**Anterior and Posterior Segment Case Presentations   
“Enough Pearls to Make a Necklace”**

Greg A Caldwell, OD, FAAO

[Grubod@gmail.com](mailto:Grubod@gmail.com)

814-931-2030 cell #

**Course Description**

This course reviews common to complex anomalies of the anterior and posterior segment in case format. This course will include numerous pathologies pertinent to primary care optometric practice and provide clinicians with pearls, therapeutic options and guidance around pitfalls.

**Learning Objectives**

1. Emphasize clinical diagnosis of anterior and posterior segment disease.
2. Strengthen clinical treatment of anterior and posterior segment disease.
3. Heighten the clinician’s comfort level when treating disease with topical and/or oral medications.
4. Gain confidence in ordering and interpreting diagnostic and laboratory tests.
5. Gain confidence in making a sub specialty referral
6. Increase knowledge in anterior and posterior segment disease to provide guidance around pitfalls.

**Outline**

1. Disclosures
   1. Greg A. Caldwell, OD, FAAO will mention many products, instruments and companies during our discussion; I don’t have any financial interest in any of these products, instruments or companies.
   2. In the past 12 months I have lectured or participated in a focus group which I received a honorarium for:
   3. All of these cases have entered/referred to my practice
2. Learning Objectives
   1. Emphasize clinical diagnosis of anterior and posterior segment disease.
   2. Strengthen clinical treatment of anterior and posterior segment disease.
   3. Heighten the clinician’s comfort level when treating disease with topical and/or oral medications.
   4. Gain confidence in ordering and interpreting diagnostic and laboratory tests.
   5. Gain confidence in making a sub specialty referral
3. Rules During this Presentation
   1. There are no rules
   2. Have fun, enjoy and relax
   3. Ask questions at the time of the case
4. Case 1- 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.
   1. SLE-unremarkable, Fundus-unremarkable, Previous unremarkable tests, Topography, Fluorescein angiography, CAT scan, MRI
   2. Any Thoughts About “Ghost Images”?
   3. Causes of “ghost images”
      1. Refractive
      2. Uncorrected astigmatism
      3. Corneal
         1. Irregular astigmatism
         2. EBMDSaltzman nodules
         3. Keratoconus
         4. Post kerato-refractive surgery
      4. Crystaline lens
         1. Opacity
      5. Retina, macula
         1. Epiretinal membrane
         2. Edema
         3. CME, CSME
   4. How I felt when I finally realized keratoconus starts posteriorly
   5. Forme Fruste Keratoconus
      1. Treatment
      2. RGP lens in office and trial frame over refraction
      3. Eliminated “ghost image”
      4. Patient currently only in spex
      5. Not interested in RGP lens
      6. RTC 1 year, BVA and topographies
5. Case 2
   1. Advanced Keratoconus
      1. Topography OD
      2. Topography OS
      3. What happens when the posterior cone gets too steep and Descemet’s membrane ruptures?
         1. Hydrops
6. Case 3- 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
   1. Topography OD
   2. Diagnosis: Keratectasia 2° LASIK
   3. RGP OD 20/20-2
      1. This lasted for about 3 months
      2. Multiple RGPs later due to progression of astigmatism to 8.5 D (BVA 20/50-2)
      3. Finally PKP was done Jan 2006
7. Case 4- 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
   1. Slit Lamp Evaluation: Corneal abrasion, Corneal ulcer, or Herpetic lesion
   2. 43 year old male further history reveals. Fourth time in past 24 months. Uses Muro 128 gtts qid and Ung qHS
   3. Diagnosis: Recurrent Corneal Erosion secondary to Epithelial Basement Membrane Dystrophy (EBMD)
   4. Treatment
      1. Antibiotic, Vigamox tid
      2. Pain management- Depending on severity
         1. Bandage contact lens
            1. Oral ibuprofen (200 mg) (16)

Maximum 3200 mg daily

* + - * 1. Oral acetaminophen (500 mg) (6)

Maximum 3000\* mg daily

* + - * 1. Oral narcotic (need DEA number)

Lortab (500/5)

They provide good pain relief

A degree of sedation

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 naproxen

* + - * 1. Topical NSAID
  1. Review of Map-Dot-Fingerprint
     1. Treatment Options (Once Abrasion Resolved, to Help Prevent Recurrence)
     2. Medically
        1. Hypertonics- Gtts and/or Ung
        2. Bandage contact lens
           1. Nocturnal
        3. Doxycycline/Minocycline
        4. Amniotic membrane
           1. Cryopreserved
           2. Dehydrated
     3. Surgical/Procedures
        1. Anterior stromal micropuncture
        2. Debridement
        3. Chemically
        4. Mechanically
        5. Beaver blade/diamond burr
        6. Excimer phototherapeutic keratectomy (PTK)
  2. The Basics of Amniotic Membrane
     1. The amniotic membrane is the innermost lining of the placenta (amnion)
     2. Amniotic membrane shares the same cell origin as the fetus
     3. Stem cell behavior
     4. Structural similarity to all human tissue
     5. The cryopreserved amniotic membrane
        1. Patented and proprietary cryopreservation
        2. Ensures key active components of the Extracellular Matrix (ECM) are retained
        3. The only method that retains both:
        4. The integrity of the tissue structure
        5. The key active (ECM) components
     6. Safe and effective
        1. Supported by over 300 peer-reviewed articles
        2. Over 100,000 implanted
     7. Technology Highlights
        1. Impressive regenerative platform that possesses natural growth factors and optimal scaffolding properties within a complex extracellular matrix that are:
           1. Anti-inflammatory
           2. Anti-scarring
           3. Anti-angiogenic
     8. Therapeutic actions:
        1. Promotes Stem Cell Expansion
        2. Suppresses pain
        3. Promotes cellular migration
        4. Expedites recovery
     9. Biological Corneal Band-Aid
        1. Cryopreserved utilizes the proprietary CryoTek™ cryopreservation process that maintains the active extracellular matrix of the amniotic membrane which uniquely allows for regenerative healing.
        2. Cryopreserved is the only FDA-cleared therapeutic device that both reduces inflammation and promotes scar less healing
        3. Amniotic membranes can be used for a wide number of ocular surface diseases with severity ranging from mild, moderate, to severe
  3. Excimer Phototherapeutic Keratectomy (PTK)
     1. Corneal Opacities, Scarring, Granular dystrophy, Surface Irregularity, Saltzman nodules, Surface Breakdown, Epithelial basement membrane dystrophy
     2. PTK Procedure
        1. Removal of epithelium, Manual debridement, Polish with excimer
        2. PRK video
        3. PTK video
     3. Post op Regimen
        1. Antibiotic (Vigamox) and steroid (Pred-Forte q2°)
        2. Until wound is closed
        3. Bandage contact lens (BCL)
        4. Vitamin C, 1000 mg/day x 1 month
        5. NP-artificial tears
        6. Sunglasses in any UV
  4. Before & After

1. Case 5- 84 year old woman. Right eye red and painful. Started about 10 days ago. See photos for discussion
   1. Diagnosis?
   2. Treatment?
   3. After Dacryocystorhinostomy (DCR)
   4. Tube Removal Video
2. Case 6- 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. BVA 20/100 OD, 20/70 OS. Hx of amblyopia OD. Current Rx OD +5.50 OS +4.50
   1. Any concerns?
      1. Patient noticed blurry vision OS
      2. Started 2 weeks ago
      3. Did not mention because he is more concerned about the blood on his right eye
      4. Headaches for 2 weeks, decrease if patient stands up
      5. ROS: unremarkable
      6. Decide to dilate OU
   2. Retinal Finding- Discussion
   3. Differential Diagnosis
      1. Hypertensive retinopathy
      2. Blood dyscrasia
      3. Terson’s syndrome
      4. Valsalva retinopathy
      5. Purtscher’s retinopathy
      6. Shaken baby syndrome
   4. Terson’s Syndrome
      1. Terson’s syndrome originally was defined by the occurrence of vitreous hemorrhage in association with subarachnoid hemorrhage.
      2. Terson’s syndrome now encompasses any intraocular hemorrhage associated with intracranial hemorrhage and elevated intracranial pressures.
      3. Intraocular hemorrhage includes the development of subretinal, retinal, subhyaloidal, or vitreal blood.
      4. The classic presentation is in the subhyaloidal space
      5. Treatment
         1. Emergency referral to neurologist due to high suspicion of intracranial hemorrhage and elevated intracranial pressure
         2. Intracranial hemorrhage confirmed with MRI
   5. Patient later diagnosed with Hairy Cell Leukemia and cryptococcal meningitis
3. Case 7- 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. Slit Lamp Evaluation
   1. Diagnosis- Herpes simplex blepharitis
   2. Treatment
      1. 400 mg Acyclovir 5x/day
      2. Call to pediatrician
4. Case 8- 58 year old woman. VA OD 20/200 OS 20/400. Longstanding history of macular degeneration. Anything suspicious here?
   1. ?? Longstanding AMD in 58 year old??
      1. History of cataract surgery OU
      2. Glasses Rx OD -1.00 OS -1.00
      3. Axial length 29.85 mm
   2. Degenerative Myopia
      1. Differs from refractive myopia
      2. There is an alteration of globe structure that is progressive
      3. Primary alteration is a posterior elongation of eyeball as a result of progressive thinning of sclera, posterior staphyloma
   3. Degenerative Myopia-Findings
      1. Lacquer cracks
      2. Posterior staphyloma
      3. Fuch’s spot
      4. RPE and choroidal atrophy
      5. Scleral crescents
      6. Vessel straightening
      7. Disc tilting
      8. Peripheral retinal changes
   4. Conditions Associated With Degenerative Myopia
      1. Fetal Alcohol Syndrome
      2. Ocular albinism
      3. Down’s Syndrome
      4. Low birth weight
      5. Infantile glaucoma
      6. Retinopathy of Prematurity
      7. Marfan’s Syndrome
   5. Treatment
      1. BVA with glasses/contact lenses
      2. Education regarding trauma and possible eye hazards
      3. Monitor for neovascularization and peripheral retinal changes
      4. Follow-up at least yearly
   6. Which patient is at higher risk of retinal detachment?
      1. Refractive myopia- Peripheral retina concerns
      2. Degenerative myopia- Posterior pole concerns
5. Case 9- 88-year-old man. I see faces of friends that I have not seen for years, wheels of cars and at times pine trees.
   1. Recommend psyche consult?
      1. Alert and Oriented x 3. Person- Knows who he is, who is with him. Place- Knows where he is, knows where he lives. Time-Knows what month, day, date and year
   2. Diagnosis and Treatment?
   3. Charles Bonnet Syndrome
      1. Visual hallucinations
         1. Irritative (brief)
            1. Epilepsy
            2. Migraine
         2. Release (continuous)
            1. Stroke
            2. Sensory deprivation
      2. Treatment
         1. Reassurance
         2. That this is normal for patient with severe vision loss to experience hallucinations
   4. Clinical Pearl
      1. Is there a difference between Geographic Atrophy and Disciform Scar?
6. Case 10- 65 year old woman. Referred by an optometrist due to corneal edema and map-like anterior opacities. Impression is EBMD versus corneal degeneration. Patient reports decreasing vision over past 6-9 months. Especially at near
   1. Vision 20/50 OU
   2. Cornea OD
   3. Patient’s Medications
      1. Baby ASA
      2. Lanoxin
      3. Synthroid
      4. Glucophage
      5. Pravochol
      6. Amiodarone
      7. Neurotin
      8. Zoloft
      9. Vitamin E
   4. Topography
   5. Called Primary Care Physician to Discuss Findings
      1. D/C amiodarone
      2. Primary Care Physician switches patient to diltiazem
   6. 6 Months Later
   7. Amiodarone Ocular Side Effects
      1. Halos and colored lights, reported symptoms
      2. Corneal opacities
      3. Epithelial basal cell layer
      4. Bilateral, dose and duration related
      5. Reversible
      6. Dot, Linear, cornea verticillata (whorl like pattern found later)
      7. Conjunctiva, lens, retina and optic nerve deposits
      8. Optic neuropathy has been reported
         1. Unilateral and bilateral cases
7. Case 11- 67 year old man complains of vision slowly deteriorating over the past 8 months. History of NA-ION 10 months ago OD.
   1. Patient sees family physician for physical due to recent NA-ION
      1. Patient has not been to PCP for 35 years
      2. Patient started Cardarone
      3. VA 20/80 OD 20/25 OS (9 months ago)
      4. VA 20/400 OD 20/200 OS (today)
      5. CF: severe constriction OU
      6. SLE: vortex corneal whorls OU
   2. Amiodarone Optic Neuropathy
8. Question and Answers
9. Thank you
   1. Greg