Which of these gives the best resolution for studying vitreoretinal disorders of the posterior pole?

- Optical coherence tomography (OCT) 100%
- Ultrasound (US) 0%
- Fluorescein Angiography (FA) 0%
- Visual Fields (VF) 0%
- Stereoscopic SLB examination 0%

Outline

- Vitreous embryology / development
- Tertiary vitreous composition
- Tertiary vitreous clinical appearances
  - A little digression for terminology sake

Outline

- Aging of the vitreous – posterior vitreous detachment (PVD)
- Congenital vitreous abnormalities
- Acquired V-R abnormalities
  - Vitreo-macular (MH, "ERM")
  - Peripheral vitreo-retinal disorders (later)

Vitreous Development & Anatomy

- EMBRYOLOGY
  - primary vitreous
  - secondary vitreous
  - tertiary vitreous (zonule)
  - Cloquet’s canal
The vitreous is a gel

Mueller cells and biological adhesive keep the retina and vitreous together
Clinical Vitreous Anatomy

- Molecular composition
  - Water (99%)
  - Solids
- Interfaces
  - Cloquet’s canal
  - Hyaloid
  - Lacunae
  - Fibrils

Anatomy & Physiology

- Abnormal clinical attachments
  - posterior pole - “ERM”, macular hole
  - blood vessels - radial lattice
  - between ILM & hyaloid face - cystic tuft, lattice retinal degeneration

Abnormal clinical attachments

Radial “Lattice”

Vitreous – Aging Changes

POSTERIOR VITREOUS DETACHMENT / SEPARATION (PVD)

- Mechanism
- Consequence(s)
- Clinical observations
  - Anterior vitreous
  - Posterior vitreous
  - Symptoms – 50%

Vitreous Liquefaction
**PVD w/ continued macular traction**

**ERMM**

BCVA 20/60

BCVA 20/20

**Terminology**

**Hyaloid Membrane**

**Examining the Vitreous**

- At slit lamp – anterior vitreous
  - Hyaloid membrane
  - Compacted fibers
- At slit lamp with PCL– posterior vitreous
  - Weiss ring *
  - Hyaloid
  - Detached
  - Remaining attachments
ANATOMY AND PHYSIOLOGY

- Normal clinical attachments
  - vitreous base
  - posterior pole
  - macula
  - along blood vessels
  - between ILM and hyaloid face (fine fibrils)

Examining the Vitreous

- At slit lamp – anterior vitreous
  - Hyaloid membrane
  - Compacted fibers
- At slit lamp with PCL – posterior vitreous
  - Weiss ring *
  - Hyaloid “old”
  - Detached
  - Remaining attachments

PVD observations – Anterior Vitreous

PVD observations

hyaloid membrane

PVD – observations

Weiss Ring

Floater W/ DO
Clinical Management of PVD

- Stereoscopic examination for complications (breaks, blood)
- 95% of PVD are uncomplicated!!!
- 50% of patients w/ acute PVD are asymptomatic

Clinical Management of PVD

- Classification & associated conditions
  - Complete with collapse (age-related w/o vitreoretinal disease, high myopia)
  - Complete without collapse (uveitis, central retinal vein obstruction)
  - Partial with thickened cortex (proliferative diabetic retinopathy)
  - Partial without thickened cortex (age-related w/o vitreoretinal disease)


Clinical Management of PVD

- Patient education (SS / RD) and reassurance

- Follow-up in 2-6 weeks

http://bjo.bmjournals.com/cgi/reprint/84/11/1264.pdf
Suggested Approach for Referral of Patients With Presumed Posterior Vitreous Detachment - Clinical Scenario Recommended Action

- Floaters and/or flashes with "red flag" sign of acute retinal detachment
- Monocular visual field loss ("curtain of darkness")

Same-day referral to retinal surgeon; high risk of having retinal detachment

- New-onset floaters and/or flashes with high-risk features including subjective or objective visual reduction.
- Vitreous hemorrhage or vitreous pigment on slitlamp examination,

Same-day referral to retinal surgeon for dilated eye examination

Adapted from JAMA, November 25, 2009—Vol 302, No. 20

• Recently diagnosed uncomplicated posterior vitreous detachment with out new retinal tear or detachment.
  - New shower of floaters
  - New subjective visual reduction

Rule out high risk features

The retinal surgeon or your clinical judgment should determine urgency.

Adapted from JAMA, November 25, 2009—Vol 302, No. 20

• Stable symptoms of floaters and/or flashes for several weeks to months, not particularly bothersome to the patient and without high-risk features.

Elective referral to retinal surgeon; counsel patient regarding high-risk features that should prompt urgent reassessment.

SYMPTOMS and RISKS of RETINAL DETACHMENT

Adapted from JAMA, November 25, 2009—Vol 302, No. 20
Note RBCs ("Shaffer's sign" or "tobacco dust")

Contrast with pigment granules (larger and less refractile)

**Vitreous Disorders**

- PVD ✓
- Other isolated vitreous disorders
  - **Asteroid bodies** (asteroid hyalosis, asteroid hyalitis, Benson’s disease, scintillatio albescens)
    - unilateral in 75% of cases
    - unrelated causally to systemic disease (e.g., only 5.4% of diabetics have asteroid bodies)
    - equal distribution between males and females and among races