrimal duct fistulas, lacrimal sac abscess, meningitis, cavernous sinus thrombosis, vision loss, even death) but if not responding consider urgent referral

RED EYE: CONJUNCTIVA



bacterial is what everyone treats - very little of conjunctivitis most
sneezing just went back to school and now both eyes are red
bacterial - more white discharge
viral - watery discharge
allergic - more itching

EVERT LID AS PART OF RED EYE EXAM



create a pivot point and grab eyelashes
younger the patient is the tighter the eyelids are

CONJUNCTIVITIS: ALLERGIC

- Itching, watering, redness
May be seasonal
- Inquire about exposures
- Oral antihistamine
- Topical ketotifen, olopatadine
- Topical mild steroid cream for lids



little like red velvet as opposed to normal conjunctiva

systemic antihistamines are drying body out but also eye so topical antihistamines work better and often need artificial tears

CONJUNCTIVITIS: VIRAL

- Most often caused by adenovirus, coxsackie virus
- History of sick contacts, URI
- Starts in one eye, spreads quickly to contralateral eye
- Watery, AM crusting, irritation, rarely pain
- Redness, chemosis, follicles, mild decrease in vision
- Treatment: artificial tears, cool compress, hand hygiene
 - Contagious until eyes no longer red, though schools may ask to hold child home until antibiotics initiated
- Refer when pain severe or vision affected (may need debridement of inflammatory membranes or steroid treatment)

will get worse for 7-10 days then will get better

CONJUNCTIVITIS: VIRAL



Follicular conjunctivitis almost always viral, note watery discharge (epiphora)

[may have preauricular nodes that are palpable](#)

CONJUNCTIVITIS: VIRAL

- If unilateral, consider HSV
- Look for history of HSV1 or HSV2, vesicles
- Look for corneal lesions
- Treat with 10-14 days of oral antiviral

doesn't need a high dose but drops will not \



If corneal HSV, classically pt's pain is much worse than red eye appearance would indicate

CONJUNCTIVITIS: BACTERIAL

- Acute or hyperacute with excessive purulence
- Typically unilateral
- Consider culture
- Cover with topical polytrim QID
- **THINK ABOUT CHLAMYDIA AND SYPHILIS:
INQUIRE ABOUT SEXUAL HISTORY** ask about systemic symptoms too



Chlamydia can present with mucopurulence, punctate staining, lid swelling. Syphilis less commonly conjunctival disease, more likely to show eyelid chancres, posterior/anterior uveitis, retinitis, optic neuritis.

stay away from 4th gen fluroquinolones - to prevent resistance
can get ocular findings in primary, secondary, tertiary syphilis

SUBCONJUNCTIVAL HEMORRHAGE



- **Reassurance**
artificial tears
- May be related to
hypertension or
anticoagulant use
- Following valsalva:
sneeze, cough,
vomiting, constipation
- Will spread out / look
worse as it reabsorbs



flat, red eye
while blood is there will not make normal t

not inflamed won't necessarily look red

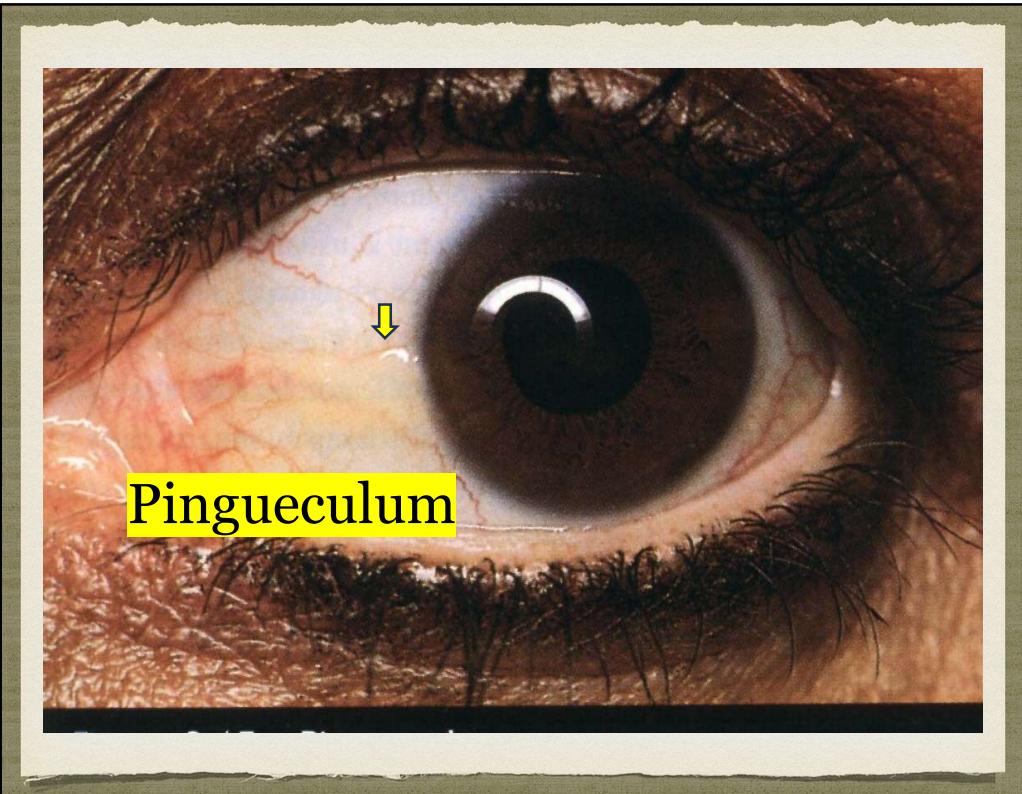
INFLAMED PINGUECULA AND PTERYGIUM

- Benign fibro-vascular superficial growths due to UV exposure
- Pinguecula – small, fleshy, pink to yellow plaques located at 3 o'clock and 9 o'clock, minimize symptoms and growth with artificial tears and sun protection
- Pterygium – triangular growth of bulbar conjunctiva onto cornea, minimize symptoms and growth with artificial tears and sun protection, refer for additional treatment with steroid or surgery if:
 - Intractable irritation
 - Affecting vision
 - Wishes to undergo cataract surgery

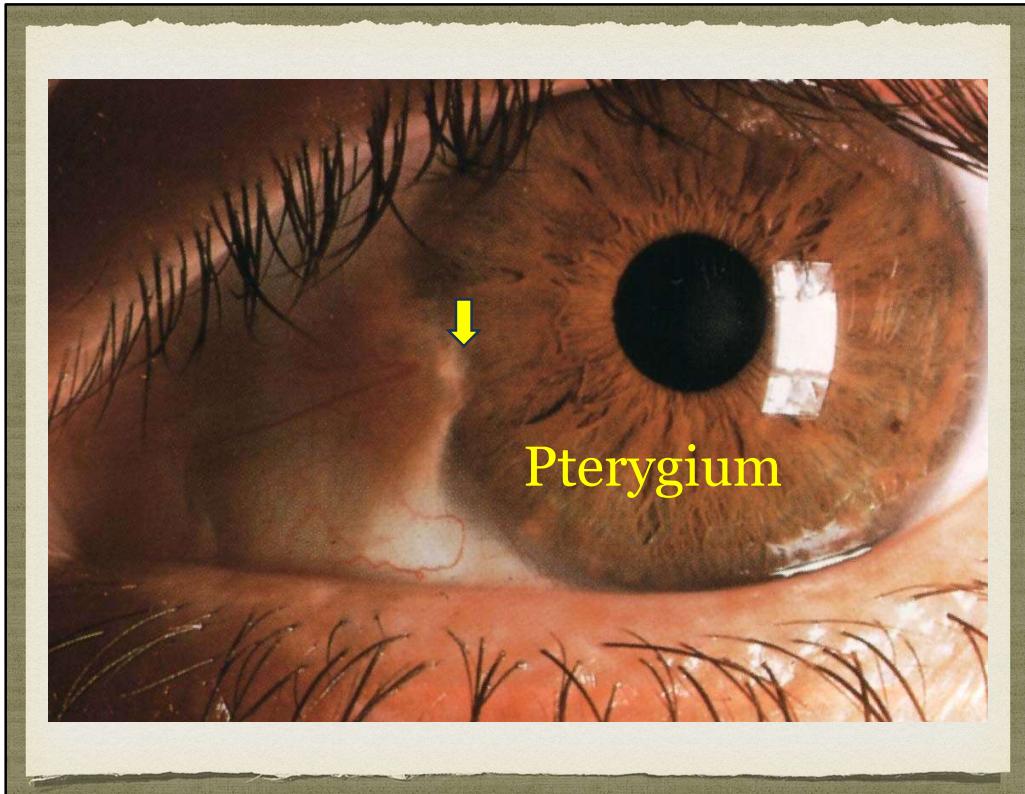
often only on one side - truck drivers who drive with window open

Pinguecula originates from the latin word pinguis meaning “fat” or “grease”

Pterygium: from the Greek word pterygion meaning “little wing” (pteryx=wing, -ion is the diminutive)

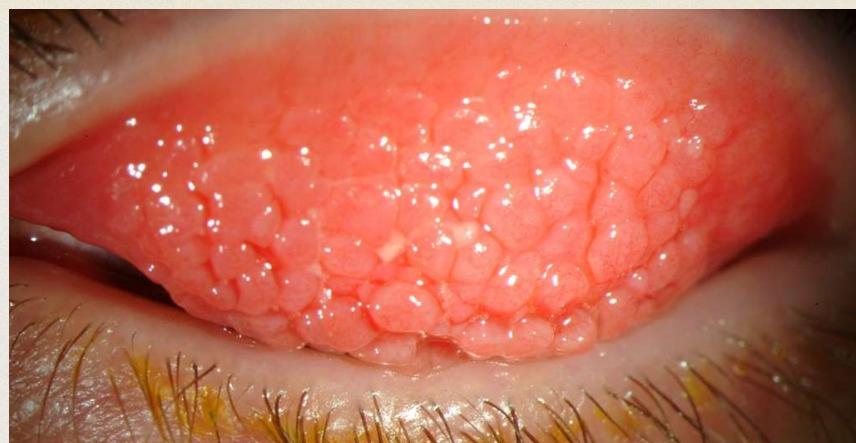


Pingueculum



wing looks like it's coming from periphery - if get large enough can change curvature
cornea bc of pressure

GIANT PAPILLARY CONJUNCTIVITIS

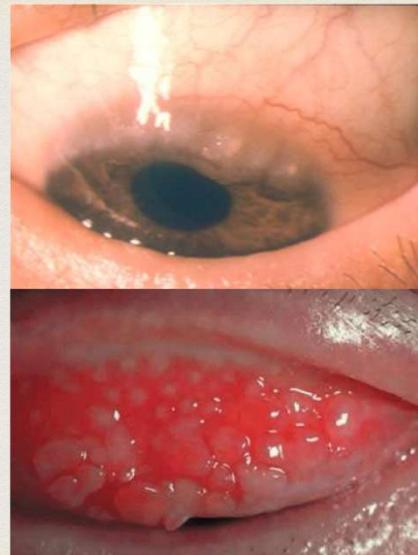


- Contact lens intolerance: discontinue CL wear
- Pain / itching: can be treated with topical antihistamine drops
- Refer for long term management: may require steroids

contact lenses 20 hours a day or sleeping in them
are flat on top - look cobblestoney
almost always upper lid only
need to flip eyelid

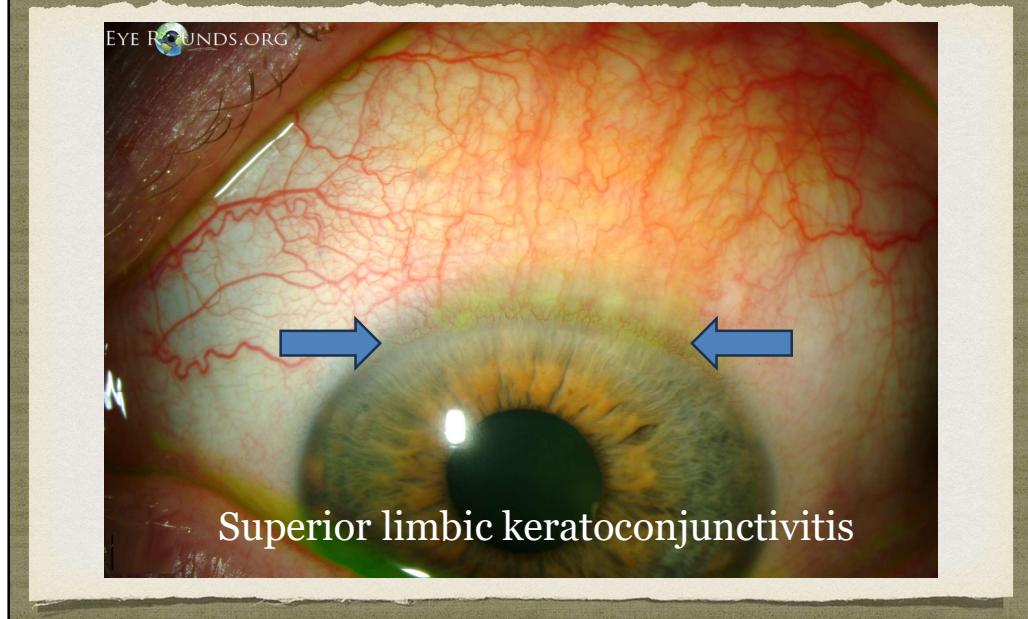
VERNAL CONJUNCTIVITIS

- Seasonal pediatric disease
- Similar to atopic conjunctivitis in adults
- Requires referral for aggressive treatment to prevent scarring



do often grown out of it in a few years

SLK AND THYROID DISEASE



fluorescein placed in eye and showing epithelial loss

SLK has been associated with thyroid disease, keratoconjunctivitis sicca, and rheumatoid arthritis

SYMBLEPHARON



eyeball is tethered to eyelid and need to be lysed

Scarring conditions such as OCP,
chemical injury, Stevens-Johnson/TEN

OCP= ocular cicatricial pemphigoid, an autoimmune disease affecting the mucous membranes of the eye

TEN = toxic epidermal necrolysis, an allergic reaction (often triggered by medications) similar to Stevens Johnson Syndrome but with a more severe amount of skin detachment

Conjunctival Intraepithelial Neoplasia

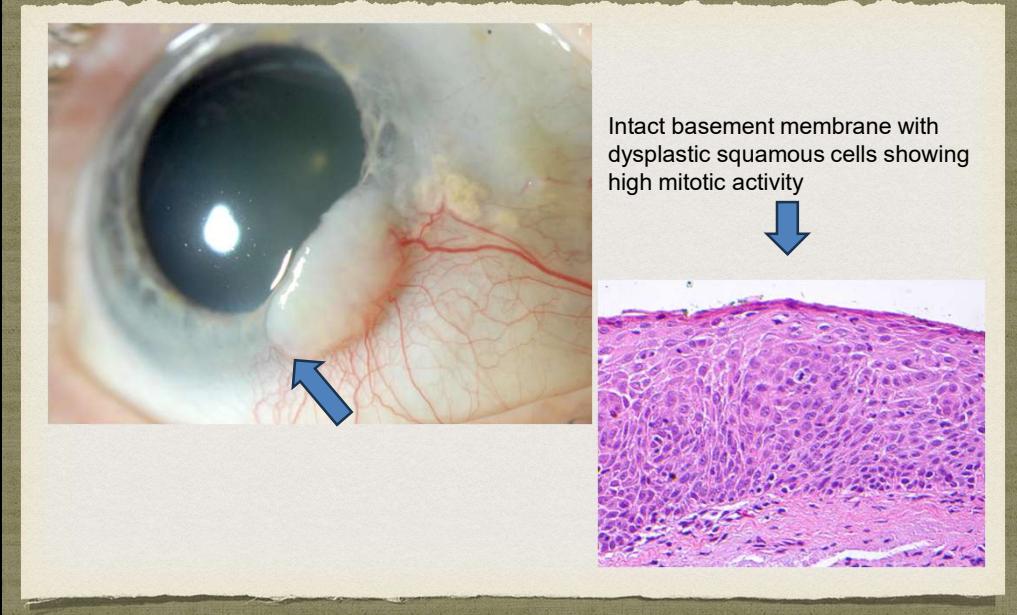


vascular mass with
disorganized vascular
supply

This particular image is squamous cell carcinoma in situ. By definition the basement membrane should be intact.

[compare to pterygium](#)

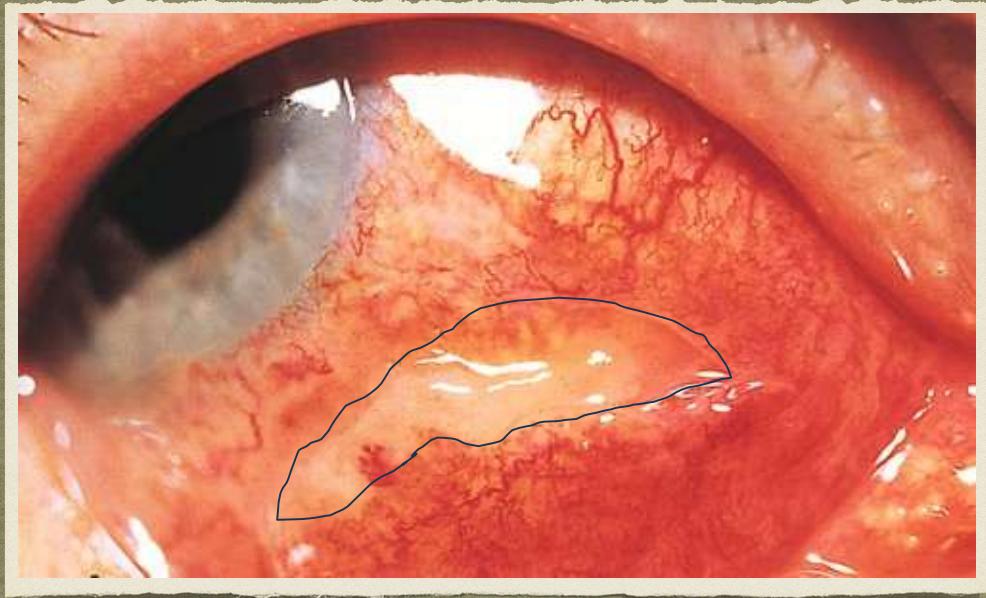
Conjunctival Intraepithelial Neoplasia



Another presentation of CIN with feeder vessels. Pathology shows dysplastic squamous cells with high mitotic activity but the basement membrane is intact

[not coming from periphery](#)

TRAUMATIC CONJUNCTIVAL LACERATION



fingernail to eye

Need to be sure it is not a ruptured globe. May not require sutures if small and laying flat, can heal by second intent with eye ointment to prevent infection/dessication.

[if can see sclera may need stitches](#)

RED EYE: CORNEA

CORNEA



EyeRounds.org

Filamentary keratoconjunctivitis: increase of mucin to aqueous in the tear film. First line treatment is lubricant drops and ointment but may need more aggressive intervention if chronic, also need to look into underlying etiology. What is causing the dry eye?

tweezer or cotton swab to debride

FLUORESCEIN DYE STAINS EPITHELIAL DEFECTS

don't always
have a slit lamp

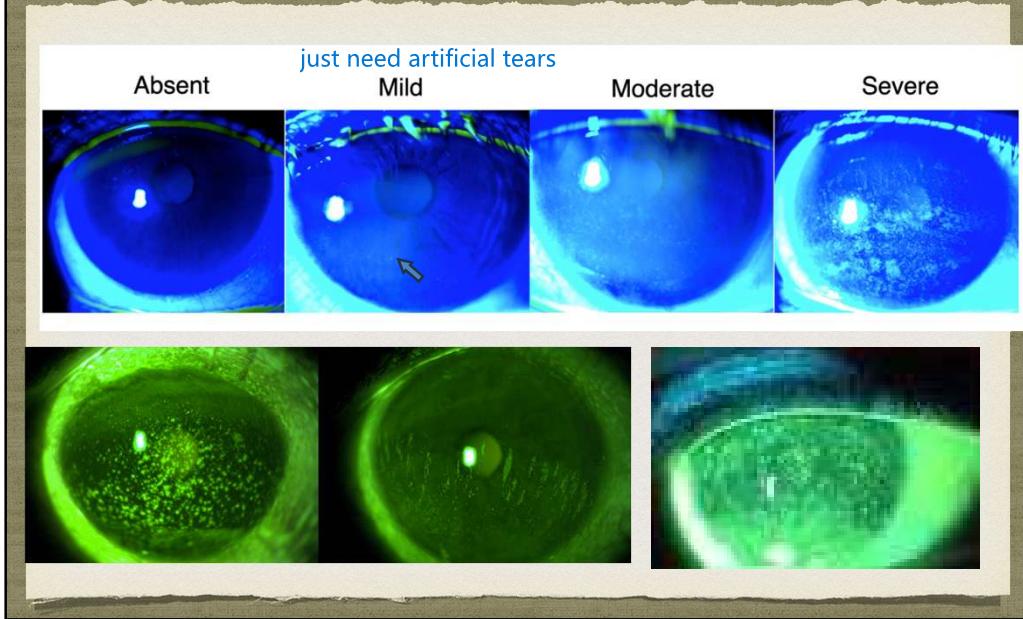


either add a filter or use the blue light on ophthalmoscope

Best used with a cobalt blue light: the wavelength of cobalt blue (465-495nm) is specifically absorbed by fluorescein, causing the fluorescence. A Woods lamp, commonly used for skin exams, has a wavelength of 365nm which does not excite the fluorescein as much, thus causing less obvious fluorescence.

fungal
infections

DRY EYE



Various patterns you may see. The upper left image shows a normal cornea (no staining). The lower right image is very severe dry eye and the patient likely has blurred vision due to poor corneal optics. Photokeratitis (welder's burn) will look similar, treat with lubrication and/or pressure patching.

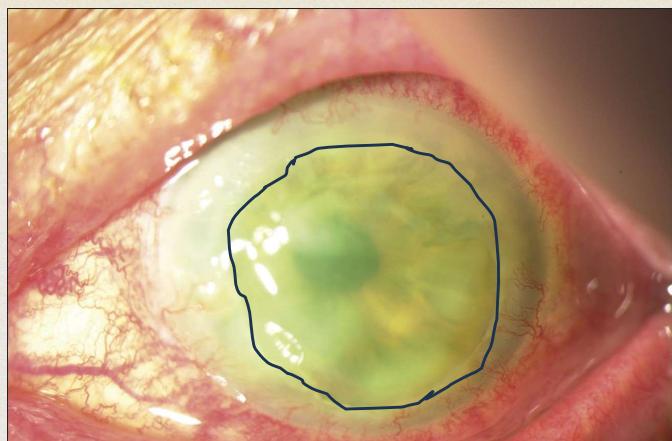


CHEMICAL INJURY

- **WASH EYE NOW** – before any further questions or examination
- Place patient on couch/table and irrigate eyes with copious quantities of water or saline
 - ...or use tap – do not waste any time
preferably not well water
- At least one liter per eye (more if alkali injury) **any cleaning solution**
- **THEN** Call ophthalmology while irrigating the eye

nasal cannula to IV but eye needs to stay open to rinse the eye

KERATOCONJUNCTIVITIS: TOXIC



- Alkaline chemicals most harmful
- Irrigate and refer

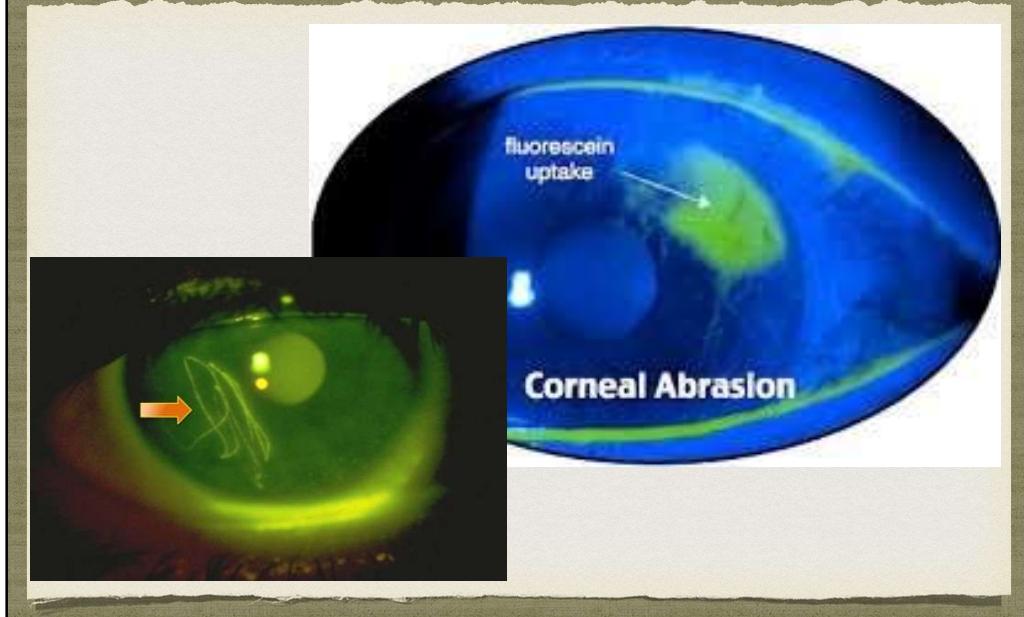
cornea is opacified - epithelial defect is huge
can melt the cornea but more likely opacify cornea

CHEMICAL INJURY

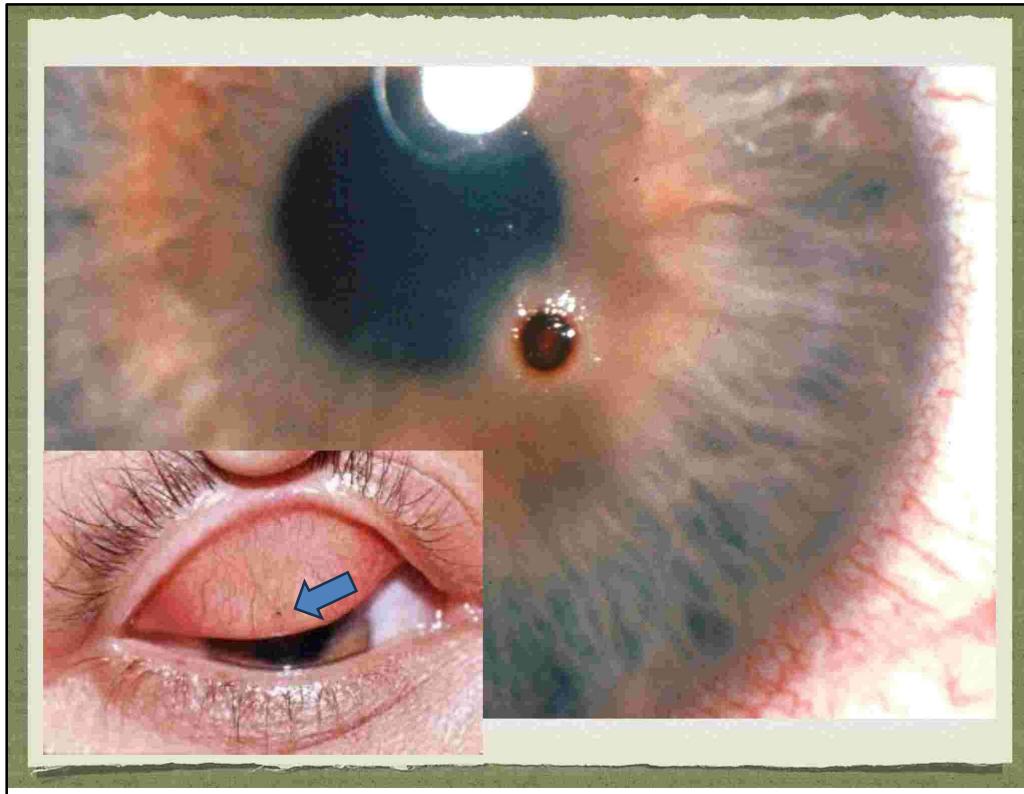


Late corneal opacification from chemical injury: full thickness corneal transplant best chance at vision recovery

CORNEAL ABRASION

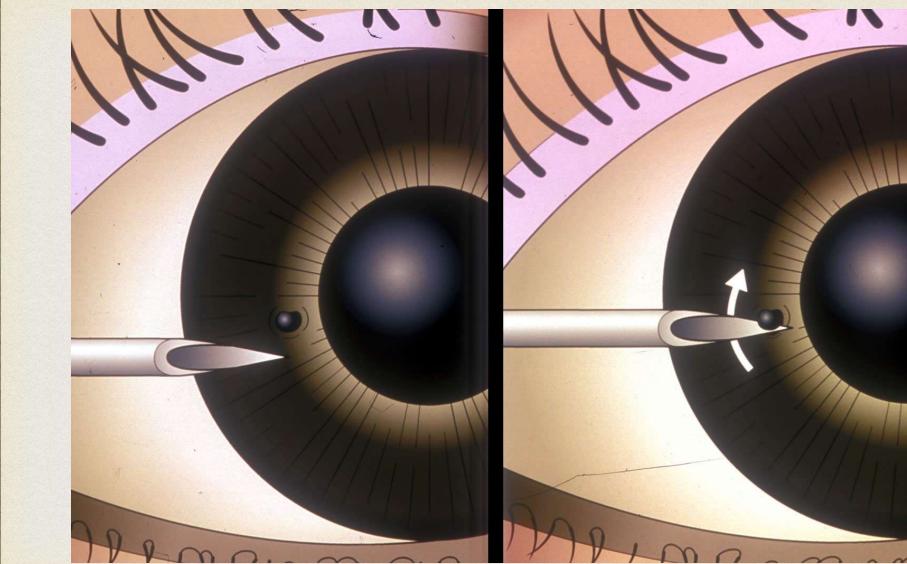


hairbrush, fingernail, walking around on a windy day
horizontal ones - likely from a tissue
if vertical/diagonal flip the eyelid



Note the small foreign body seen on the palpebral conjunctiva when the lid is everted in the smaller image. This could abrade the cornea with blinking. You may see vertical linear epithelial defects on the cornea to prompt eversion and exam of the eyelid

REMOVAL OF FOREIGN BODY



if have steady hands and a cooperative patient can try since may not always have an ophthalmologist

25 gauge or smaller

25 gauge can be a self-sealing wound if there is corneal perforation (but not if an oblique entry). I use a 27 gauge needle, bevel up, as parallel to the corneal surface as possible to avoid penetration

get tip of needle under foreign body ad flip it up and grab with wet cotton swab like picking a scab need to get something under it

REMOVAL OF FOREIGN BODY



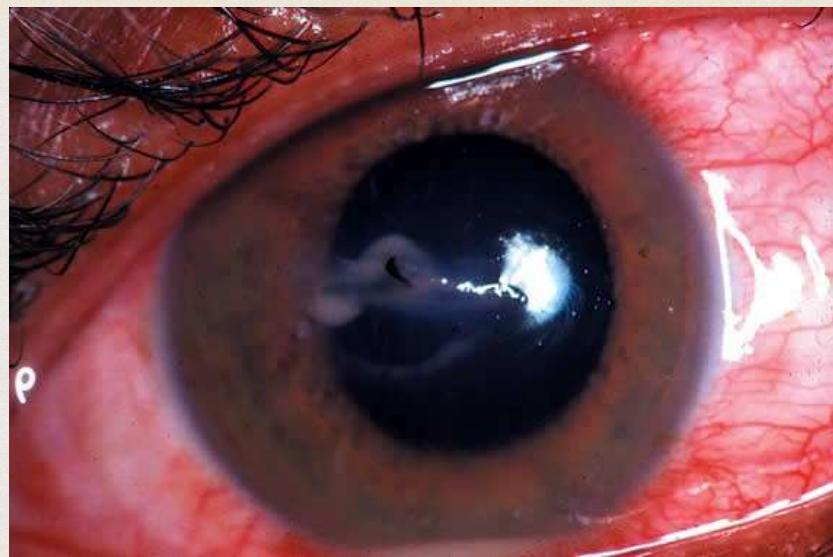
The upper right image shows a small residual amount of rust centrally with superficial epithelial removal shown by the blue outline after use of the burr

5 drops of tetracaine in 5 min epithelial will roll up and fall off - DO NOT send it home with patients bc will overuse and opacify cornea

WHEN TO REFER CORNEAL INJURY?

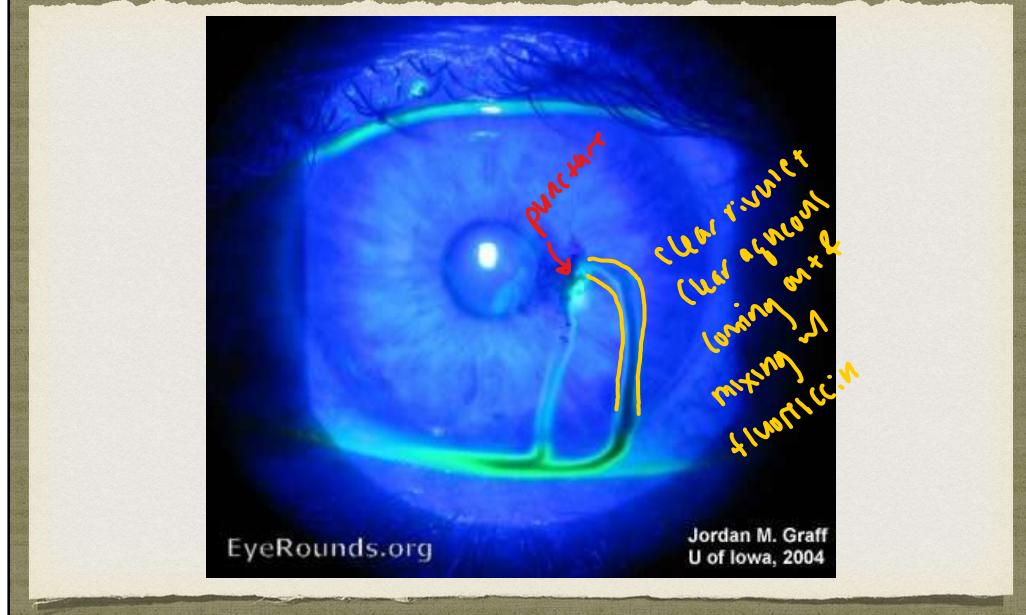
- Unable to remove corneal foreign body
- Concern for penetrating injury: worrying signs
 - Seidel test positive **KNOW**
 - Large laceration
 - Evidence of pupillary damage
 - Hyphema
- Corneal ulcer

LACERATION



The pupil is also not round, another worrying sign. There may be a very small layered hypopyon as well.

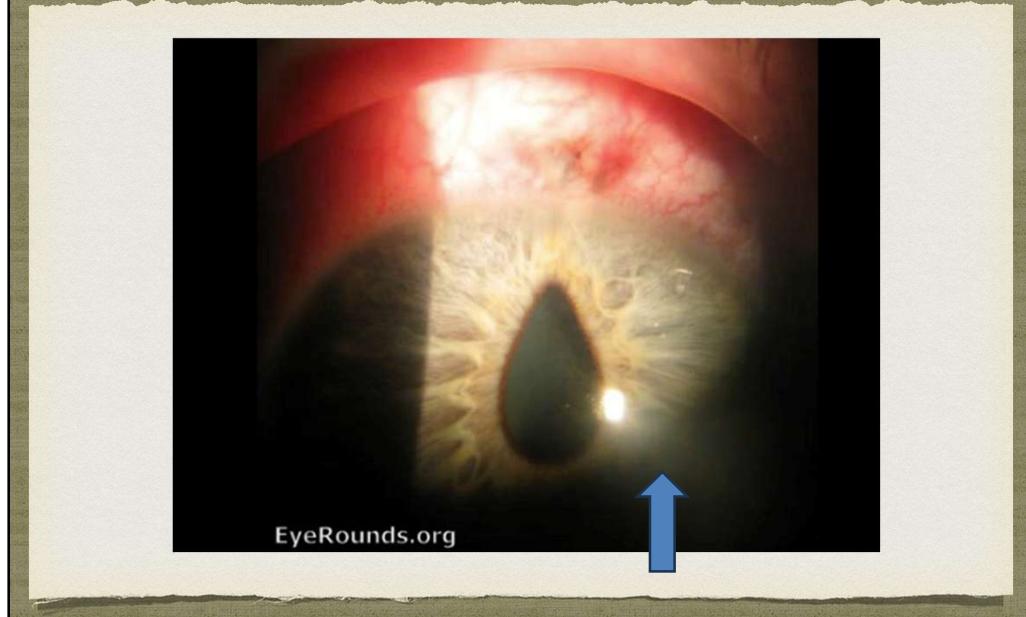
SEIDEL POSITIVE



Perforated cornea – needs emergent ophthalmology referral

[rivulet from anterior chamber](#)

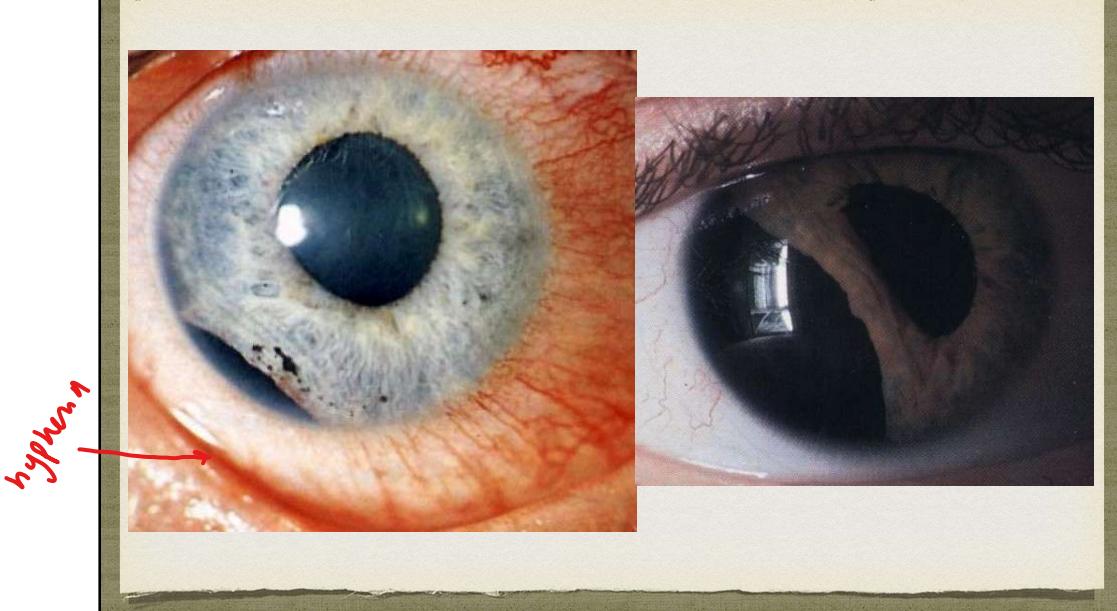
PEAKED PUPIL



Highly suspicious for a ruptured globe – if acute onset (as evidenced by associated hemorrhage in this photo) needs emergent ophthalmology referral

[uveal tissue getting pulled out of a rupture](#)

IRIDODIALYSIS

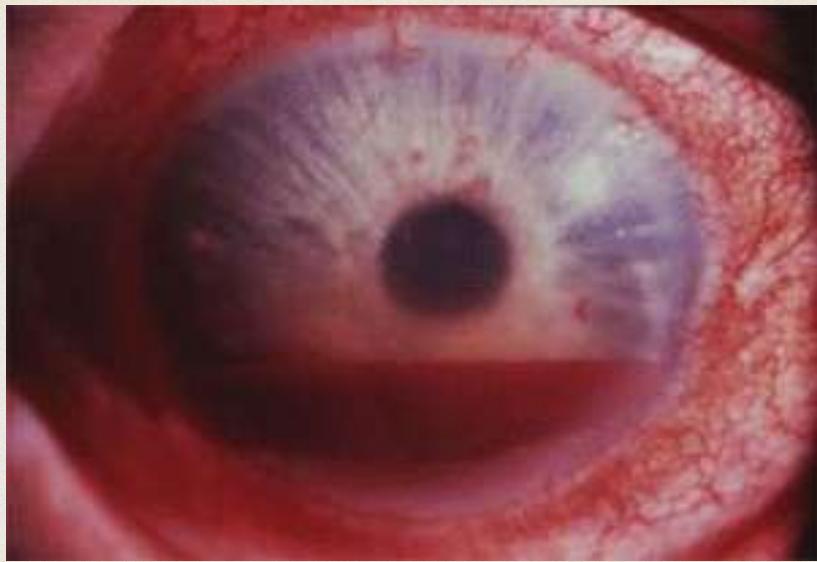


Lifetime increased risk for glaucoma

[will usually also see a hyphema acute](#)

HYPHEMA

8 ball hyphema
very high risk for
ruptured globe
and high pressure



Get the history of mechanism of injury. If no concern for ruptured globe or if no easily accessible ophthalmologist, can gently check the eye pressure. High pressures are less worrisome for rupture but have a higher risk of corneal blood staining.

EYELID LACERATION

- Check for other injuries and treat appropriately
- Assess wound depth
 - If full thickness globe may also be involved
 - Partial thickness and not through lid margin, clean and repair
 - Full thickness or involving lid margin or lacrimal puncta leave repair to ophthalmologist
- Update tetanus
- Sterile dressing

REPAIR OR REFER?



have to make sure it heals flat on the posterior surface

Clockwise from top left:

- 1) Full eyelid margin laceration lower eyelid-> refer
- 2) Medial lid laceration possibly involving lacrimal system-> refer [possibly through canalicula](#)
- 3) Upper eyelid laceration superior to crease and not entering post-septal (orbital) region-> repair
- 4) Full eyelid laceration upper eyelid-> refer

SUSPECTED GLOBE RUPTURE OR PENETRATING INJURY

- DO NOT put any pressure on the globe
- Cover eye with eye shield
- Document visual acuity, anterior eye exam in both eyes if injuries allow
- Systemic Antibiotics
- Tetanus update
- **REFER to ophthalmology immediately**



don't just put gauze on there put a shield if no shield use whatever you can to keep pre from getting to eye

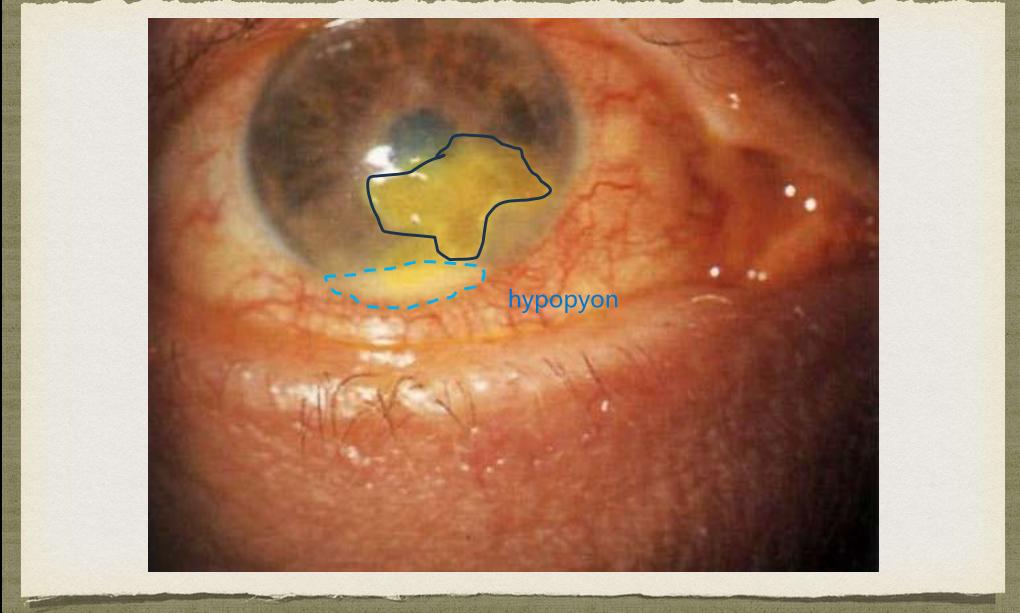
INFECTIOUS KERATITIS

- Bacterial, fungal, protozoan (acanthamoeba)
 - Contact lens wear and trauma are major risk factors
 - Same day ophth referral for evaluation and antibiotics
- Viral: HSV, VZV
 - Look for skin lesions
 - Initiate oral antiviral treatment acyclovir 800mg 5xday or valacyclovir 1g ~~BID~~ TID
 - Ophthalmology referral within 24 hrs to assess other complications such as high pressure, uveitis, retinitis

possibly BID for patients with other problems too bc need to dose renally

Cultures not often taken at initial exam anymore due to low diagnostic yield; however, careful documentation of the size of the ulcer is important to follow if response to treatment is adequate.

BACTERIAL KERATITIS WITH HYPOPYON



Edge of this lesion is rolled but well defined as seen after fluorescein instillation but without the cobalt blue light. Note the layered hypopyon in the anterior chamber.

FUNGAL KERATITIS

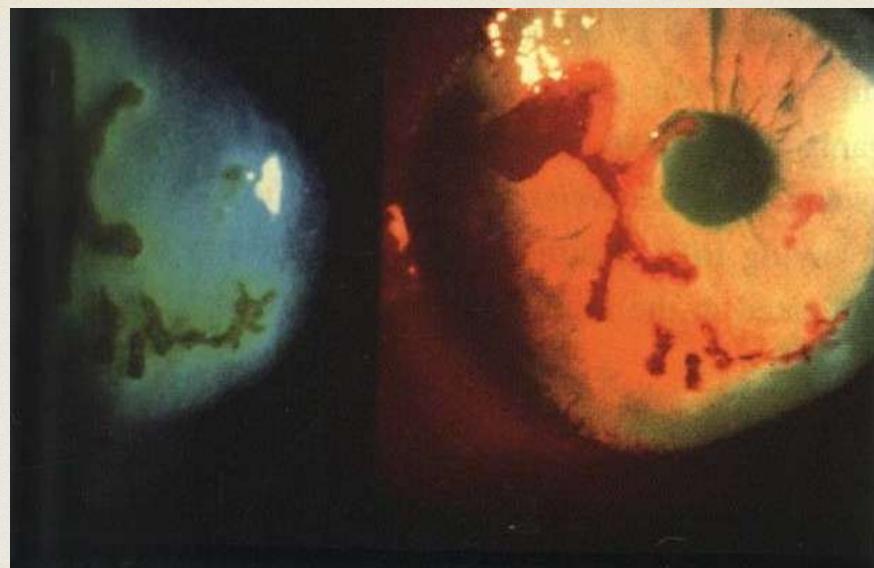


"fuzzy" edges to lesion/infiltrate with some satellite lesions. Note hypopyon.
[not necessarily rolled edges](#)

LATE STAGE INFECTIOUS KERATITIS



HERPETIC KERATITIS



Dendrites. Photo on the right is stained with rose Bengal.

[know what a dendrite looks like](#)



DENDRITES AND PSEUDODENDRITES



The large image on the left shows a classic dendrite: complex branching with terminal bulbs, caused by HSV. The large image in the center shows varicella zoster pseudodendrites: no terminal bulbs, raised without central ulceration. Other sources of pseudodendrites are neurotrophic epitheliopathy, ancanthamoeba infection, healing epithelial defects, recurrent erosion syndrome. Do not mistake these for whorl keratopathy (also known as cornea verticillate, shown in the two small photos) that are basal epithelial grey-white or light brown deposits that DO NOT STAIN and are most commonly due to amiodarone treatment or Fabry disease.



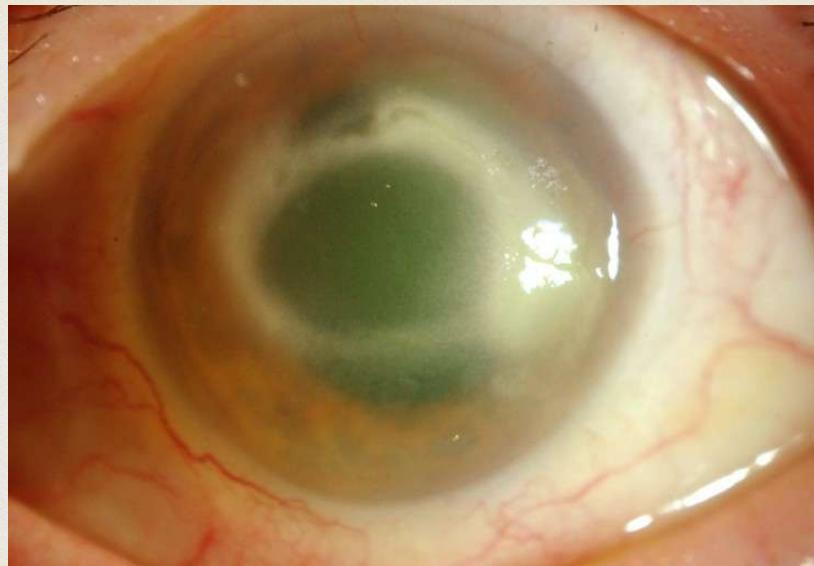
Various presentations of zoster ophthalmicus

vesicles crusted over not contagious anymore - be aware if in a household with pregnant women, infants immunocompromised



Hutchinson's sign:
vesicular rash of Herpes
Zoster on tip of nose,
indicating involvement of
CN V1, with ocular
involvement likely

ACANTHAMOEBA KERATITIS



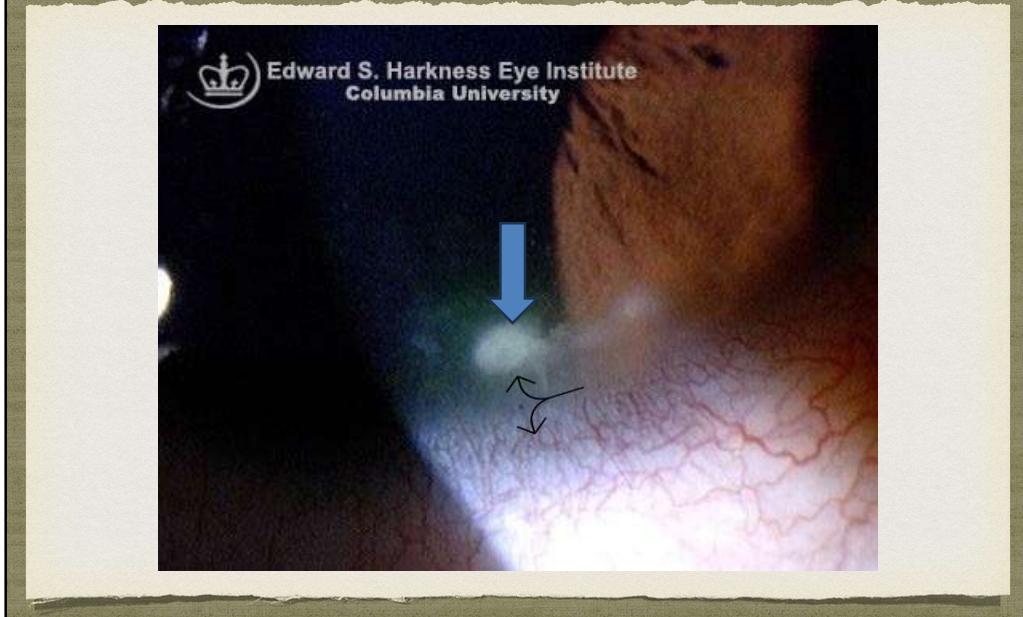
Ubiquitous protozoa in soil, water, air. In USA, 85% of these cases are contact lens wearers. Biggest risk factors: swimming/hot tub/showering while wearing contacts, contact with contaminated water/storage solution, improper disinfection/storage of contacts, history of trauma. Typically delayed diagnosis, usually people not improving despite topical ocular antibiotics. Late finding shown on slide, the classes "ring infiltrate".

INFLAMMATORY KERATITIS

- Staph marginal most common, from blepharitis
- Peripheral ulcerative keratitis can be associated with systemic conditions:
RA, GPA, relapsing polychondritis, Cogan syndrome, viral keratitis, Mooren's ulcer.
- Treat with steroids or other steroid sparing immunosuppression – be sure it is not viral before adding topical steroids

RA=rheumatoid arthritis. GPA=granulomatosis with polyangiitis. Terrien's marginal degeneration causes thinning of the cornea but is PAINLESS. Cogan's syndrome most commonly causes iritis, not keratitis, but is in the differential for inflammatory red eye. Mooren's ulcer is painful, etiology unknown but evidence points towards a possible autoimmune basis.

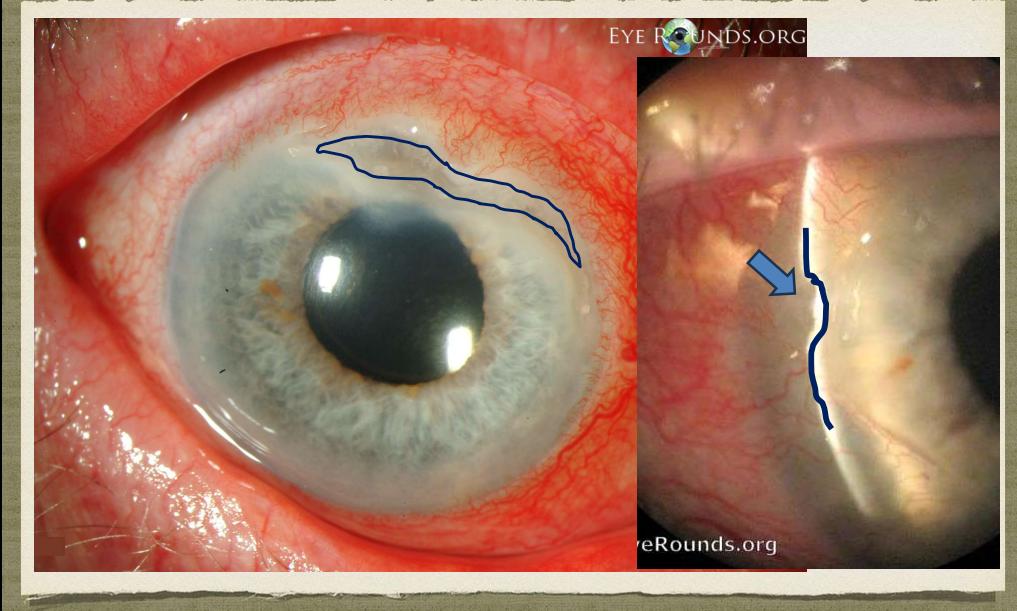
STAPH MARGINAL KERATITIS: 2, 4, 8 & 10 O'CLOCK



where the eyelids are crossing the cornea - overreaction to the staph

Due to contact with infected eyelid margins, thought to be inflammatory response not direct infection with staphylococcus aureus. Classically 1-2mm “clear” margin to limbus. Treat blepharitis and inflammation.

PERIPHERAL ULCERATIVE KERATITIS



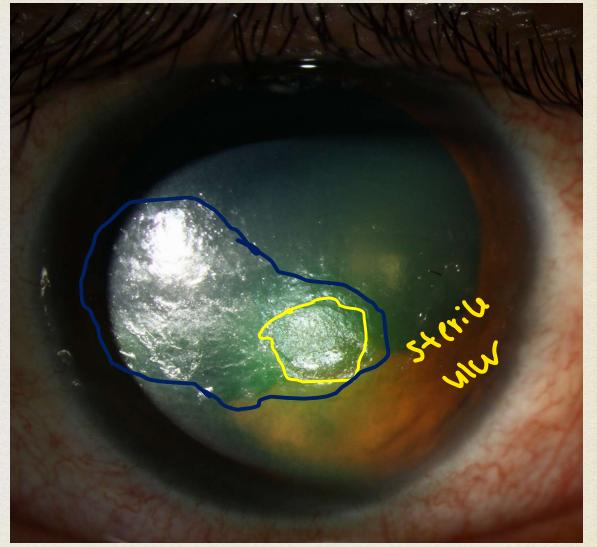
Superior edge of the peripheral corneal ulcer with surrounding infiltrate delineated by the blue arrows in the picture on the left. Thinning of cornea demonstrated by loss of normal slit lamp line in the picture on the right.

loss of normal contour of slit lamp light

NEUROTROPHIC KERATITIS

- Inability to heal due to poor corneal sensation
- Common in diabetics, h/o stroke, those with lagophthalmos such as Bell's palsy
- Aggressive lubrication, lid taping, or tarsorrhaphy

CN V and VII



exposure is a big one - cannot close eye or sleep with eyes open cannot heal cornea

sterile ulcer doesn't need to be treated need aggressive moisture

OTHER REFERRALS

Severe pain, light sensitivity, pupillary abnormalities,
and most importantly...just doesn't look right!!

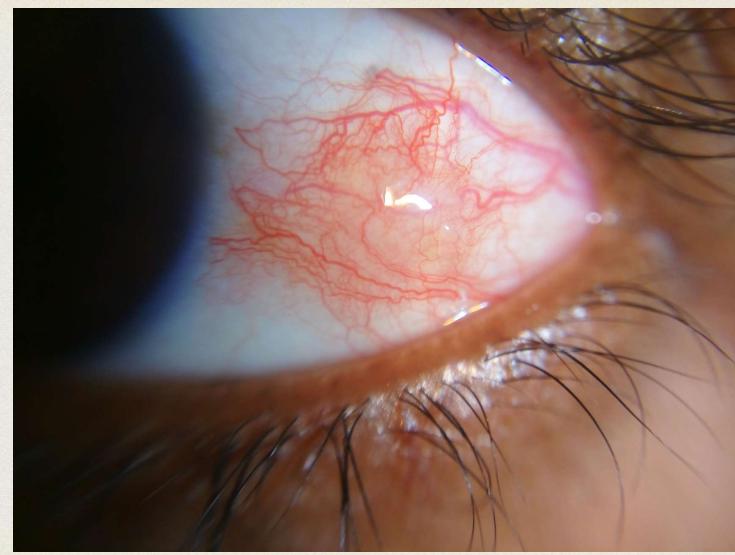
URGENT

- Episcleritis, scleritis, uveitis
- Post-operative
- Orbital congestion: thyroid eye disease, tumors, vascular occlusion/fistula

EMERGENT

- Angle closure glaucoma
- Endophthalmitis
- Retrobulbar hemorrhage
- Intraocular foreign body

EPISCLERITIS +/- UVEITIS



This is an example of nodular episcleritis. Vessels will blanch with phenylephrine if episcleritis or inflamed pingueucula, but not if scleritis (deeper vessels)

[tx with oral and topical NSAID](#)

[want to make sure not anterior uveitis/iritis - need st](#)

NECROTIZING SCLERITIS

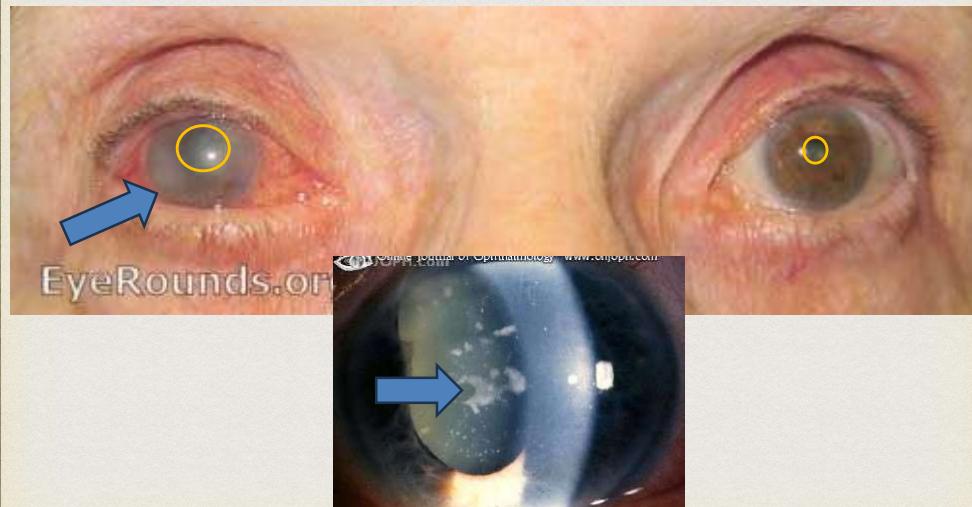


Typically no history of trauma



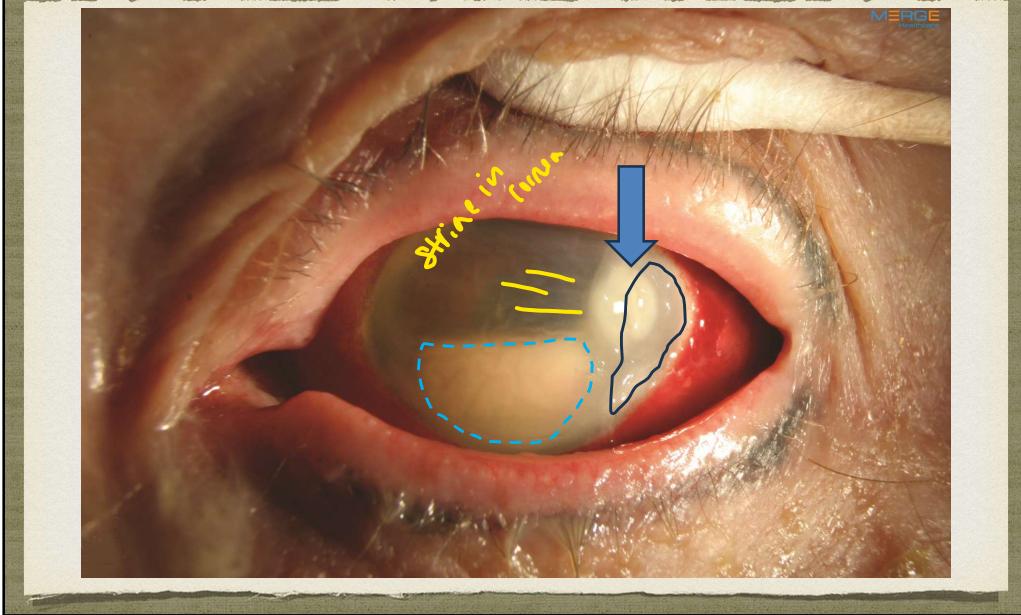
ANGLE CLOSURE GLAUCOMA

Painful red eye with injected conjunctiva, corneal edema, mid-dilated pupil



Glaucomflecken are opacities seen on lens due to epithelial necrosis from high intraocular pressure.

ENDOPHTHALMITIS

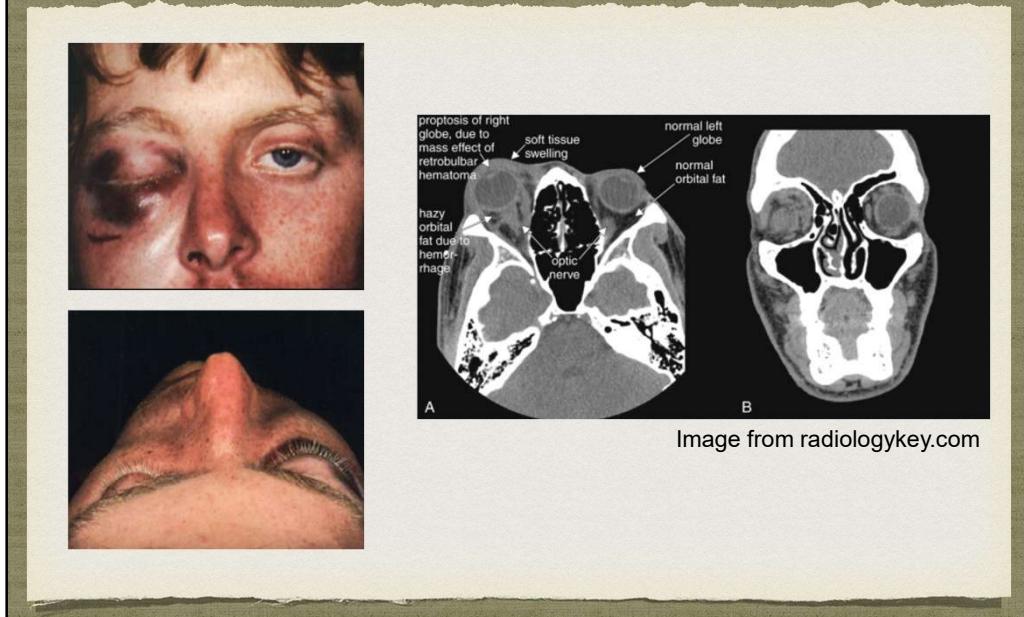


no history of trauma but likely history of eye surgery

Note very large hypopyon (nearly half the anterior chamber) and peripheral corneal ulcer. Ask about prior eye surgery/trauma.

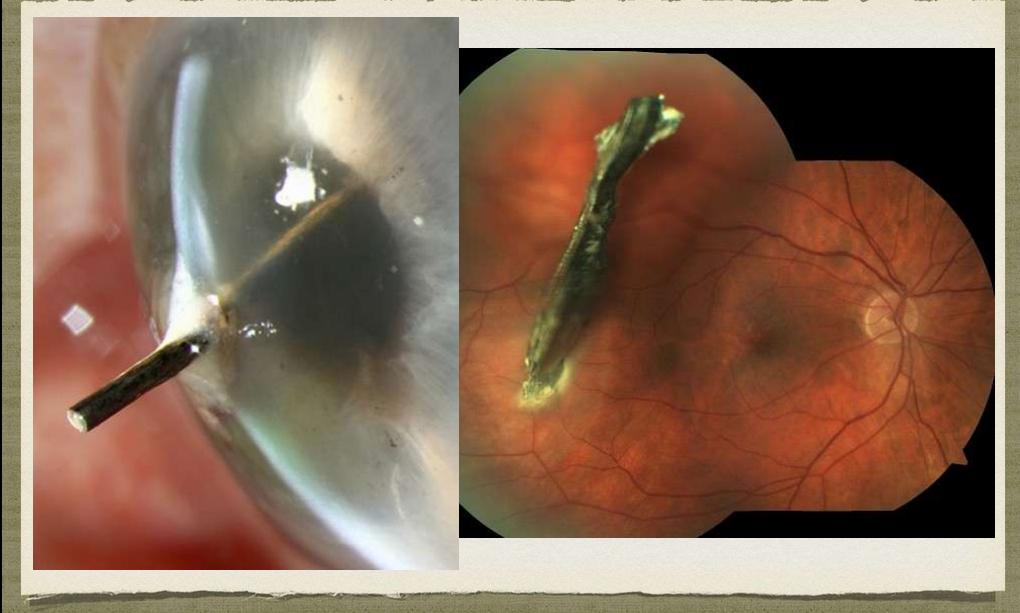
corneal infiltrate

RETROBULBAR HEMORRHAGE WITH ORBITAL COMPARTMENT SYNDROME



something making eye pushed forward
retrobulbar hemorrhage -
compartment syndrome

INTRAOCULAR FOREIGN BODY



Avoid MRI if suspect a metallic intraocular foreign body by the patient's history. CT scan or even X-ray safer. Avoid ocular ultrasound unless able to perform a zero-pressure ultrasound [use a lot of gel and float the transducer](#)

Questions?

