**Posterior Segment Disease: Case Challenges**

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**CHRPE**

- Lesions are almost always stable in size, but color may change.
  - Very rare instances of enlargement with time
- Typically asymptomatic, and found on routine exam, but large lesions have been shown to have VF defects

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**Gardner’s Syndrome**

- Multifocal CHRPE have been associated with Gardner’s Syndrome
  - Familial condition of colonic polyps that may be precursor to colon cancer
  - However, these lesions are bilateral, have more irregular borders, and are often scattered throughout the fundus

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**CHRPE**

- Can also appear as multifocal CHRPE
  - From 3 to 30 lesions, 0.1 to 3.0 mm in size
- Benign, stationary and unilateral in 85% of the cases
- Often called bear tracks

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**Nevus**

- Common, benign tumor of the posterior fundus
- Typically slate-gray or brown in color, with somewhat indistinct borders
  - Often have overlying drusen, which signify chronicity of lesion
- Vary in size from 1/3 DD to as much as 7 DD
  - Flat or minimally elevated, < 2mm
Nevus

- Very common, with prevalence ranging from 0.2% up to 32% of patients
- More common in Caucasian population
- Asymptomatic, and usually found on routine exams
- Management consists of serial photography and frequent follow-up, with ultrasound if needed for more suspicious lesions

TTSOM: To Find Small Ocular Melanomas

- T: Thickness: lesions > 2 mm
- F: Fluid: any subretinal fluid suggestive of RD
- S: Symptoms of photopsia or vision loss
- O: Orange pigment overlying the lesion
- M: Margin touching the optic nerve head
  - No factor = 3% risk of converting to melanoma in 5 yrs
  - 1 factor = 8% risk
  - 2 or more factors = 50% risk

Update

- Arch Ophthalmol Aug 2009: Shields and Shields
- Suggests adding two new features that are predictive for growth of nevi to melanoma
  - UH: Ultrasonic Hollowness
    - 25% with hollowness progressed vs. 4% w/o
  - H: Halo absence
    - 7% w/o halo progressed vs 2% w/halo
  - To Find Small Ocular Melanomas Using Helpful Hints

Retinal Plaques

- Several different types of plaques can often be visualized in the retinal vasculature
  - Pt is typically elderly, has HTN, CAD, hypercholesterolemia/hyperlipidemia, and/or atherosclerotic disease
  - Often totally asymptomatic and found on routine exam

- May present with amaurosis fugax, transient episodes of monocular blindness
- Rarely, may report transient ischemic attack (TIA), which is above with hemiparesis, paraesthesia or aphasia
- Three different types of plaques, but all share strong association to significant cardiovascular disease

- Cholesterol (Hollenhorst) plaque
  - shiny yellow-orange in appearance
  - typically from the ipsilateral carotid artery
  - Rarely causes occlusion, unless multiple
  - Typically occurs at bifurcations
  - Mobile in nature
Retinal Plaques

**Calcific**
- Appears more whitish than HH
- Classically within arteriole, not at bifurcation
- Typically immobile
- Often causes BRAO
- Often from cardiac atheromas of heart valves

**Fibrin-platelet**
- Appear as dull white to gray, long plugs
- Typically within arterioles, not at bifurcations
- May break-up and dissolve with time
- May lead to BRAO or CRAO
- Often associated with carotid disease or mitral valve insufficiency

Retinal Plaques

**Talc retinopathy**
- Represents an exogenous plaques as opposed to others
- Appears typically as multiple shiny yellow plaques within capillaries in posterior pole
- Typically smaller than other plaques
- Typically seen in IV drug users
- Rarely cause complications, but reported cases of associated NV and occlusions

After ruling out underlying etiology, see patient regularly, q 6-12 mos, to evaluate for additional plaques or other disease associated with vascular disease
- BRVO/CRVO
- BRAO/CRAO
- NTG

Retinal Plaques

**No direct management of plaques is needed**
**Management is aimed at discovering source of embolus to decrease risk of other emboli, occlusion, or stroke**
**Pts need referral to internist for complete physical**

Retinal Plaques

**Examination should include**
- Complete physical, including cardiac risk factors and BP evaluation
- Carotid ultrasound
- Stress echocardiogram
- Fasting BS
- Lipid profiles
- Cardiac enzymes
Retinal Plaques

- If carotid stenosis or coronary artery disease is found, treatment may include:
  - Carotid endarterectomy
  - Angioplasty
  - Aspirin therapy
  - Other anti-coagulation therapy, such as coumadin
- Pts with cholesterol HH emboli have 15% mortality at 1 yr, 29% by year 3, and 54% by 7 years
- Mostly from cardiac disease

SF CASE

- Really no consensus
- Symptomatic PVD without retinal break:
  - AOA: 1-2 weeks
  - AAO: depending on symptoms, risk factors and clinical findings:
    - 1-6 weeks
    - Then 6 mos to 1 year
  - Cleveland Clinic: 4-6 Weeks
  - Others: if no heme or other issues, very low risk so no need to see to back

PVD

- Floaters are typically most common symptom
  - Cobwebs
  - Files
  - Hairs
- Flashes
  - Indicative of traction on retina, but not necessarily a tear or break

The Vitreous Humor

- Vitreous attached most firmly at:
  - Macula
  - VMT
  - Vitreous base
  - Around optic nerve head
  - Weiss' Ring
  - Also, some traction on blood vessels
  - Vit heme

Physiologic Changes

- With age, liquefaction due to reduction in hyaluronic acid causes loss of support.
- This process is referred to as synchesis.

Physiologic Changes

- Vitreous shrinkage, contraction and collapse can cause traction.
- This process is referred to as syneresis.
**Incidence of PVD**

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<th>Age</th>
<th>Incidence</th>
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<tr>
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<tr>
<td>30-59</td>
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<tr>
<td>60-69</td>
<td>27%</td>
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<tr>
<td>≥70</td>
<td>63%</td>
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<tr>
<td>≥80</td>
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>65% ≥65 HAVE A PVD

**Incidence of PVD**

- Incidence may be accelerated by:
  - Myopia
  - Trauma
  - Prior vitreoretinal disease
  - Surgery
  - Inflammation
- Symmetrical 90% of the time
- Happens to second eye with 1-2 years

**PVDs**

- **Good News:**
  - Retinal Tears/Breaks *Relatively uncommon*
  - One study: only 7-15% of symptomatic PVDs have a retinal break

- **Bad news:**
  - 7-15% have a retinal break

**Risk Factors**

- Pigment
  - Schaeffer's Sign
    - Indicates break is possible
- Hemorrhage
  - 90% have break
- Inflammatory cells

**Take Home**

- **DFE WITH scleral Depression!**
- Council patient on signs and symptoms of RD
  - Increase in floaters
  - Increase in flashes
  - Sudden loss of vision/ curtain over eye
- RTC 4-6 weeks as long as FLASHES are present
  - Sooner if heme or high risk
  - 6 months to 1 year after
  - DOCUMENT! DOCUMENT! DOCUMENT!

**Retinal Breaks**

- Occur in 3 to 7% of adult population
- Usually asymptomatic
- 1-2% with breaks progress to detachment
- Risk factors include lattice degeneration, high myopia, atrophic holes, aphakia/pseudophakia, and trauma
Procedure

- Laser treatment is used to seal the break by creating adhesion between the retinal tissue and underlying RPE.
- Provides barrier to continued enlargement from vitreo-retinal traction and prevents accumulation of subretinal fluid.
- Adhesion present 24 hours after surgery, and strengthens over several days.

Follow-up

- RTC 1-2 weeks after laser for symptomatic tears.
- 3-4 weeks for asymptomatic.
- If large or superior, RTC even sooner.
- If enlargement or new subretinal fluid, retreat with 1 week follow-up.
- RTC 6-8 weeks after initial follow-up.
- Yearly thereafter.

Complications

- Few complications:
  - Inadequate burn intensity, causing ineffective adhesion.
  - Possible CNVM.
  - Intraretinal hemorrhage.
  - Vitreous hemorrhage.
  - ERM formation.

Basic Guidelines for Treatment

- Rule-of-thumbs:
  - For macula off RD, want to get it repaired in same amount of time it has been off.
  - So if off for 4 days, best to try repair within 4 days!!
- Macula on RD is emergency.
  - Same day referral to retinal specialist.
  - Remind pt NPO until sees specialist in case same-day surgery.

RD

- Guidelines for management of retinal breaks and lattice degeneration (from Weingeist TA, Sneed SR. Laser Surgery in Ophthalmology)
Retinal Detachments
- Rhegmatogenous RD occur when liquefied vitreous fluid enters the subretinal space through a full-thickness retinal break.
- Occurs in 1/100,000 per yr
- Treatment options include scleral buckle, pars plana vitrectomy, and pneumatic retinopexy

Scleral Buckle
- Works by altering the geometry and fluid dynamics of the eye causing closure of a retinal tear
  - Placed so that once the retina is flattened the breaks will lie upon the area of indentation created by the buckle
  - Most scleral buckles consist of solid silicone rubber
  - Silicone sponges and fascia lata also used

Advantages
- External procedure so avoids complications of intraocular surgery
- Minimal cataract progression
- Very low rate of endophthalmitis
- One of longest studied procedures
- Appropriate for almost all RDs
  - Exception is giant retinal breaks, posterior retinal breaks
  - Post-op positioning may be easier, as tamponade is often not needed
  - Success rate > 90%

Disadvantages
- Greater post-operative pain
- Extrusion of buckle
- Induced myopia
- Diplopia
- Increased intraocular pressure

Pars Plana Vitrectomy
- Allows for direct relief of vitreous traction associated with retinal breaks
- Good for many detachments that are not amendable to SB
  - Giant retinal breaks, posterior retinal breaks, breaks with significant vitreous heme
  - Fluid is drained, retina is flattened, and endolaser photocoagulation is used to create choroidal adhesion
  - Intracocular gas bubble or silicone oil can be used as tamponade

Advantages
- Less post-operative pain than SB
- Less induced myopia
- Removes floaters
- Enables small peripheral retinal holes to be viewed and treated if needed
- Success rate 85-90%
Disadvantages

- Increased cataract formation
  - Preferred in pseudophakic patients
- Increased risk of iatrogenic retinal breaks
- Retinal or optic nerve damage from instruments
- Elevated intraocular pressure
- Risk of endophthalmitis

Pneumatic Retinopexy

- Intraocular gas bubble is used to provide temporary tamponade until retinal adhesion can occur, either by cryopexy or laser
- Indications are fairly limited
  - Ideal candidate is phakic patient with single superior break < 1 clock hour

Advantages

- In office procedure
  - Lower cost
- Minimal post-operative pain with quicker recovery time
- Success rate 75-80%

Disadvantages

- Patient must be in strict head positioning for extended period of time
- Iatrogenic retinal breaks
- Intraocular pressure spikes from gas
- Cataract formation
- Fairly limited indications

Follow-up

- Monitor IOP
- Monitor inflammation
- Monitor for signs/symptoms of endophthalmitis
- Make sure retina is flat with no new tears or breaks

Retinal Detachments

- Many factors go into selecting which procedure is best for patient
  - Phakic/pseudophakic
  - Location of tear
  - Size of tear
- Experience of retinal surgeon is essential!
  - Do your homework!