REFER OR RELAX: RETINA

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Disclosures

- I serve on the speaker bureau or advisory board for the following companies
  - Apellis
  - Genentech
  - I-care
  - Iveric
  - Notal Vision
  - Regeneron
  - Science Based Health
  - Visible Genomics

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What if?

- Pt states he does MMA " for fun"?
- Pt is -6.50 D Myope?
- Had an RD in other eye?
- Is monocular for any reason?
- Is a lawyer?
- Is you father-in-law?
- Is your favorite neighbor?
- Is your least favorite neighbor?
- Is going to have cataract surgery?
- It just looks bad!

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Lattice Degeneration

- 5-10% in General Population
- Found in 30% of all RD cases

- But, less than 1% of all lattice results in RD!!
  - Byer NE. OPHTH 1989. 0.7% over 10 years

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Lattice Degeneration

- Circumferential oval lesions often with thin white blood vessels
- Pigment can vary
- Vitreous adhesion at borders
- Syneretic vitreous overlying the lesion itself
- Can have atrophic round holes without operculum typically towards end of lesions
  - Occur up to 30% of the time

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Lattice Degeneration

- Most common in Superior and inferior retina
  - 2/3 cases from 5-7 or 11-1 o'clock
- Typical lesion size
  - ½ to 2.5 DD in width
  - 1-4 DD in length
- Average numbers of lesion per eye: 2
  - Range: 1-19
- Bilateral in >>50% of cases

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Lattice degeneration

- Most new cases discovered from 10-20 years of age
- May have hereditary component
- No apparent gender or race bias

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Risk Factors

- Myopia > 3D, especially if < 30.
- Myopia > 6 D at any age
- Fellow eye has RD
- Family history of RD
- Symptoms
- Presence of traction
- High risk behavior

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Follow up

- Lattice as only sign/symptom
  - Scleral depression
  - Pt ed.
  - RTC 1 year
- Lattice with symptoms of flashes/floaters
  - Reexamine q 6 mos
  - Or REFER if not comfortable
  - Repeat DFE/scleral depression
  - Pt ed

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Follow up

- Lattice with holes but no risk factors
  - Scleral depression
  - Pt ed
  - Rtc 6 mos
  - Sooner if young myope, myope > 5 D, inferior holes, or adhesion
- Lattice with risk factors for RD
  - Consider retinal consult
- Lattice with breaks at margin of lesion
  - Consider retinal consult

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Retinal Breaks

- Occur in 3 to 7% of adult population
- *Usually* asymptomatic
- 30-50% of *symptomatic* HST progress to detachment if untreated
- ≅5% of *asymptomatic* HST progress to detachment if untreated
- Risk factors include lattice degeneration, high myopia, atrophic holes, aphakia/pseudophakia, and trauma

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Horseshoe tears

- Common locations
  - Near lattice
  - Near pigment clumps
  - Near chorioretinal scars
- Worst locations
  - Superior
  - Near equator
  - Close to posterior pole

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Treatment

- **prompt treatment for *symptomatic* HST advised**
  - **Reduces risk of RD to <5%**
- Treatment of *asymptomatic* HST advised unless clear signs of chronicity
  - Even still most retinal MDs recommend treatment

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Treatment

- 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
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Procedure

- Typically Topical or rarely retrobulbar anesthesia
- Entire lesion should be enclosed by at least 3 rows in a honeycomb pattern

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Follow-up

RTC 1-2 weeks after treatment

Then 4-6 weeks

Then 3-6 mos

Then annually

If untreated, must be followed closely with proper pt education

AAO : Posterior vitreous detachment, retinal breaks and lattice degeneration Preferred Practice Pattern , 2019

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Complications

- Few complications
  - inadequate burn intensity, causing ineffective adhesion
  - possible CNVM
  - intraretinal hemorrhage
  - vitreous hemorrhage
  - ERM formation
- More theoretical than actual
- Between 5-14 % of pts with initial break will develop additional breaks in future
  - Cataract surgery is risk factor for new breaks

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Operculated holes

- Round, red hole with overlying free operculum attached to vitreous
  - Operculum often appears smaller than hole
- Minimal risk as no traction
- Treatment sometimes
  - High myopia
  - Aphakia
  - h/o RD in the fellow eye
  - Other factors

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Atrophic Retinal Holes

- Small round, red hole w/o operculum
  - May have surrounding pigment
  - Occasional edmea
- 2-3% of general population
- Most often in vitreous base
- Found in atrophic retina, perhaps 2^0 to vascular insufficiency

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Atrophic Retinal Holes

- No traction
  - Minimal risk of detachment
- Asymptomatic holes
  - Yearly
  - Pt ed
- Asymptomatic with surrounding edema
  - Follow more closely
- Symptomatic
  - Consider consult
- Other associated issues
  - As warranted
- Rarely treated

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Treatment of Symptomatic Lesions

Lesion	Treat
• Horseshoe tears	• Yes
• Operculated holes	• Rarely
• Atrophic holes	• No
• Lattice w/o holes	• No
• Lattice with holes	• Sometimes

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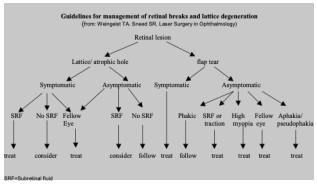
Basic Guidelines for Treatment



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RD

- Rule-of-thumb:
  - 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**

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Retinal Detachments

- Rhegmatogenous RD occur when liquefied vitreous fluid enters the sub-retinal space through a full-thickness retinal break.
- Occurs in 1/100,000 per yr
- Treatment options include scleral buckle, pars planar vitrectomy, and pneumatic retinopexy

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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!

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Retinoschisis

- Defined as splitting of the neurosensory retinal Layers
  - Typically in outer plexiform layer
- variability: large, small, bullous, flat, bilateral, unilateral, progressive ,non-progressive
- Two major types
  - Acquired
  - x-linked (XLRS)

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Acquired retinoschisis

- Usually benign and non-progressive
  - Myopic pts tend to be more progressive than hyperopic pts
- Asymptomatic, found on routine DFE, but may cause VF defect
- Incidence:
  - 3.9% in pts 60-80
- Most commonly affects inferotemporal retina
- Bilateral 33-82% of time

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Schisis vs RD

- Schisis:
  - More translucent with visible vasculature
  - Less flexible
  - Well demarcated borders
  - Overall smoother appearance
  - Should have absolute VF defect vs relative with RD
- B scan/OCT can be helpful
  - OCT often difficult to image due to location

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Retinoschisis

- Can have outer or inner wall breaks
  - Outer:
    - larger, often have ring of pigment
    - 11-24% of time
  - Inner:
    - smaller
    - Look like atrophic holes
  - Either associated with increased risk for detachment, so retinal consultation advised
  - Inner and outer together very dangerous
- if no holes, generally benign and can be monitored

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Retinoschisis

- Very rare to have detachment into macula area
- Prophylactic Laser treatment has not been shown effective in most studies to halt progression
- Cataract surgery and PVD do not seem to have adverse effect
- If progresses to detachment, retinal surgery indicated
  - Only about 0.05% to 2.2% of cases
  - Typically respond poorly to surgery
- Most are benign and can be monitored yearly unless holes, enlargement, or symptoms

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PVD

- Really no consensus
- Symptomatic PVD without retinal break
  - AOA:1-2 weeks
  - **AAO: depending on symptoms, risk factors and clinical finings:**
    - **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

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PVD

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

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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

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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

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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

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Risk Factors

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

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PVD: 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 ≈6 weeks as long as FLASHES are present
  - Sooner if heme or high risk
- 6 months to 1 year after
- DOCUMENT! DOCUMENT! DOCUMENT!

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CHRPE

- Unifocal lesion typically appear as flat, pigmented round lesions with distinct margins
- Color ranges from light brown to jet black, depending upon amount of melanin
- Often have areas of chorioretinal atrophy within the lesion that appear window like and allow a clear view of the underlying choroid (lacunae)

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CHRPE

- Typical size is 2-6 mm, but may be smaller or as large as 14 DD (21 mm)
- Can be located anywhere within the fundus, but about 70% in temporal half of fundus
- No apparent racial predisposition, although reported more in Caucasians
- May be present at birth, with reports in as young as 3 months old

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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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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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Gardner's Syndrome

- Multifocal CHRPE have been associated with Gardner's Syndrome
  - AKA FAP: familial adenomatous polyposis
  - 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

- Deferential includes nevi and choroidal melanoma
  - Nevi: nevi are rarely jet black and tend to have more indistinct borders
  - Melanomas tend to be greater than 2mm in thickness, where CHRPE are flat
- B-scan, serial photos and frequent monitoring of assistance

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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

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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

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Nevus

- TFSOM: To Find Small Ocular Melanomas (1995)
  - 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

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Update 2019

- Incorporates imaging and re-evaluates risk factors
- TFSOM-DIM
  - To Find Small Ocular Melanomas Doing Imaging
    - T: Thickness > 2mm (US)
    - F: Fluid, subretinal (OCT)
    - S: Symptoms of vison loss (VA)
    - O: Orange pigment (FAF)
    - M: Melanoma Hollowness (US)
    - DIM: diameter > 5 mm (photos)

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Update 2019

- Risk of converting to melanoma over 5 years
  - 0 factors: 1 % risk
  - 1 factor: 11%
  - 2 factors: 22 %
  - 3 factors: 34%
  - 4 factors: 51%
  - 5 factors: 55%
  - 6 factors: who knows?
- Bottom line: Increasing number of risk factors imparts greater risk for transformation

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Update 2019

- M: Tumor Margin replaced with ultrasound
- S: Vision loss (VA < 20/50) rather than flashes/floaters
- Most important:
  - Thickness, Fluid, orange Pigment, Hollowness
- Least important:
  - Symptoms, Diameter

INSERT POLL QUESTION 7 and 8

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Choroidal Metastasis

- Most common site of metastasis to eye is choroid ≈ 88%
  - Iris 9%
  - Ciliary body 2%
- Most common primary sites
  - Men:
    - Lung 40%
    - GI 9%
    - Kidney 8%
  - Women
    - Breast 68%
    - Lung 12%T

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Choroidal Metastasis

- Typically yellow in color
- Often associated with subretinal fluid
- Solitary and unilateral or multiple and bilateral
- On ultrasound, have high internal reflectivity vs melanoma which has low internal reflectivity

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Choroidal Metastasis

- 90% present with visual symptoms
  - Blurred vision 70%
  - Flashes /floaters 12%
  - Pain 7%
- Asymptomatic metastasis often detected in fellow eye
- Not uncommon to be asymptomatic

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Choroidal Metastasis

- Differential diagnosis
  - Choroidal amelanotic melanoma
  - Choroidal amelanotic nevus
  - Posterior scleritis
  - Choroidal Hemangioma
  - Choroidal Granuloma
  - Choroidal osteoma
- Differential diagnosis
  - Posterior Uveal Effusion syndrome
  - VKH
  - Central Serous Retinopathy
  - Infectious lesions
  - Organized subretinal hemorrhage
  - Solitary idiopathic choroiditis
  - Idiopathic Sclerochoroidal Calcification

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Treatment

- Collaborative effort with oncologist/retinal specialist
  - Most pts have known primary cancer
  - If no known metastatic disease, PET CT needed to look for other metastasis as well as source
- If other metastasis, chemo alone can be effective
- Plaque radiotherapy for solitary metastases
- External beam radiation for bilateral and multifocal disease
- PDT for small lesions

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