

PVD and its Associated Complications

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Course Outline

Posterior vitreous detachment (PVD) plays a key role in the pathogenesis of many vitreoretinal disorders, with potentially sight-threatening complications. This course will discuss the spectrum of vitreo-retinal disorders associated with PVD, with emphasis on the updated clinical practice guidelines, courtesy of the American Academy of Ophthalmology (AAO)

I. PVD Review

- Vitreous: Collagen, water (99%), and Glycosaminoglycans (Hyaluronan, Chondroitin Sulfate)
- Posterior Hyaloid
 - Posterior vitreous- adherent to the ILM of the retina.
- Posterior Vitreous Detachment (PVD)
 - Synchysis= liquefaction of the vitreous gel
 - Syneresis= contraction or “shrinkage” of the vitreous
 - PVD: Defined as a separation between the posterior vitreous cortex (Posterior Hyaloid Membrane) and the internal limiting membrane (ILM) of the retina
 - Pathognomic sign -Weiss’s Ring a
 - Complete versus Incomplete PVD
 - Symptoms
 - Flashes of lights (photopsia)
 - Floaters

II. Incomplete PVD

- Vitreoretinal Interface (VRI): The vitreous cortex is connected to the ILM via an extracellular “**matrix glue**” including:
 - Laminin- high affinity with Collagen
 - Fibronectin-high affinity with collagen
 - Chondroitin
- Spectrum of vitreoretinal interface disorders
 - Vitreomacular Adhesion (VMA)-Adhesion of the posterior hyaloid membrane without macular abnormalities or morphological changes on OCT.
 - Vitreomacular Traction (VMT)- persistent traction due to the progression of PVD. International Vitreomacular Traction Study (IVTS) Group (Duker, 2013)
 - Symptoms (metamorphopsia, decreased visual acuity, central visual field defect)
 - Testing:
 - OCT findings
 - Treatment
 - Observation
 - JETREA® (Ocriplasmin)- recombinant proteolytic enzyme

- Pars plana vitrectomy (PPV)
- Epiretinal Membrane
- Macular Hole
 - Pseudomacular hole (PMH)
 - Lamellar hole
 - Full-thickness macular hole (FTMH)
 - Stage 1
 - A: Foveal detachment with Macular cyst with characteristic yellow spot at the center of the fovea.
 - B: Xanthophyll pigment changes to a donut shaped yellow ring.
 - Stage 2: full-thickness break less than 400 µm in size.
 - Stage 3: A full-thickness macular hole greater than 400 µm in size with partial vitreomacular adhesion/traction.
 - Stage 4: A full-thickness macular hole exists in the presence of a complete separation of the vitreous from the macula and the optic disc.

III. Ominous Vitreous Clinical Signs

- PVD with Retinal Breaks and Tears
 - Horseshoe tears common with PVDs
 - Up to 26% of patients with acute PVD have a retinal tear at the time of the initial examination
 - Asymptomatic PVD have 2-5 % chance of a retinal tear within the first few weeks
- PVD and Hemorrhage
 - PVD with vitreous Hemorrhage (VH)- 50%-70% have retinal tears
 - PVD without VH- 10%-12% have retinal tears
 - Patients on anticoagulation therapy may have a larger incidence of vitreous hemorrhage following acute PVD
- Retinal Detachment
 - Treatment/Surgery

TABLE 1: RECOMMENDED GUIDELINES FOR FOLLOW UP	
Type of Lesion	Follow-up interval
Symptomatic PVD with no retinal break	Depending on symptoms, risk factors and clinical findings, patients may be followed in 1-8 weeks, then 6-12 months
Acute symptomatic horseshoe tears	1-2 weeks after treatment, then 4-6 weeks, then 3-6 months, then annually
Acute symptomatic operculated holes	2-4 weeks, then 1-3 months, then 6-12 months, then annually
Acute symptomatic dialyses	1-2 weeks, then 4-6 weeks, then 3-6 months, then annually
Traumatic retinal breaks	1-2 weeks, then 4-6 weeks, then 3-6 months, then annually
Asymptomatic horseshoe tears	1-4 weeks, then 2-4 months, then 6-12 months, then annually
Asymptomatic operculated holes	1-4 months, then 6-12 months, then annually
Asymptomatic atrophic round holes	1-2 years
Asymptomatic lattice degeneration without holes	Annually
Asymptomatic lattice degeneration with holes	Annually
Asymptomatic dialyses	<ul style="list-style-type: none"> • If untreated, 1 month, then 3 months, then 6 months, then every 6 months • If treated, 1-2 weeks, then 4-6 weeks, then 3-6 months, then annually
Eyes with atrophic holes, lattice degeneration or asymptomatic horseshoe tears in patients in whom the fellow eye has had a retinal detachment	Every 6-12 months

Source: AAO Retina/Vitreous PPP Panel, Hoskins Center for Quality Eye Care - 2014

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1. The Vitreous, the Retinal Interface in Ocular Health and Disease *Ophthalmologica* 2013 Nov;230:165-178
2. The international vitreomacular traction study group classification of vitreomacular adhesion, traction, and macular hole. *Ophthalmology*. 2013 Dec;120(12):2611-9.
3. Preferred Practice Pattern Guidelines. Posterior Vitreous Detachment, Retinal Breaks, and Lattice Degeneration. American Academy of Ophthalmology; 2014