

Urgency vs. Emergency

Cecilia Koelling, OD, FAAO
Denver CO
Hines Sight/Burcham Eye

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Disclosures

- Ocular Therapeutics
- Glaukos
- Ivision
- Quidel
- Eyevance
- Novartis
- Orasis
- RVL
- Cyteir Point
- Dampre
- Thera
- Tansu
- Kala

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Levels

- Immediate/Emergency
 - Should come to office to be seen immediately, or to nearest emergency eye care facility
- Urgent
 - 24 hours
- Semi-Urgent
 - 1 week
- Routine
 - Next available
 - Does not pose immediate threat, may have been present for more than a week.



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Emergencies

- Chemical burns
- Sudden Painless Loss of Vision
- Loss of Vision associated with scalp tenderness/elderly
- Painful loss of vision with nausea
- Trauma from high velocity projectile/possible laceration
- Trauma associated with persistent pain
- Blunt trauma (fist or ball)
- Acute onset of pain
- Sudden onset of diplopia, ptosis, pain, and dilated pupil
- Emergency referral from another physician



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Urgencies

- Persistent loss of vision with gradual evolution over few days to weeks
- Sudden onset of diplopia
- Recent onset of flashes and floaters
- Acute red eye
- Blunt trauma with no pain or loss of vision
- Photophobia
- Increasing pain
- Acute swelling of eyelids with pain or discharge

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Routine

- Discomfort after prolonged use of eyes
- Difficulty with near work
- Mild itching, burning, irritation
- Teasing
- Lid twitching
- Mucous discharge
- Mild redness without other symptoms
- Unchanged floaters

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THE 5 W's!

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The 5 W's

- Who
- What
- When
- Where
- Why
- Assess and classify a patient's signs and symptoms according to their severity and urgency

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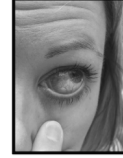
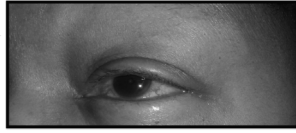
Patient

- "My eyes are all red and watery."

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Redness

- When did this start?
- Which eye is it?
- Do you have seasonal allergies?
- Who in your home or friends has had "pink eye" recently?
- Did you get anything in your eye?
- Are you light sensitive?
- Have you tried putting any drops in it?
 - Is it helpful?



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Red Eye

- | | |
|---|---|
| <ul style="list-style-type: none"> ■ Emergent <ul style="list-style-type: none"> ■ Foreign Body ■ Light sensitivity ■ Recent trauma ■ Actual foreign body ■ Urgent <ul style="list-style-type: none"> ■ Bacterial Conjunctivitis <ul style="list-style-type: none"> ■ Yellow/green discharge ■ Crusting ■ May itch | <ul style="list-style-type: none"> ■ Urgent <ul style="list-style-type: none"> ■ Viral Conjunctivitis <ul style="list-style-type: none"> ■ Weepy/watery ■ Crust ■ Lid edema ■ Iritis <ul style="list-style-type: none"> ■ Light sensitivity ■ Pain ■ Should be seen within 1-2 days |
|---|---|

Red Eye

- | | |
|--|---|
| <ul style="list-style-type: none"> ■ Not urgent <ul style="list-style-type: none"> ■ Irritation/Dryness <ul style="list-style-type: none"> ■ Try to use AT Q2H and call if worsens ■ Should see w/in 1-2 weeks | <ul style="list-style-type: none"> ■ Semi-Urgent <ul style="list-style-type: none"> ■ Allergies <ul style="list-style-type: none"> ■ Usually itchy ■ Seasonal allergies ■ Should see w/in 1 week |
|--|---|

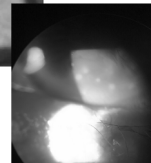
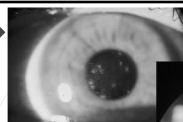
Adenovirus

- Caused by a virus
 - 4 subgenera and 53 serotypes
- Symptoms: redness, itching, photophobia, tearing, aching, foreign body sensation, blurred vision
 - Fever, headache, fatigue (flu like symptoms)
- Signs: chemosis, follicles, swollen lymph nodes, discharge, sub epithelial infiltrates, pseudomembranes

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- Highly contagious.
- Adenovirus
 - Tests for most common serotypes 3,4,8,11,19,37
- Rule of 7s
 - Contagious for 7 days prior to signs and symptoms
 - Contagious for 7-14 days after signs and symptoms
 - Signs and symptoms will persist for 21 days after they start

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Treatment

- In office
 - Betadine wash
 - Removal of pseudomembranes
- Topical antivirals
 - Decrease viral load?
- Topical NSAID
- Topical Steroid
 - Prolong viral shedding?
- Lubrication with artificial tears

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Patient

- I actually think I got sand in my eye!



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Foreign Body Sensation

- What are you feeling?
- Which eye is it?
- When do you notice it, how often?
- When did this start?
- Have you possibly gotten anything in your eye?
- Any recent trauma to the head or eye?

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Foreign Body

- Urgent!
 - Remove Day if Possible
- Stage:
 - Involvement?
 - Intra/Extra?
 - Penetration? Awareness?
 - Corneal?



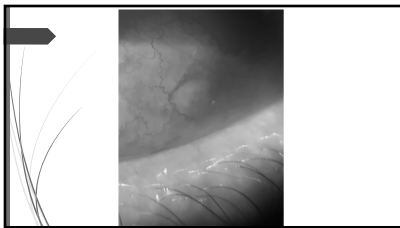
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Foreign Body

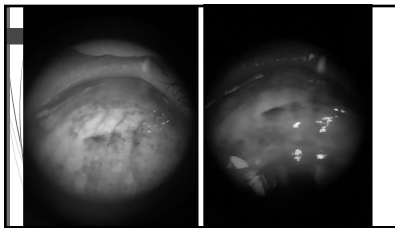
- Ok to flush
- Don't try to remove if visible
- Removal
 - Sterile Q-tip
 - Spatula
 - Bent 25 G needle
 - Algor brush for uveitis
- Bandage CL/Antibiotic drops



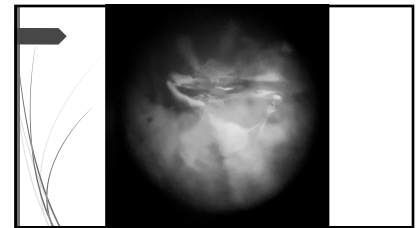
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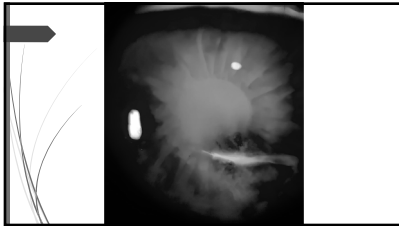
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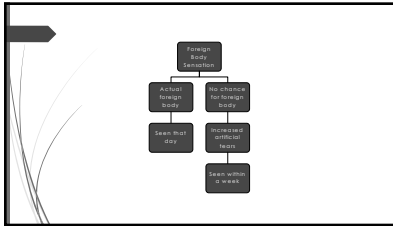
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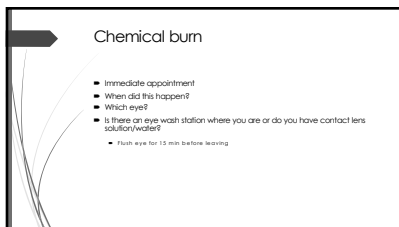
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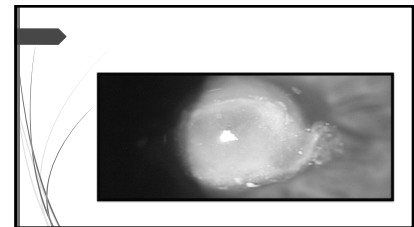
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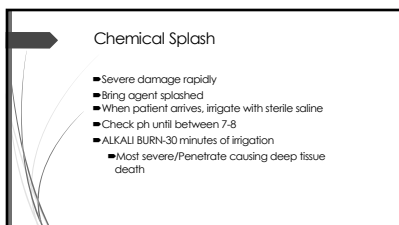
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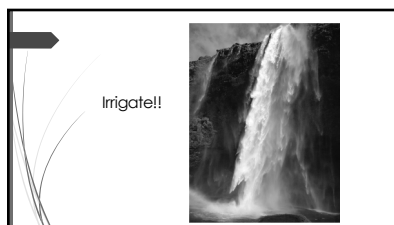
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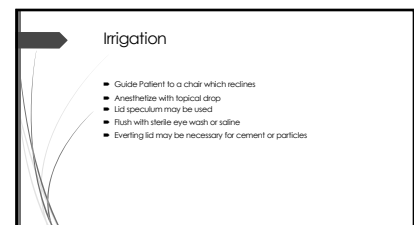
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Chemical Splash Treatment

- Always irrigate first
- Topical Antibiotic
- Topical Steroid
- Cycloplegic
- More Severe:
 - Amniotic membranes, grafts, dexamethasone, VIT C

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Patient

- "I've noticed over the last few days I keep seeing double."

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Double Vision

- When did you start to notice this?
- Has there been any recent trauma?
- When do you notice the double vision, is it constant?
- When you cover one eye is it still double or does it go away?

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Astigmatism

- Produces shadows
- Not 2 fully separate images
- Will still be present if closes one eye
- Improves with refraction

STOP**STOP**

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Monocular Diplopia "pseudo-diplopia"

- Corneal surface
- Lenticular
- Refractive etiology
- Astigmatism

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True Diplopia

- 2 separate images that can be side to side, up and down, or at an angle
- Usually goes away when one eye is covered
- Improves and measured with prisms

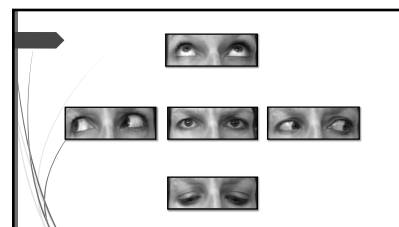
**Double
Double**

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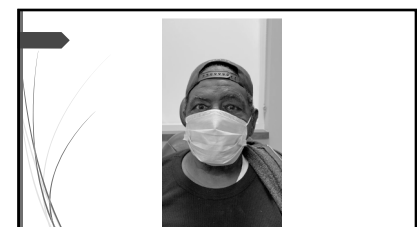
Binocular Diplopia

- Astigmatism
- Strabismus
- Decompensated phoria
- Cranial nerve 3,4, or 6 palsy

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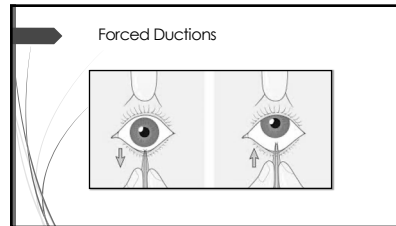
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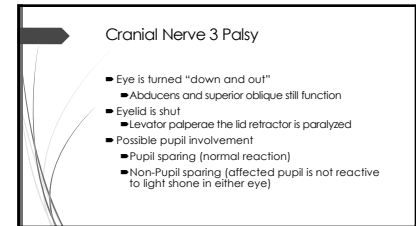
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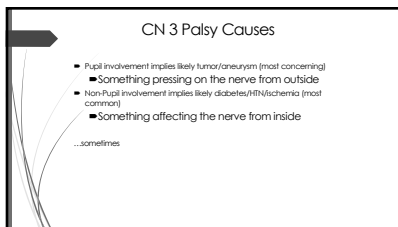
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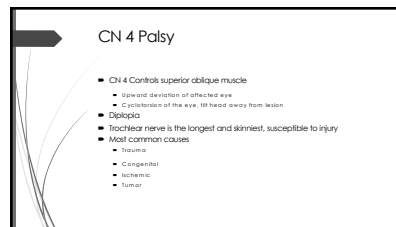
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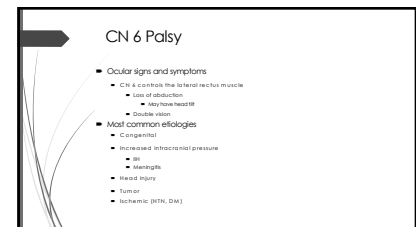
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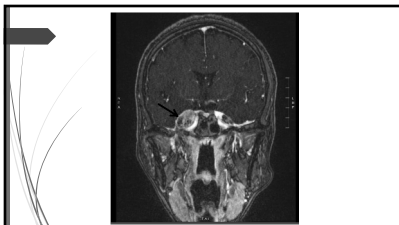
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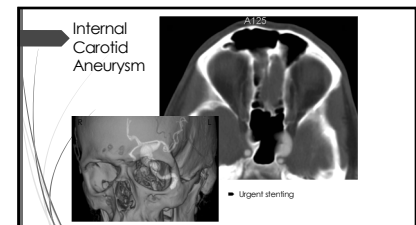
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Patient

- "Hey so I started to notice these weird spots" in my vision, should I come in?"

*Your raggy flies, floaters, cobwebs, blobs, greys, worms, etc.

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Flashes and Floaters

- What are you noticing?
 - Are there flashes?
 - What's floating?
 - Is there a curtain or veil?
- Which eye?
- When did they start?
- When was the most recent flash?
- Any recent head trauma or accident?

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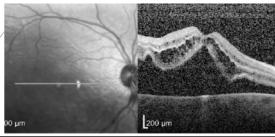
Flashes and Floaters

- Urgent
- Same day if possible
- Posterior Vitreous Detachment (PVD)
- Establish if NEW

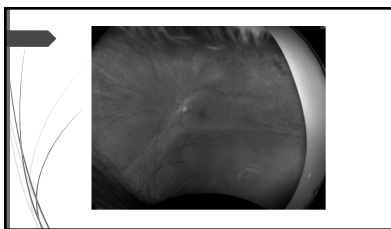
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Flashes and Floaters

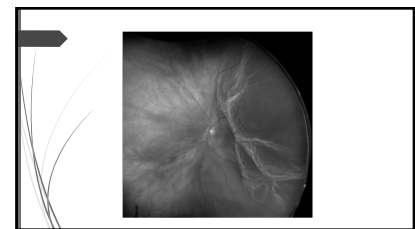
- Retinal Detachment



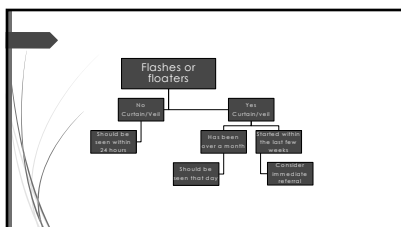
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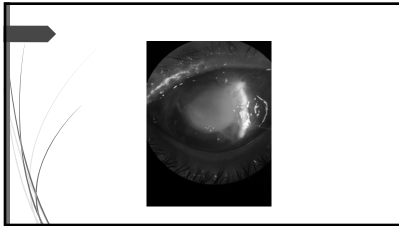
Patient

- "I slept in my contacts the last few nights and I woke up in pain and the light hurts my eyes!"

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What could you ask?

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Bacterial Keratitis: Risk Factors

- Contact lens wear - #1
- Non-surgical trauma
- Surgical trauma
- Lid dysfunction
- Ocular surface disease
- Corneal epithelial abnormalities
- Systemic diseases
- Topical medications

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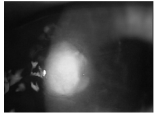
Indications for Cultures

- Hyperacute conjunctivitis
- Neonatal conjunctivitis
- Post-operative infections
- Chronic conjunctivitis
- Central corneal ulcers
- Membranous / Pseudoconjunctivitis
- Preseptal / Orbital cellulitis
- Post-traumatic infections
- Marginal infiltration / ulceration
- Atypical external disease
- Severe dry eye
- Bulbar keratopathy
- Atypical and severe keratitis

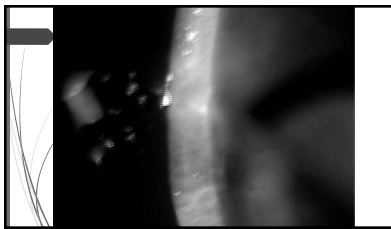
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Work-up

- History
- Slit lamp examination
- Photodocumentation
- Culture - Rules of 1-2-3
 - Within 1 hr of inoculation
 - Ulcers ≥ 1 mm or more infiltrates
 - ≥ 2 mm or more in diameter



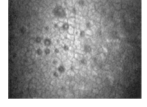
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Confocal Microscopy



- Historically used for endothelial cell evaluation
 - Post-hypoxemia
 - Post-surgical bullous keratopathies
- Recently studied for use in diagnosing infectious keratitis
 - Acanthamoeba
 - Fungal keratitis



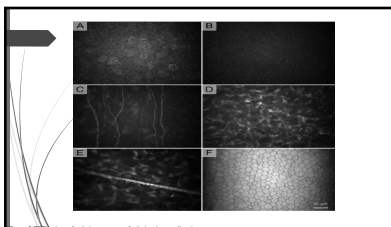
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Confocal Microscopy & Fungal Keratitis

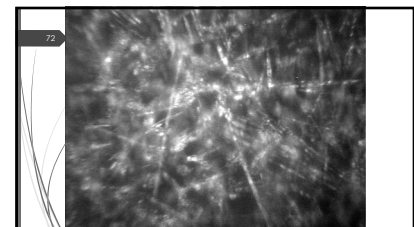
- Studies show
 - Sensitivities: 80-94%
 - Specificities: 78-93%
- Procedure
 - Thick fluid-coupling agent on cornea
 - Scans all layers

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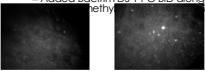
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Dx: Acanthamoeba Ulcer

- Monitored daily
 - Day #2: epithelium debridement and subconj. Gentamicin injection
 - Added Bactrim DS 1 PO BID along with Idoxuridine 1% eye drops 9-11 tx/day



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Acanthamoeba

- Parasitic infection
 - A. castellanii* and *A. polyphaga*
- Typically pain is out of proportion to findings
- Culture on dish of *E. coli* plated over non-nutrient agar

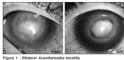


Figure 1. Acanthamoeba corneal

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Acanthamoeba

Symptoms <ul style="list-style-type: none"> Decreased vision Pain Light sensitivity Redness Foreign body sensation Lid edema 	Signs <ul style="list-style-type: none"> Epithelial irregularities Epithelial or subepithelial infiltrates Satellite lesions Stromal infiltrates (ring-shaped, disciform) Anterior uveitis Scleritis Chorioretinitis
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Differential Diagnoses of Acanthamoeba

- Herpes Simplex Virus Keratitis
- Recurrent Corneal Erosion
- Bacterial Keratitis
- Fungal Keratitis
- Contact Lens Associated Keratitis
- Dry Eye Syndrome

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Treatment and Management of Acanthamoeba

- Early stages- topical antibiotics
- Colonic antiseptics- polyhexamethylene biguanide (PHMB) and Chlorhexidine
- Combination therapy with a diamidine
- Debridement of tissue
- Penetrating keratoplasty
- Steroids?

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Back to Patient...

- All satellite lesions healed ~15 days following initial evaluation
- Cryopreserved membrane was inserted at 1 month visit
- Patient continued to improve; PHMB was tapered weekly (7x/week, 6x/week, 5x/week, 4x/week, etc.)

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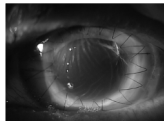
What if it doesn't heal?



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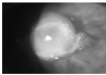
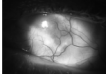
Penetrating Keratoplasty

- The first successful human corneal transplant was performed in 1905 in the present day Czech Republic.

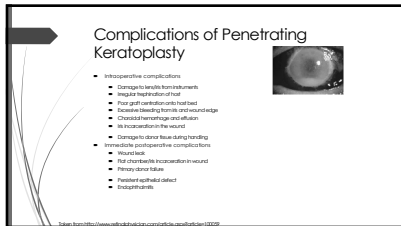


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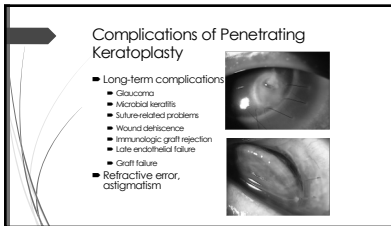
PK Indications / Contraindications

Indications <ul style="list-style-type: none"> Deep scarring Endothelial pathology Perforation Diseased corneas 	
Contraindications <ul style="list-style-type: none"> Glaucoma Vascularization Previous graft failure 	

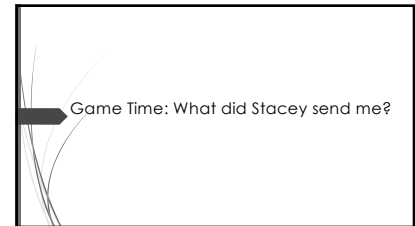
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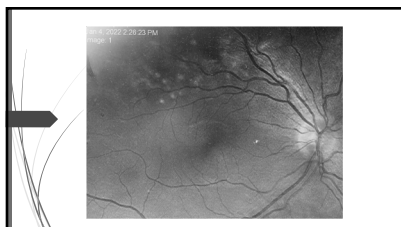
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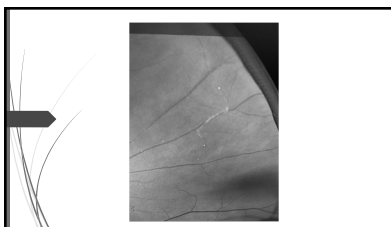
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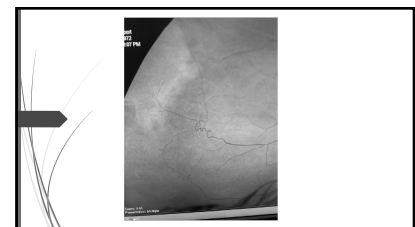
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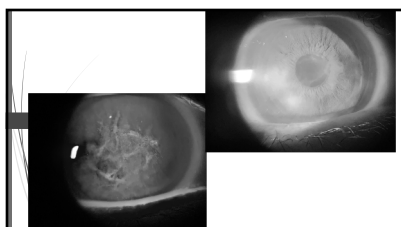
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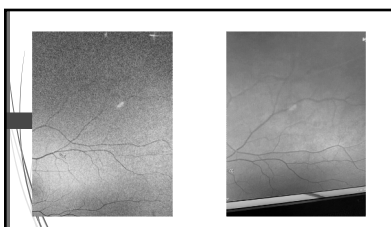
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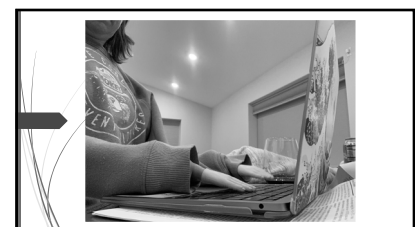
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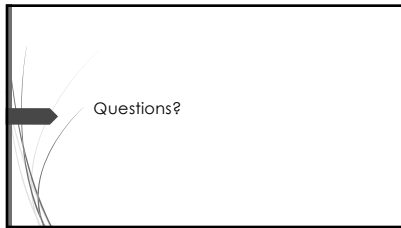
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