

REFER OR RELAX: macula

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Disclosures

- I serve on the speaker bureau or advisory board for the following companies
 - Apellis
 - Astellas
 - B&L
 - I-care
 - LENZ Therapeutics
 - LKC Technologies
 - Notal Vision
 - Science Based Health
 - Tenpoint Therapeutics
 - Visible Genomics
- All relevant relationships have been mitigated

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Viagra and CSR

- Retina 2008: Fraunfelder and Fraunfelder
- 11 reported cases of CSR in men taking Viagra
 - In 8/11, pts stopped taking Viagra
 - In 6/8, vision improved with cessation
 - In 3 cases, CSR returned when started med again
 - 2 pts continued to have CSR after cessation
- Might consider recommending cessation of Viagra if active CSR, but relationship is unknown at this time

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Central Serous Retinopathy

- Common disorder of unknown etiology which typically affects men between age 20 and 45
 - Males to females 10:1
- Serous detachment of neurosensory retina due to leakage from small defect in RPE

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Central Serous Retinopathy

- Pt typically presents with fairly recent onset of blurred VA in one eye with a scotoma, micropsia, or metamorphopsia
 - VA typically 20/30-20/70
 - Often correctable with low hyperopic RX
 - Unilateral in 70% of cases

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Central Serous Retinopathy

- Appears as a shallow round or oval elevation of the sensory retina often outlined by a glistening reflex
- FA is helpful in providing definitive diagnosis
 - Classic Smoke stack appearance (occasionally)
 - Ink-blot appearance
- OCT shows marked elevation

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CSR: Risk Factors

TRADITIONAL

- Male > Female 10:1
- Age: Peak 20-45
- Type A personality
- Stress
- Pregnancy

OTHERS

- Steroid use
 - Oral
 - Topical?
 - Inhaled?
 - Injection?
- Choroidal Thickness
- Sleep apnea?
- Genes?
- Viagra?

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Central Serous Retinopathy

- 80-90% of pts will undergo spontaneous resolution and return to normal (or near normal) VA within 1-6 mos.
 - >60% resolve back to 20/20
 - Rare to have vision remain < 20/40
- Approx 40% will get recurrence
- CNVM is VERY rare occurrence, but possible

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CSR

- **When to worry/refer**
 - If VA worse than 20/70
 - If pt demographics do not support
 - If does not resolve in 6 mos
 - If gets worse rather than better
 - FA/ OCT does not support diagnosis
 - “Just doesn’t feel right”
 - Pt is unable to accept vision/prognosis

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Treatment

- Observation
- PDT
- Anti-VEGF
- Anti-corticosteroids
 - Rifampin
 - Mifepristone
 - Ketoconazole
 - Spironolactone/eplerenone
 - Finasteride
- Acetazolamide
- Aspirin
- Metoprolol
- H.pylori treatment
- Methotrexate
- Behavior Modification!

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Macular Hole

- Present as a circular to oval depression of varying degrees in the avascular area of the macula
 - May have surrounding cuff of edema
- Most common cause is primary
 - secondary causes include blunt trauma, severe myopia, solar retinopathy, CME
- Highest incidence in 7th decade of life
- Women 2x as often as men

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Macular Hole

- Vision typically 20/80 to 20/200 with full-thickness hole
- If pt has macular hole in one eye, 28-44% chance of macular hole in other eye w/o a PVD
 - If PVD already, very little chance
- Watzke-Allen sign useful to differentiate true hole from similar appearance
- OCT very useful

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FTMH

- Definition: Full thickness macular hole that affects all macular layers from ILM to RPE
- Size
 - Small: ≤ 250 μm
 - Medium: 250 μm to 400 μm
 - Large ≥ 400 μm
- Presence or absence of VMT
- By cause
 - Primary: Initiated by VMT (formerly idiopathic)
 - Secondary: from associated disease or trauma

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FTMH

- Small holes
 - Small rate of spontaneous closure
 - Very high surgical closure rate (almost 100%)
 - Best response to pharmacologic vitreolysis
- Medium holes
 - High surgical closure rate (>90%)
 - Decent response to pharmacologic vitreolysis
- Large holes
 - High surgical closure rate (75-90%)
 - No response to pharmacologic vitreolysis
 - $\frac{1}{2}$ of all holes are large at time of diagnosis

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Macular hole surgery

- Vitrectomy and membrane peel
- Filled with gas which dissipates over 4-6 weeks
- Face down positioning
 - 14 days traditional
 - Newer studies evaluating less vs none
- 95% success rate if operated within 1 yr
- Risks
 - Endophthalmitis: 1:1000
 - RD: 5%
 - Cataract formation: many pts need cataract surgery within 1 year of vitrectomy

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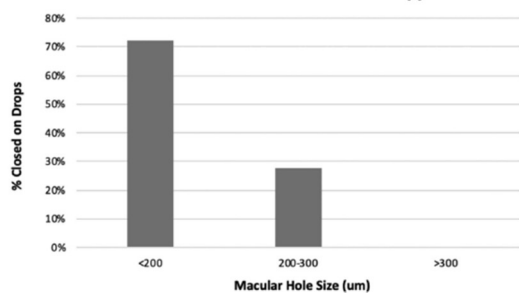
Macular hole medical therapy

- 49 pts with FTMH started on PF, NSAID, CAI
- 18/49 (36.7%) achieved closure with drops
 - higher % in small holes and those without VMT
- Hole size directly related to chance of closure
 - Every 10 μm decrease in size increased odds for closure by 1.2X
 - Best results less than 200 μm
 - 200-300 μm $\approx$ 25% closure
 - No FTMH over 300 μm had closure
- Avg time to closure was 107.2 days (range 20-512 days)
- If no response at all within first 1-3 mos response unlikely and surgical candidate

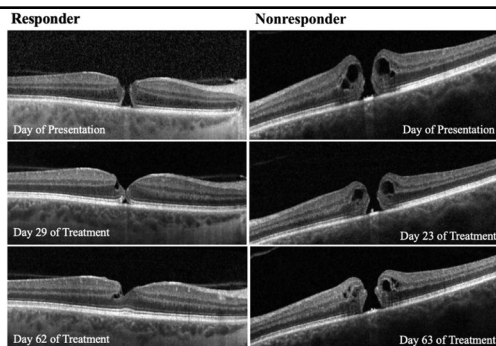
Wang J, et al. Full-thickness macular hole closure with topical medical therapy. Retina 44:392-399, 2024.

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Rate of FTMH closure on medical therapy



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Take home

- My take home:
 - If < 300 um, try consider trying
 - PF qid
 - Nsaid (Voltaren, Acular) Qid
 - CAI (trusopt) bid until sees retina
 - Refer to retina 1 mos
 - Send oct to compare
 - If no improvement in 1 mos, unlikely to have change so surgical candidate
 - If improvement, try for 3 mos then decide on surgery

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Epi-retinal Membrane

- AKA macular pucker, cellophane maculopathy
- Can be secondary to peripheral retinal disease, such as detachment or tear; a retinal vascular disease such as BRVO; inflammation; trauma or idiopathic
- Idiopathic tend to be more mild and non-progressive vs. those after retinal tear

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Epi-retinal Membrane

- VA can range from 20/20 to 20/200 or worse
 - Studies show > 5% have worse than 20/200
- Often metamorphopsia is only complaint with idiopathic ERM
- Fewer than 20% of cases are bilateral
- Surgical removal is considered if severe vision loss or distortion

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ERM

AGE	INCIDENCE
< 60	1.7%
60-69	7.2%
70-79	11.6%
80+	9.3%

BLUE MOUNTAIN EYE STUDY, AUSTRALIA

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ERM

- Consider surgery if:
 - VA 20/40-ish or worse
 - Symptomatic
 - Visual need of patient
- Make sure you have an experienced surgeon!!

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VMT: Vitreomacular Traction

- VMT syndrome is characterized by a partial detachment of the posterior vitreous with persistent adherence to the macula
 - Can lead to CME, ERM, and macular hole formation
- Once thought to be relatively rare, with advent of OCT now being seen more and more
 - In one study, 8% of pts were thought to have VMT by clinical observation only, but 30% by OCT

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VAST STUDY

- 2,179 eyes, 1,120 asymptomatic pts >40 years of age
 - Mean age 59
 - 57% female
 - 57% hyperopes, 35% myopes, 8% emmetropes
- VMA in 31% of eyes
 - Peak age 50-59
 - Less common in AA and HA

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VMT

- More commonly encountered in older women
 - Can occur in either sex, and age, no apparent racial predilection
- Aphakia and pseudophakia are protective, as these patient typically have a complete PVD
- Pts may report decreased vision, metamorphopsia and photopsia

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VMA vs. VMT: Duker

VMA

- Evidence of vitreous cortex detachment from retinal service
- Attachment of vitreous within 3 mm of fovea
- **No detectable change in foveal contour or underlying tissues**
- Focal: <1500 um
- Broad: >1500 um

VMT

- Evidence of vitreous cortex detachment from retinal service
- Attachment of vitreous within 3 mm of fovea
- **Distortion of foveal surface, intraretinal structural changes, and/or elevation of fovea, but no full thickness interruption of retinal layers**

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VMT

- Clinically, very hard to diagnose
 - PVD with adherence to macular area
 - Can present as macular surface wrinkling/striae, similar to ERM, or loss of foveal reflex
 - May also note a thickened posterior hyaloid membrane
 - Retinal blood vessel distortion straightening may be present
 - Retinal thickening /macular edema may be associated

–OCT IS THE KEY!!!!

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VMT

- Natural progression of disease is rather variable
 - Slow progression possible with near normal acuity
 - Approx 10% will have spontaneous PVD and resolution after 1 mos
 - Almost 30% by 3 mos
- Therefore, close monitoring may be advised for some patients

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VMT

- In patients with poor vision, or symptomatic, a pars planar vitrectomy (PPV) may be considered
 - Duration, severity should also be considered
- Literature reports up to a 75% success rate and improvement of vision following PPV

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BRVO/CRVO

- Management includes diagnosis and management of underlying etiology
- Most often associated with DM and HTN
- However many other possible etiologies
 - Carotid artery disease
 - Hyperlipidemia/hypercholesterolemia
 - Altered platelet function
 - Coats disease
 - Von-Hippel Lindau
 - Eales' disease
 - Trauma

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BRVO/CRVO

- At minimum, should have
 - BP evaluated
 - Fasting Blood sugars (FBS)/A1c
 - CBC
 - Lipid profile
- Additional tests might include
 - Carotid artery evaluation
 - Cardiac evaluation
 - Additional blood tests
 - ANA
 - RF
 - FTA/ABS
 - ESR

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Anti-VEGF: Lucentis

- CRUISE (CRVO) Study:
 - Vision improved > 15 letters in almost 50% of patients vs. 17% with sham at 6 mos
 - mean VA gain of almost 15 letters
- BRAVO (BRVO) Study:
 - Vision improved > 15 letters in over 60% of patients vs. 28% with sham
 - Mean VA gain of approx 18 letters
- Few side effects in either group

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Anti-VEGF: Eylea® (aflibercept)

- FDA approved Sept, 2012 for treatment of macula edema secondary to CRVO
- COPERNICUS and GALILEO studies:
 - % of pts gaining 15 letters or more of BCVA
 - Injection q 2 mos for 24 weeks
- COPERNICUS:
 - 56% vs. 12% with sham
 - 17.3 letters gained vs. 4.0 lost with sham
- GALILEO:
 - 60% vs. 22% with sham
 - 18.0 letters gained vs. 3.3 lost with sham

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CRVO/BRVO

- Refer if macula edema within 1 week
 - Laser vs. injection in BRVO
 - Injection CRVO
 - Steroids?
- Systemic workup recommended
 - DM
 - HTN
 - Cholesterol panel
 - Carotid Doppler
- Look for NV/NVI/NVA/NVG esp. in CRVO, esp. if ischemic

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Solar Retinopathy

- Damage to the foveomacular area due to high intensity exposure to light energy
- Classically associated with sungazing or eclipse viewing
 - Welding
 - Laser pointers
 - Ophthalmic operating microscopes
 - Endo-illumination used during vitreoretinal surgery

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Solar Retinopathy

- Fundus appearance
 - First few days, may present with yellow spot in macula area
 - Tends to become more red over subsequent weeks
- OCT
 - Focal disruption of the RPE, with otherwise overall normal contour and appearance
- FAF
 - well-circumscribed, hypo-autofluorescent central area surrounded by a ring of hyper-autofluorescence.

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Risk factors

- High-intensity light exposure
- Younger age
- Photo sensitivity drugs, such as tetracycline
- Mental impairment
 - Psychiatric illness
 - Illicit drugs

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Protective factors

- High refractive error
- Cataracts
- Darkly pigmented fundus

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Symptoms

- Typically occur within hours of exposure
 - Decreased VA 20/25-20/100
 - Central or paracentral scotomas
 - Typically bilateral
- Additional symptoms may include
 - Dyschromatopsia
 - Metamorphopsia
 - Micropsia
 - Headaches

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Solar Retinopathy

- No management including steroids have proven beneficial
- Most VA improvements happens within first 1-6 mos
- Most pts VA improves to 20/20-20/40
- Metamorphopsia or scotoma is often permanent

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