


Anterior and Posterior Case Presentations
Enough Pearls to Make a Necklace


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Disclosures- Greg Caldwell, OD, FAAO
All relevant relationships have been mitigated



- ** Lectured for: Alcon, B&L, BioTissue, Dompé
- ** Disclosure: Relative speaker honorariums
- ** Advisory Board: Dompé, ImmunoGen, Iveric
- ** Disclosure: Passive participant honorarium
- ** I have no direct financial or proprietary interest in any companies, products or services mentioned in this presentation
- ** Disclosure: Non-salaried financial affiliation with Pharmacia
- ** Healthcare Registries – Chairman of Advisory Council for Diabetes and AMD
- ** The content of this activity was prepared independently by me – Dr. Caldwell
- ** The content and format of this course is presented without commercial bias and does not claim superiority of any commercial product or service
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My Practice

- I am a clinician first then a scientist
- Some are scientists first then clinician
- I need to simplify for patient and patient care.
- Science is great, but not good if there isn't a clinical application.
- Some lectures are science based without clinical application.
- My lectures will be a hybrid, showing clinical applications of the science



It is wonderful to have someone who's juggling so many aspects of optometry [scientific, clinical experience, teacher & lecturer]. It is refreshing and very informative. -Sarah

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Case 1

Optometric Public Service Announcement
Pay Very Close Attention



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65-year-old man

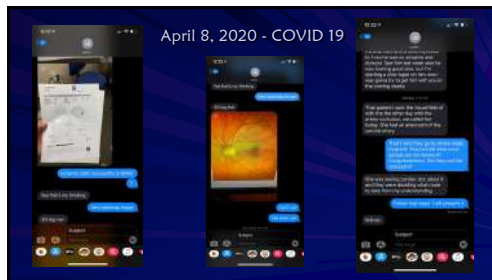
- ↳ Reports a sudden loss of vision OD
- ↳ Vision is count fingers at 2 feet OD and 20/25 OS
- ↳ APD OD grade 4
- ↳ Fundus photos OU

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Photos OU



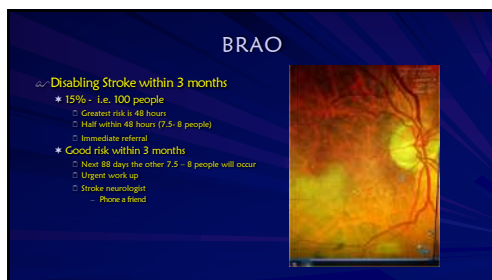
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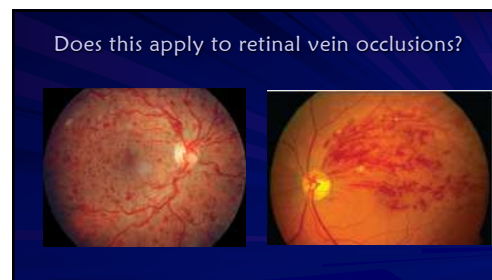
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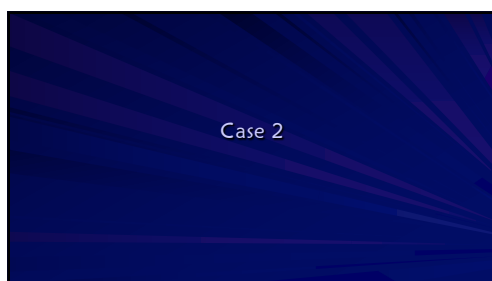
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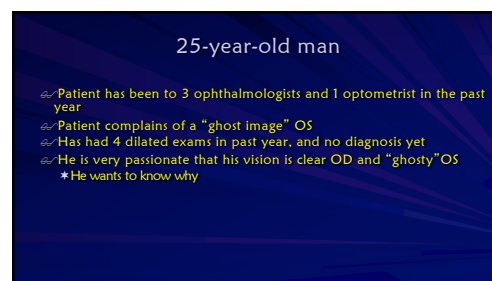
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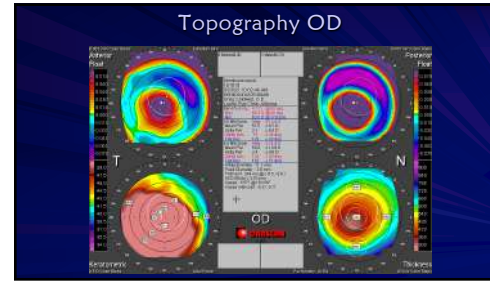
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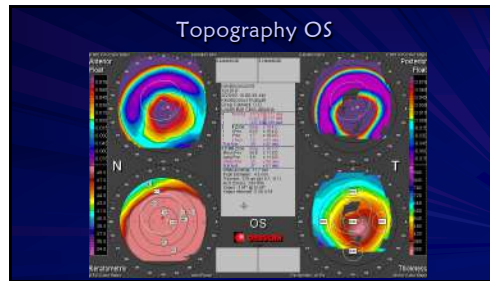
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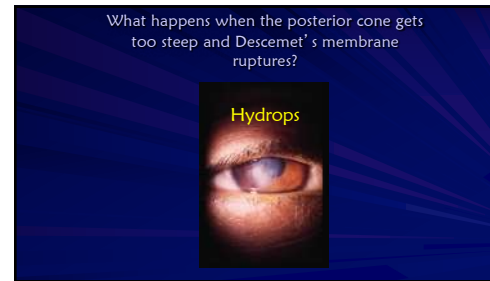
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Keratoconus

- Progressive corneal disease
 - Focal thinning, steepening, bulging, and irregular shape
 - Loss of biomechanical strength
 - Bilateral, asymmetric, clinically non-inflammatory
- Caused by a combination of genetic and environmental factors
 - Allergies and eye rubbing
- Onset in puberty
 - Typically progressive to 4th decade of life
 - Previously estimated 1:2000 (1986 US), more recent estimate 1:375 (2017 Netherlands)

Normal

KC

Two clinical photographs comparing a normal eye (Normal) with an eye affected by keratoconus (KC), showing the characteristic bulging and irregular shape.

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Conventional Management of Keratoconus

Increasing complexity of interventions and loss of best corrected visual acuity with disease progression

Eyeglasses
Rigid Contact Lenses
Specialty and Scleral Lenses
Intrastromal Ring Segments
Corneal Transplant

Vision management options do not stop disease progression

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Importance of Early Diagnosis in Keratoconus

As keratoconus progresses, it becomes more challenging to manage

Progressive keratoconus often results in:

- Loss of visual acuity
- Decreased tolerance to contact lens wear, caused by the ongoing changes in the cornea

The earlier progressive keratoconus is diagnosed, the sooner treatment can be provided that may slow the progression of the disease.!

Important to diagnose and educate patients before visual function is lost

CXL is an early intervention intended to slow or halt the progression of keratoconus

© Galvis, J. D., OD, FFAO, FCSA, (2017, April). The Optometrist's Role in Keratoconus Management. Advanced Ocular Care.

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Watch Out for Keratoconus!

Potential Signs & Symptoms

Take note! Look out for warning signs in medical history or early treatment:

- Increased Corneal Curvature or Irregularity
- Increased Tear Production
- Increased Tear Evaporation
- Increased Tear Stability
- Excess and Discharge
- Family History of Keratoconus
- Family History of Astigmatism
- Excessive Eye Rubbing
- Excessive Blinking or Squinting
- Increased Eye Redness

LOOK OUT FOR KC!

- Look out** for warning signs in medical history
 - History of eye rubbing
 - Family & genetic predispositions
- Look out** for visual complaints
 - Blurred vision
 - Distortion of images
- Look out** for refractive anomalies
 - Distortion of mires on keratometry
 - Error messages on autorefractors
 - Unsatisfactory attempts at vision correction & progressive loss of UCVA & BCVA
 - Increasing astigmatism

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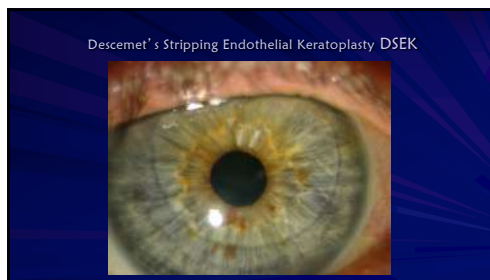
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Cross-linking Procedure Summary

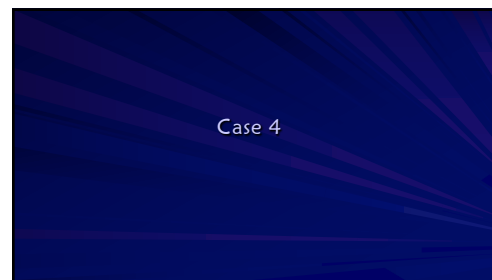
1. Remove epithelium
2. Soak cornea Photreva® Viscous (Riboflavin 5% phosphate in 20% dextrose ophthalmic solution) for 30 minutes
3. Check for flare
4. Once flare is observed, measure corneal thickness. If corneal thickness is less than 400 µm, instill 2 drops of Photreva (Riboflavin 5% phosphate in ophthalmic solution) until the corneal thickness increases to at least 400 µm.
5. Irradiate for 30 minutes. Continue applying Photreva Viscous (Riboflavin 5% phosphate in 20% dextrose ophthalmic solution) during irradiation.

* Refer to prescribing information for entire FDA-approved procedure

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43-year-old male
further history reveals


- ~ Fourth time in past 24 months
- ~ Uses Muro 128
 - * Cts qid
 - * Ung qHS
- ~ **Diagnosis:**
 - * Recurrent Corneal Erosion secondary to Epithelial Basement Membrane Dystrophy (EBMD)



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Treatment

- ~ Antibiotic, topical
- ~ Pain management
 - Depending on severity
 - Bandage contact lens
 - Oral Ibuprofen (600 mg) (16)
 - Maximum 3200 mg daily (8)
 - Oral acetaminophen (500 mg) (6)
 - Maximum 3000 mg daily
 - Oral narcotic (need DEA number)
 - Loraz (5000)
 - They provide good pain relief
 - A degree of dilation
 - Tend to minimally impact the digestive system and kidneys
 - It's not that they're dramatically more potent than OTC analgesics like aspirin, acetaminophen, ibuprofen or Tylenol
 - Topical NSAID



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Review of Map-Dot-Fingerprint



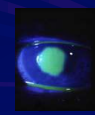
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Treatment Options
(Once Abrasion Resolved, to Help Prevent Recurrence)

When is it time for surgical procedure?

- ~ Medically
 - Hypertonic
 - Gels
 - Ung
 - Bandage contact lens
 - Nocturnal
 - Doxycycline/Mincocycline
 - Amniotic membrane (PROKERA™)
- ~ Surgical/Procedures
 - Anterior stromal micropuncture
 - Debridement
 - Chemically
 - Mechanically
 - Laser Medialment burr
 - Excimer phototherapeutic keratotomy (PTK)

Answer: medical treatment failure




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The Basics of Amniotic Membrane

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The Amniotic Membrane


- The amniotic membrane is the innermost lining of the placenta (amnion)
- Amniotic membrane shares the same cell origin as the fetus
 - Stem cell behavior
- Structural similarity to all human tissue



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The CRYOTEK™ Method

- Patented and proprietary cryopreservation
- Ensures key active components of the Extracellular Matrix (ECM) are retained
- The **only** method that retains both:
 - The integrity of the tissue structure
 - The key active (ECM) components
- Safe and effective
 - Supported by over **300** peer-reviewed articles
 - Over **100,000** implanted
- Bio-Tissue Cryopreserved Amniotic Membrane is the **ONLY** AM granted wound healing indication by the FDA.



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Technology Highlights

Impressive regenerative **platform** that possesses natural growth factors and optimal scaffolding properties within a complex extracellular matrix that are:

- Anti-inflammatory
- Anti-scarring
- Anti-angiogenic

Therapeutic actions:


- Promotes Stem Cell Expansion
- Suppresses pain
- Promotes cellular migration
- Expedites recovery



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PROKERA®: BIOLOGIC CORNEAL BANDAGE

- PROKERA® utilizes the proprietary CryoTek™ cryopreservation process that maintains the active extracellular matrix of the amniotic membrane which uniquely allows for regenerative healing.
- PROKERA® is the only FDA-cleared therapeutic device that both reduces inflammation and promotes scar less healing
- PROKERA® can be used for a wide number of ocular surface diseases with severity ranging from mild, moderate, to severe



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PROKERA®: Biologic Corneal Bandage An Active Amniotic Membrane

Prokera Slim	Prokera	Prokera Plus
		
Mild to Moderate	Moderate to Severe	Severe
<ul style="list-style-type: none"> • Microbial, HSV • Recurrent Corneal Erosions • Corneal Abrasions / Wounds 	<ul style="list-style-type: none"> • Neurotrophic PED • Severe Infectious Keratitis • Post-DSEK for Bullous Keratopathy • Corneal Wounds 	<ul style="list-style-type: none"> • Chemical Burns • Stevens Johnson Syndrome • Severe Corneal Ulcers • Corneal Wounds

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Excimer Phototherapeutic Keratectomy (PTK)

- Corneal Opacities
 - * Scarring
 - * Granular dystrophy
- Surface Irregularity
 - * Salzmann nodules
- Surface Breakdown
 - * Epithelial basement membrane dystrophy



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PTK Procedure

- Removal of epithelium
- Manual debridement
- Polish with excimer

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Post op Regimen

- ✓ Vigamox and Pred-Forte q2^o
* Until wound is closed
- ✓ Bandage contact lens (BCL)
- ✓ Vitamin C, 1000 mg/day x 1 month
- ✓ NP-artificial tears
- ✓ Sunglasses in any UV

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Before & After

Four small images arranged in a 2x2 grid. The top-left image shows a normal eye. The top-right image shows an eye with a large, dark, circular lesion on the cornea. The bottom-left image shows an eye with a normal appearance. The bottom-right image shows an eye with a large, dark, circular lesion on the cornea, similar to the top-right image.

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Case 6

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84 year old woman

- ✓ Right eye red and painful
- ✓ Started about 10 days ago
- ✓ See photos for discussion

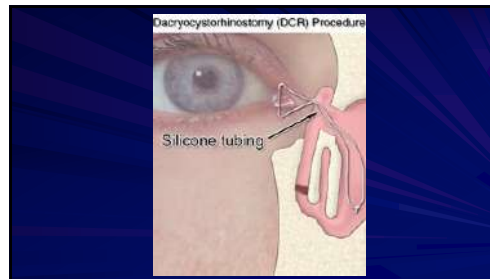
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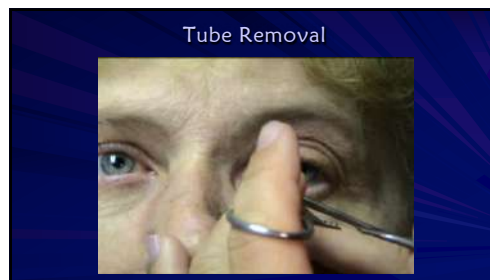
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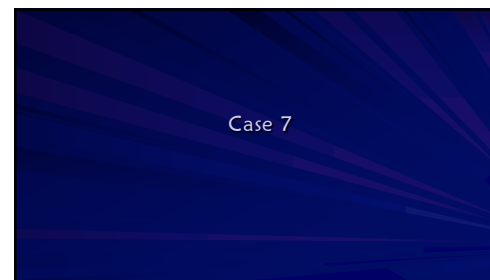
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35-year-old man

- Wants another opinion due to "hemorrhage on my right eye"
- Happened 3 days ago after vomiting
 - Claims food poisoning from chicken Caesar salad
 - Still feels a little nauseated
- Saw ophthalmologist 3 days ago, told he had a bruise on his eye and it should go away in 1-2 weeks

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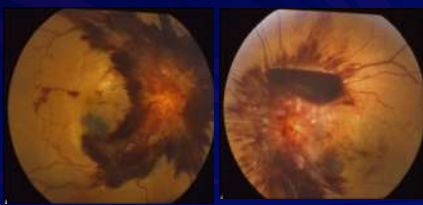
35-year-old man

- BVA 20/100 OD, 20/70 OS
 - Hx of amblyopia OD
 - Current Rx OD +5.50 OS +4.50
- Any concerns?
- Patient noticed blurry vision OS
 - Started 2 weeks ago
 - Did not mention because he is more concerned about the blood on his right eye
- Headaches for 2 weeks, decrease if patient stands up
- ROS: unremarkable
- Decide to dilate OU



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Retinal Findings



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Differential Diagnosis

- Hypertensive retinopathy
- Blood dyscrasia
- Terson's syndrome
- Valsalva retinopathy
- Purtscher's retinopathy
- Shaken baby syndrome

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Terson's Syndrome

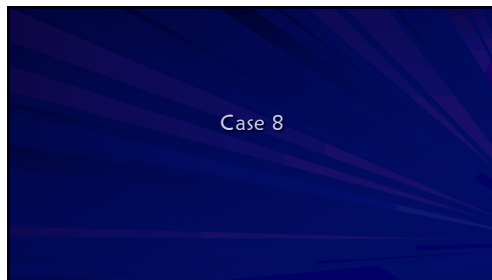
- Terson's syndrome originally was defined by the occurrence of vitreous hemorrhage in association with subarachnoid hemorrhage
- Terson's syndrome now encompasses any intraocular hemorrhage associated with intracranial hemorrhage and elevated intracranial pressures
- Intraocular hemorrhage includes the development of subretinal, retinal, sub-hyaloidal, or vitreal blood
- The classic presentation is in the sub-hyaloidal space

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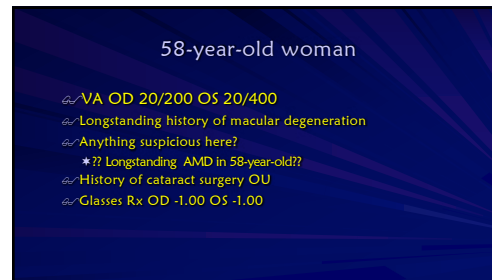
Treatment

- Emergency referral to neurologist due to high suspicion of intracranial hemorrhage and elevated intracranial pressure
- Intracranial hemorrhage confirmed with MRI
- Patient later diagnosed with Hairy Cell Leukemia and cryptococcal meningitis

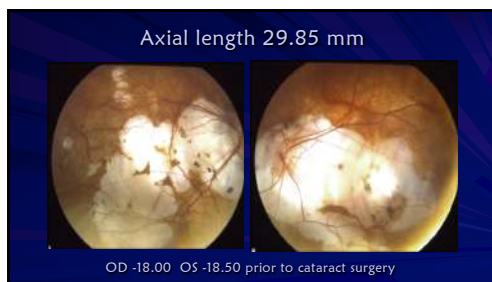
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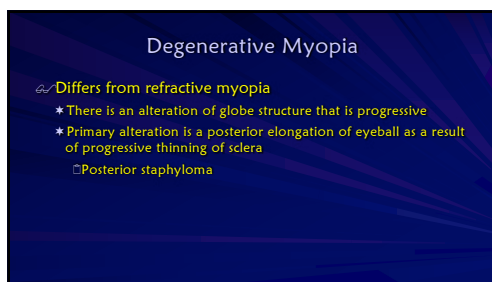
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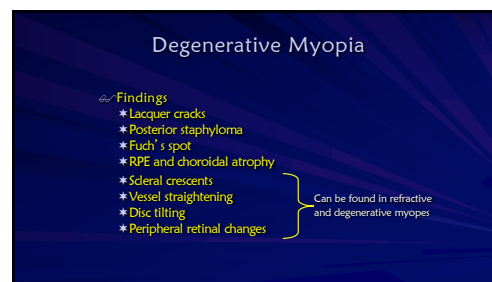
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Conditions Associated With Degenerative Myopia

- ⌚ Fetal Alcohol Syndrome
- ⌚ Ocular albinism
- ⌚ Down's Syndrome
- ⌚ Low birth weight
- ⌚ Infantile glaucoma
- ⌚ Retinopathy of Prematurity
- ⌚ Marfan's Syndrome


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Treatment

- ⌚ BVA with glasses/contact lenses
- ⌚ Education regarding trauma and possible eye hazards
- ⌚ Monitor for neovascularization and peripheral retinal changes
- ⌚ Follow-up at least yearly

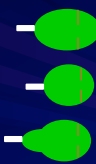
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Which patient is at higher risk of retinal detachment?



Two patients are in your office
-8.00 D axial myope
-14.00 D degenerative myope

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- ⌚ Refractive myopia
* Peripheral retina concerns
- ⌚ Degenerative myopia
* Posterior pole concerns

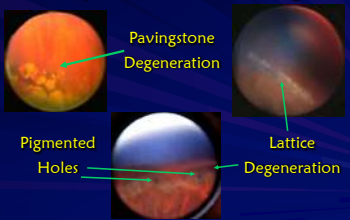
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Clinical Pearl

- ⌚ Refractive myopia
* Peripheral retina is general concern
- ⌚ Degenerative/Pathological myopia
* Posterior pole is general concern
□ Posterior staphyloma

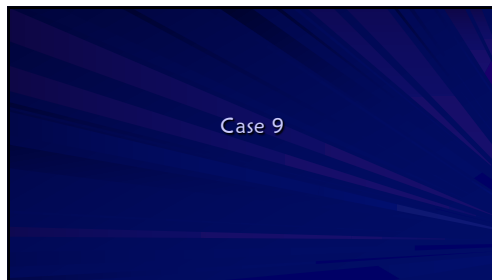
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Peripheral Fundus Findings

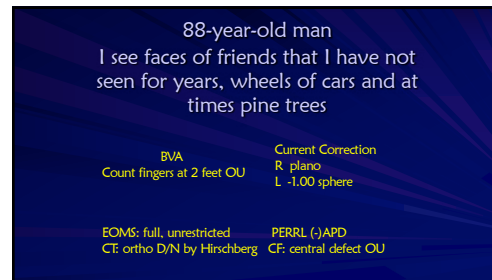


- Pavingstone Degeneration
- Lattice Degeneration
- Pigmented Holes

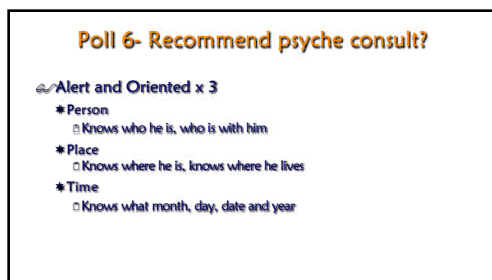
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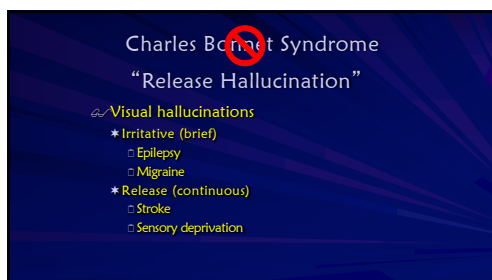
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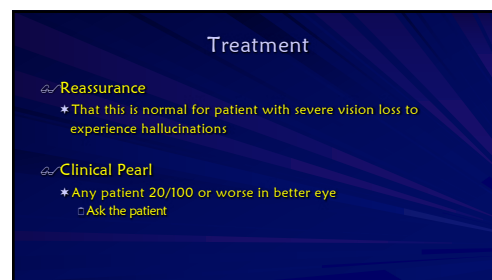
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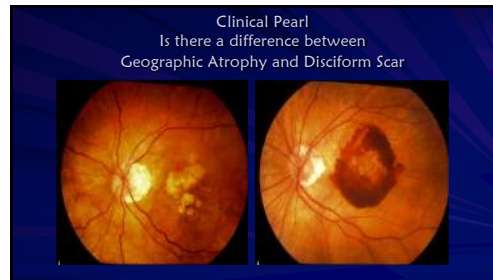
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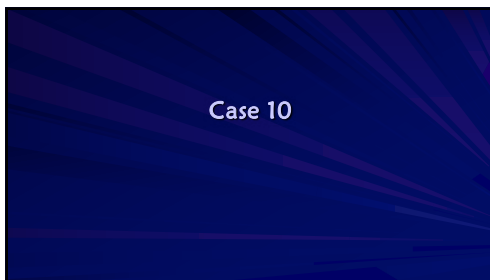
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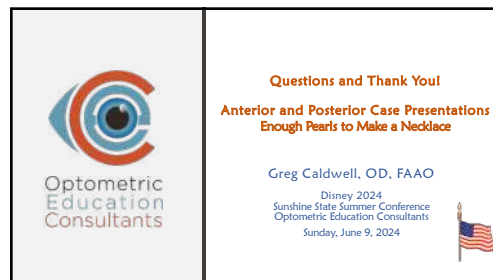
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