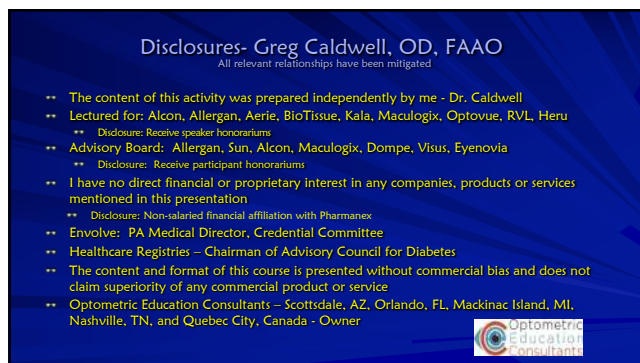
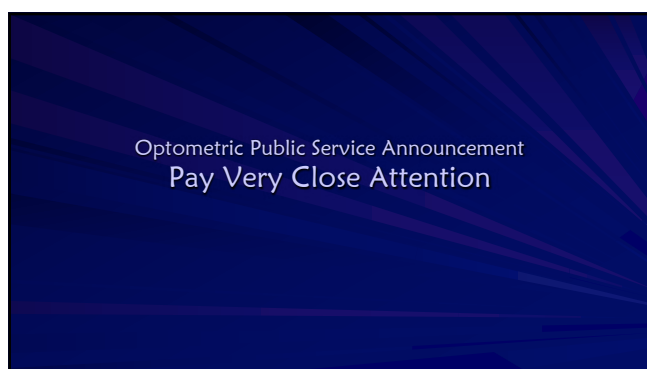




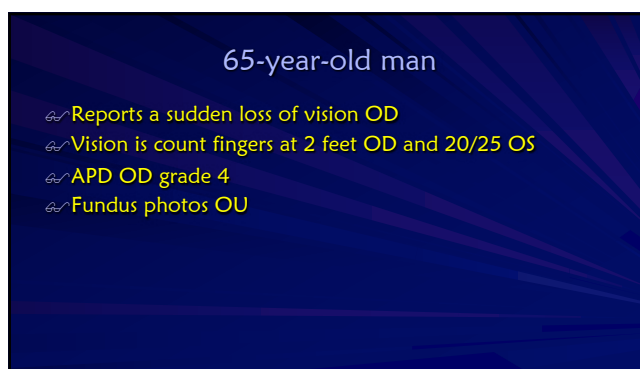
1



2



6



7

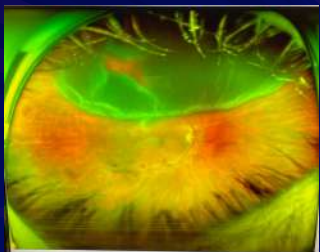


8



9

April 5, 2020 – COVID 19 Times



16

Patient reports vision loss 14 days ago



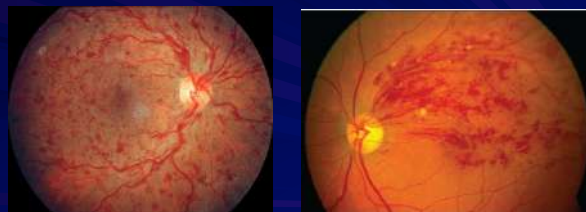
17

BRAO



18

Does this apply to retinal vein occlusions?



19

Case 2

21

25-year-old man

- ~ Patient has been to 3 ophthalmologists and 1 optometrist in the past year
- ~ Patient complains of a "ghost image" OS
- ~ Has had 4 dilated exams in past year, and no diagnosis yet
- ~ He is very passionate that his vision is clear OD and "ghosty" OS
 - * He wants to know why

22

"Ghost Image" OS

Va 20 / 20
cc 20

Current Correction
R -2.50-1.00 x 180
L -3.25-1.00 x 180

EOMS: full, unrestricted
CT: ortho D/N

PERRL (-)APD
CF: full by FC OU

~SLE-unremarkable

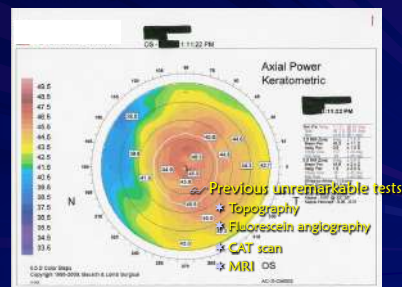
~Fundus-unremarkable

~Previous unremarkable tests

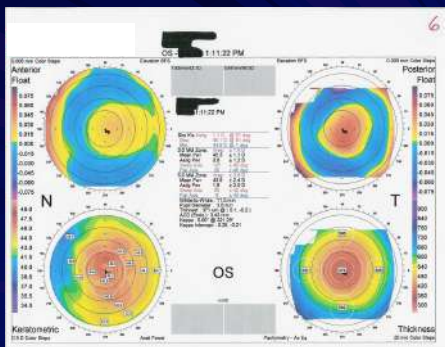
- * Topography
- * Fluorescein angiography
- * CAT scan
- * MRI

23

Any Thoughts About "Ghost Images"?



24



25

How I felt when I finally realized keratoconus
starts posteriorly



26

Forme Fruste Keratoconus

~Treatment

~RGP lens in office and trial frame over refraction

* Eliminated "ghost image"

~Patient currently only in spex

* Not interested in RGP lens

~RTC 1 year, BVA and topographies

Case 3

27

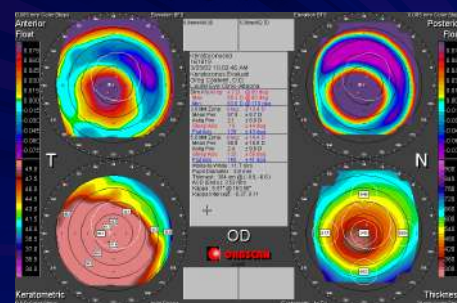
28

Advanced Keratoconus



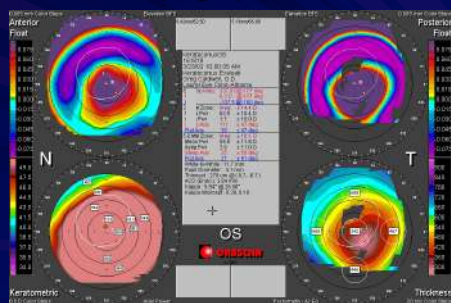
29

Topography OD



30

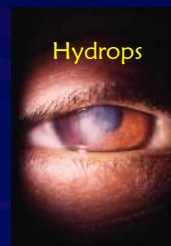
Topography OS



31

What happens when the posterior cone gets too steep and Descemet's membrane ruptures?

Hydrops



32

TV
E

The following
video is rated
"E" for Educational

33

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)

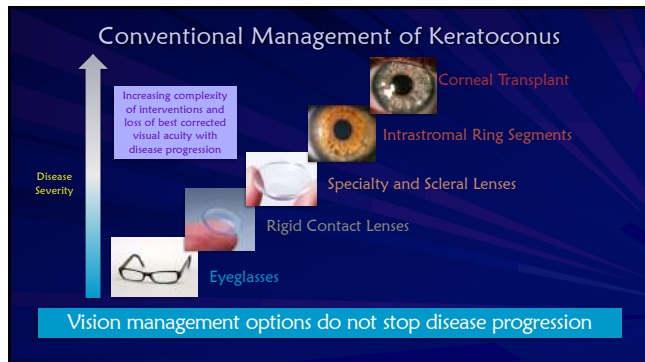
Normal



KC



34



35

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.¹
- 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

1. Gelles, J. D., OD, FRCO, FCLSA. (2017, April). The Optometrist's Role in Keratoconus Management. Advanced Ocular Care.

36

Watch Out for Keratoconus! 8 Potential Signs & Symptoms

Typically onset occurs in teenage years or early twenties

- Frequent Changes in Refraction or Increasing Cylinder
- Reduced Best Corrected Visual Acuity
- Frequent Headaches
- Miles and Distorting
- Family History of Keratoconus
- Excessive Eye Rubbing
- Difficulty Seeing at Night
- Increased Light Sensitivity

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

If you believe a patient may have keratoconus, perform a diagnostic search of FIM. An Expert at Lumera DMEC can help to refer them for a KC screening.

37

Cross-linking Procedure Summary

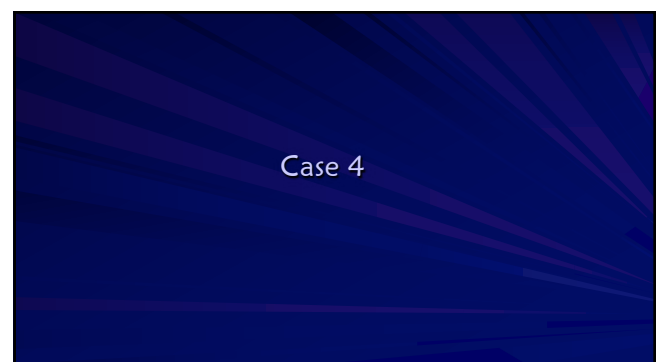
1. Remove epithelium
2. Soak cornea Photorex® Viscous (riboflavin 5'-phosphate in 20% dextran ophthalmic solution) for 30 minutes
3. Check for flare
4. Once flare is observed, measure corneal thickness. If corneal thickness is less than 400 µm, instill 2 drops of Photorex Viscous (riboflavin 5'-phosphate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

* Refer to prescribing information for entire FDA-approved procedure

38



39



40

28-year-old man

- Had LASIK 14 months ago
- His right eye is now very blurry
- He tried calling for an appointment the center is now closed

41

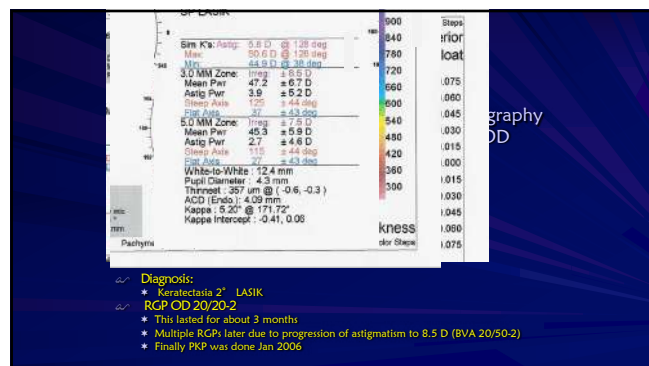
Va 20 / 40
cc 20

Current Correction
R +0.50 -7.00 x 040
L -0.25 sphere

EOMS: full, unrestricted PERRL (-)APD
CT: ortho D/N CF: full by FC OU

- SLE-trace fibrosis at flap edges, no stain
- SLE-few multi-directional striae OD>OS
- SLE-clean interface OU
- Fundus-unremarkable

42



43

Case 5

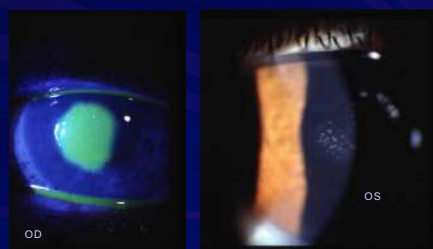
45

43-year-old man

- Called your office today
- Eye pain in the right eye since this morning
- OD 20/80 OS 20/20
- Externals: normal
- Review of Systems: unremarkable

46

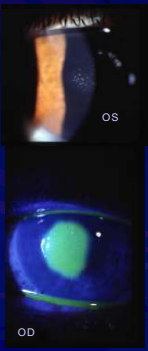
Slit Lamp Evaluation



47

43-year-old male
further history reveals

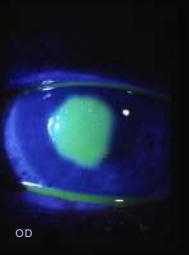
- Fourth time in past 24 months
- Uses Muro 128
 - Gts qid
 - Ung qHS
- Diagnosis:
 - Recurrent Corneal Erosion secondary to Epithelial Basement Membrane Dystrophy (EBMD)



48

Treatment

- Antibiotic, topical
- Pain management
 - Depending on severity
 - Bandage contact lens
 - Oral ibuprofen (200 mg) (16)
 - Maximum 3200 mg daily
 - Oral acetaminophen (500 mg) (6)
 - Maximum 3000 mg daily
 - Oral narcotic (need DEA number)
 - Lorab (500/5)
 - They provide good pain relief
 - A degree of sedation
 - Tend to minimally impact the digestive system and kidney
 - It's not that they're dramatically more potent than OTC analgesics like aspirin, acetaminophen, ibuprofen or naproxen
 - Topical NSAID



49

Review of Map-Dot-Fingerprint



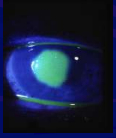
50

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

When is it time for surgical procedure?

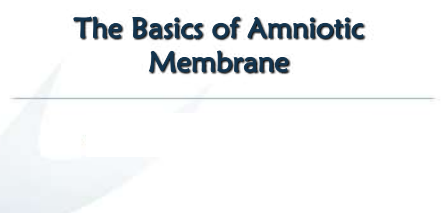
- Medically
 - Hypertonic
 - Gts
 - Ung
 - Bandage contact lens
 - Nodular
 - Doxycycline/Minocycline
 - Amniotic membrane (PROKERA™)
- Surgical/Procedures
 - Anterior stromal micropuncture
 - Debridement
 - Chemically
 - Mechanically
 - Beaver Blade/diamond burr
 - Excimer phototherapeutic keratectomy (PTK)

Answer: medical treatment failure



51



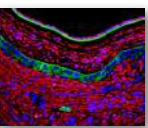
The Basics of Amniotic Membrane



52

The Amniotic Membrane

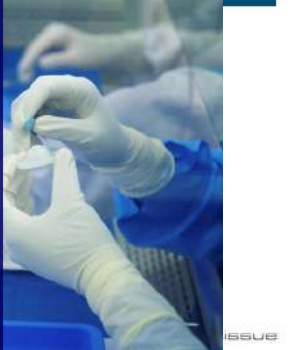
- The amniotic membrane is the innermost lining of the placenta (amnion)
- Amniotic membrane shares the same cell origin as the fetus
 - Stem cell behavior
- Structural similarity to all human tissue

53

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.



54

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



55

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



56


PROKERA®: Biologic Corneal Bandage An Active Amniotic Membrane

PROKERA <small>SLIM</small>	PROKERA <small>STANDARD</small>	PROKERA <small>PLUS</small>
		
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

57

Excimer Phototherapeutic Keratectomy (PTK)

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



58

PTK Procedure

- Removal of epithelium
- Manual debridement
- Polish with excimer

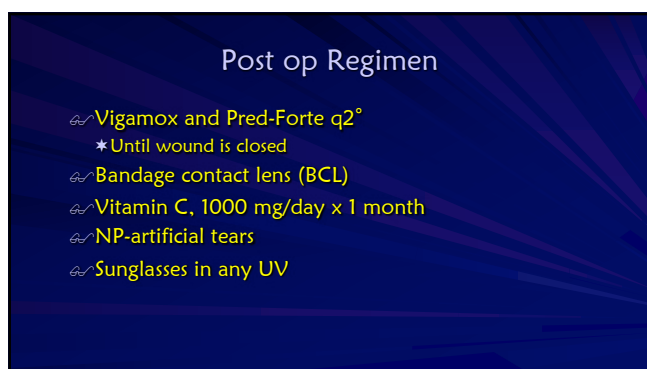
59



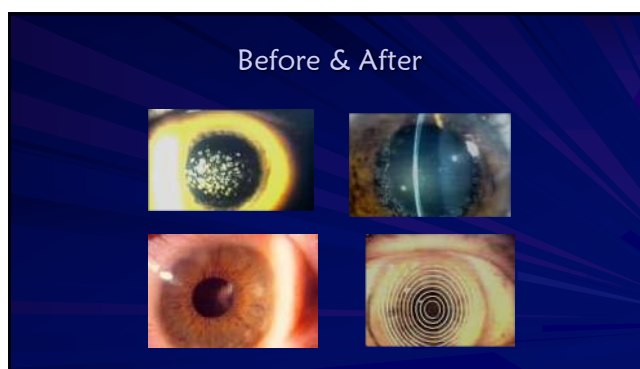
60



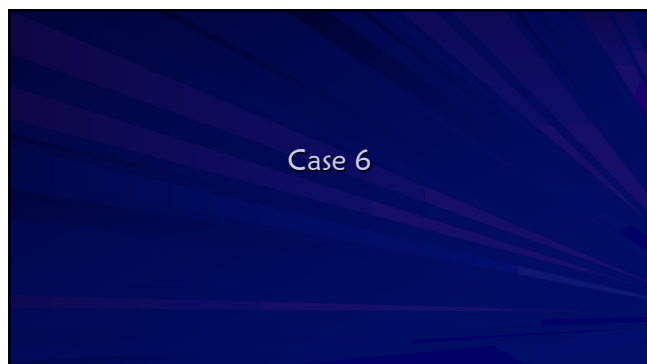
61



62



63



64



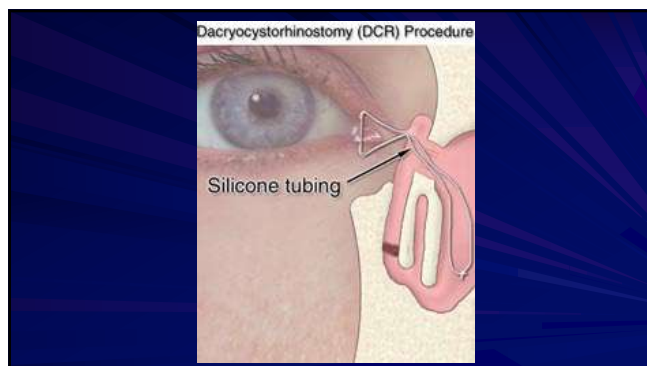
65



66



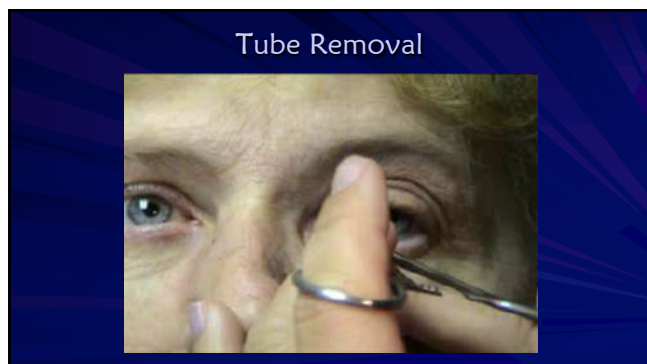
67



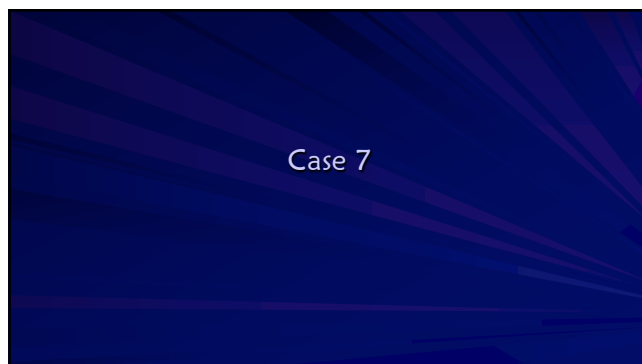
68



69



70



71

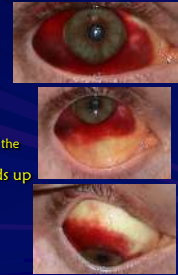
35-year-old man

- 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

73

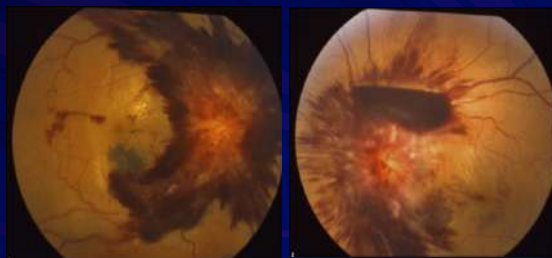
35-year-old man

- 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



74

Retinal Findings



75

Differential Diagnosis

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

76

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

77

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

78

Case 8

79

8-year-old girl

- ~ Mom noticed the left eyelid has become red and has pimples
- ~ Started two days ago
- ~ Slowly getting more pimples on the eyelid
- ~ Globe not affected

80

Slit Lamp Evaluation



- ~ **Diagnosis**
 - * Herpes simplex blepharitis
- ~ **Treatment**
 - * 400 mg Acyclovir 5x/day
 - * Call to pediatrician



81

Case 9

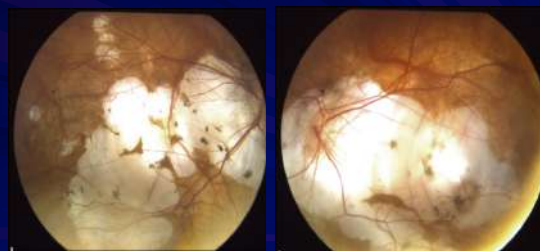
82

58-year-old woman

- ~ VA OD 20/200 OS 20/400
- ~ Longstanding history of macular degeneration
- ~ Anything suspicious here?
 - * ?? Longstanding AMD in 58-year-old??
- ~ History of cataract surgery OU
- ~ Glasses Rx OD -1.00 OS -1.00

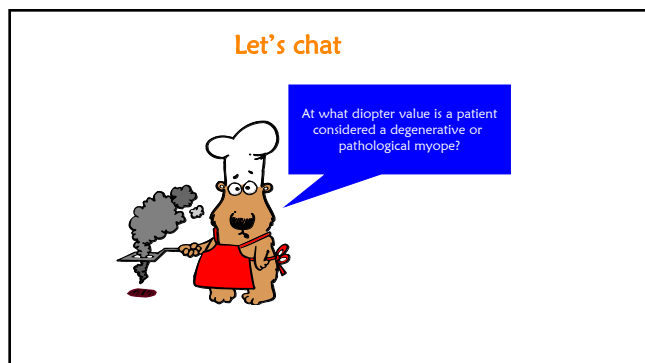
84

Axial length 29.85 mm

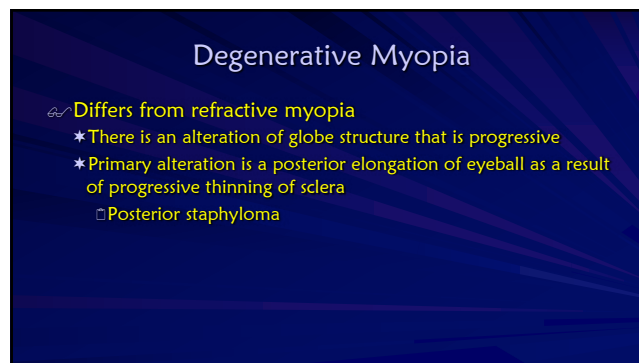


OD -18.00 OS -18.50 prior to cataract surgery

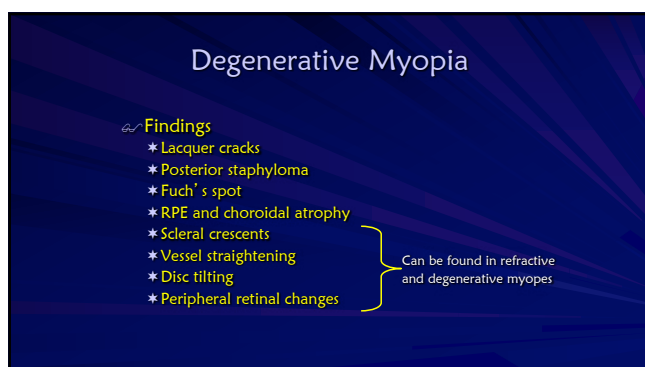
85



86



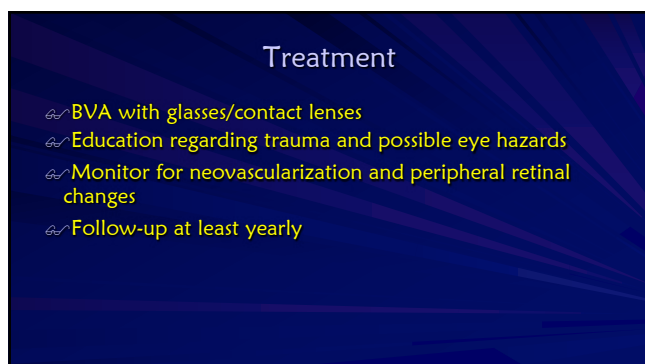
87



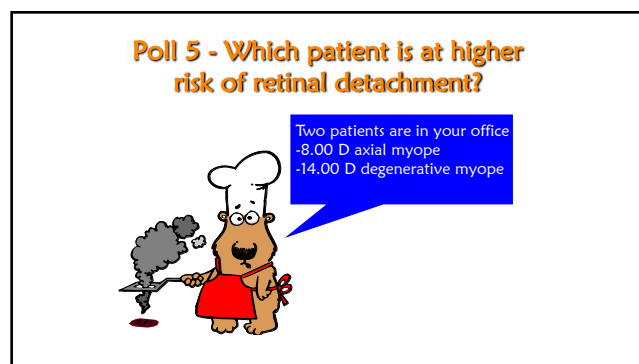
88



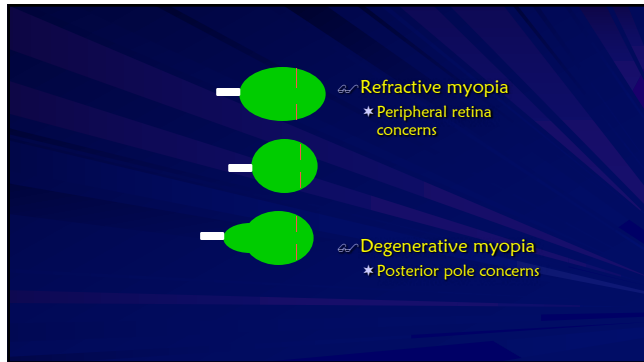
89



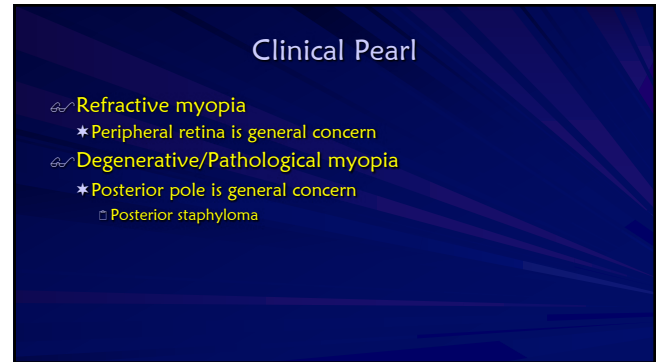
90



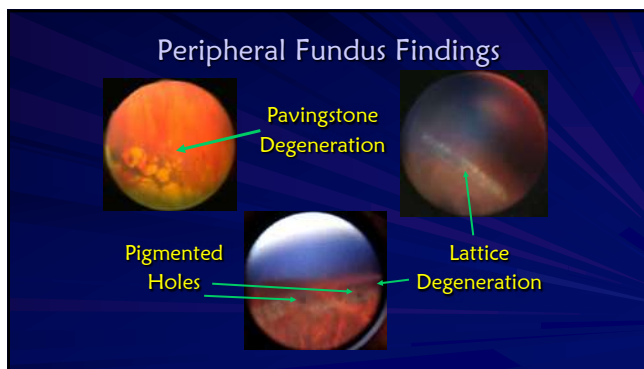
91



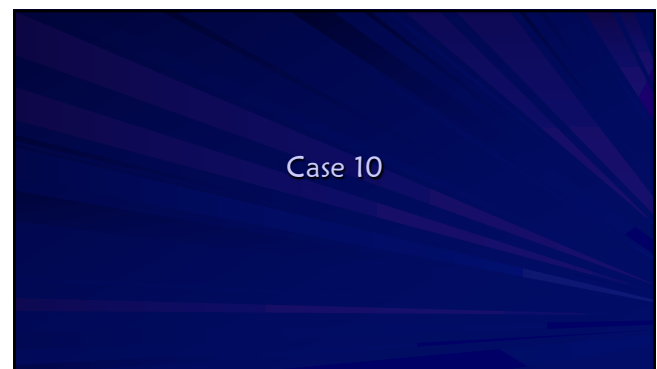
92



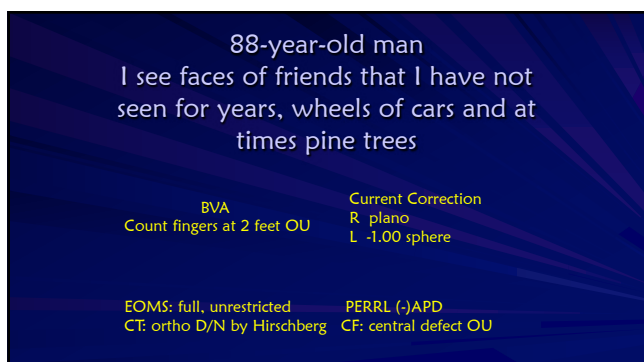
93



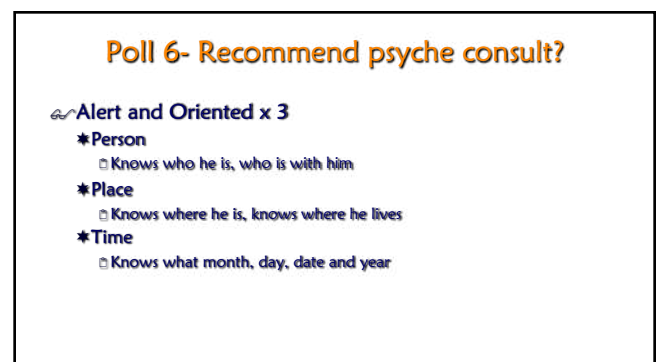
94



95



96



97



98

Charles Bonnet Syndrome
“Release Hallucination”

- Visual hallucinations
 - ★ Irritative (brief)
 - Epilepsy
 - Migraine
 - ★ Release (continuous)
 - Stroke
 - Sensory deprivation

99

Treatment

- Reassurance
 - ★ That this is normal for patient with severe vision loss to experience hallucinations
- Clinical Pearl
 - ★ Any patient 20/100 or worse in better eye
 - Ask the patient

100



101

Clinical Pearl
Is there a difference between
Geographic Atrophy and Disciform Scar

102

 <p>Optometric Education Consultants</p>	<p>Questions Thank You!</p> <p>Grand Rounds Improving Eye Care and Outcomes for Patients</p> <p>Greg Caldwell, OD, FAAO Mackinac Island Optometric Education Consultants Sunday, August 28, 2022</p> 
--	--

105