A Journey to the Peripheral Retina:
Diagnosis and Management of Peripheral Retinal Disease
A Clinically Relevant Review

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Disclosures
• Mohammad Rafieetary, OD, FAAO
  • Charles Retina Institute
  • Alcon/Novartis
  • Genentech
  • Heidelberg Engineering
  • Notal Vision
  • Optos
  • Regeneron
  • RegenXbio

Peripheral Retinal Abnormalities
(Primary or Secondary Conditions)
• Peripheral Lesions
  • Meridional folds, Pars Plana Cysts, Ora Serrata Pearls
• Degenerative Disorders
  • Poing Stone, Lattice, Acquired Retinoschisis
  • Vitreous and Vitreoretinal Interface Caused
  • Degenerative vitreopathies, Tufts, Holes, Tears,
• Retinal Vascular
  • Coats, PEHCR, Sickle and Diabetic, Vascular Tumors
• Inflammatory, Infectious Disease
  • Pars Plana, APR, CMV
• Pigmented Lesions
  • CHRPE, Choroidal Nevus and Melanoma, pigmented CRS
• Trauma

Morphological Differences In Clinical Course
• The Involved Landmark
  • Vitreo-retinal
  • Neurosensory Retina
  • RPE
  • Choroid
• OCT's Role In Clinical Understanding

Peripheral Retina

Retinal examination--
Limitations

Stratus
Optovue
Peripheral Retina Anatomy

Normal Variations

Peripheral Retinal Degeneration Consequential vs. Inconsequential

Artist’s Renditions of Peripheral Retinal Degeneration (PRD)
Peripheral Retinal Degeneration Association With RRD

- Association of these conditions with inner or outer retina
- The architectural association of vitreous and retinal surface
- The integrity of “normal” retinal thickness
- Peripheral Retinal Degeneration
  - Of Outer Retina
  - Of Inner Retina
  - Coexisting Conditions may or may not be interrelated or may have common root (e.g., myopia, genetics)
  - Similarities with central retinal conditions

White and Dark without Pressure

Misdiagnosed for RRD and Retinoschisis
Look and Listen for Clues

Dark Without Pressure

Peripheral Drusen (another outer retinal deg)

OCT-White without Pressure

Hyper-reflectance of PR outer seg

Spectral Domain Optical Coherence Tomography
Characteristics of White-Without-Pressure
Retina Sep 2013
Peripheral Drusen

Normal vs AMD

Peripheral Drusen

± Macular Drusen, Familial (mid-peripheral) Drusen

Association with AMD

Peripheral Drusen-FA

Peripheral Reticular Degeneration

Normal vs AMD
Peripheral Reticular + Peripheral Drusen

Same genotype (CFH) as Peripheral Drusen (and AMD)
Both have choroidal vascular deficiency

Myopic Pt with MD findings also has multiple Peripheral DZ

AMD Complications

Peripheral CNV

Paving Stone (CR) Deg

Other coexisting conditions may go undetected or overlooked

This is not a retinal hole!
Compare the choroidal thickness.

Paving Stone Degeneration

Peripheral Microcystoid Degeneration (An intra-retinal degeneration)

Absence of choroidal features.

Peripheral Microcystoid

Precursor for Retinoschisis

Retinoschisis Variations and Causes
Acquired Retinoschisis

No Pigment Demarcation Line

Acquired Retinoschisis

X-linked JRS

Outer Retina

Inner Retina

OR Break
RRD vs. Retinoschisis

Role of Vitreous
- Architectural/Anatomic Implications
- Effect of Aging
- Congenital Anomalies
- Degenerative Vitreopathies

Retinoschisis Outer Layer Break

Vitreoretinal Interface Macular Region
Recent Onset “Flashes” OS

Suspicious Retinal Hole

Tuft (small cysts) No Retinal Breaks No TX (Monitor)

Vitreoretinal Tufts
cystic vs. non-cystic

Tuft during PVD
VR Tuft Post PVD

Precursor to RT

Tuft-Partial Thickness Hole

Operculated Retinal Hole

Significance of the pigmentation

Aqueous

Hyperpigmentation

Tuft Post PVD

Edge Lift

Vertical Size
Tufts-to Operculated Hole

Peripheral Break Leading to RD

RRD 2ndry to FTMH

Partial Thickness Operculated Holes

No Treatment!
Maybe the old myth
Operculated holes don't need TX!

Subclinical RRD 2ndry
to Peripheral RH

Prophylactic Laser
Cystic Tuft (Traction, Fluid, Break) TX

Lattice a Retino-vitreal Degeneration

Peripheral Vitreo-retina Interface and Lattice

Variations and Morphology of Lattice

Lattice-Myopia
Lattice
Retinal Permeability Drives TX Plan

Lattice (Snail Track) Degeneration

Vit Deg, Lattice

Schisis w ORB RT w SRF??
Post-Laser Lattice+Holes

Partial- vs Full-thickness Holes (within or outside/adjacent to lattice)

13 Y/O high myopia Bilateral Radial Lattice
Lattice-RD Post Laser then PVD and RRD

Lattice RRD with PVD

PVD
- Complications
  - VH—RT

RD not Schisis

Degenerative Vitreopathies-Stickler Syndrome
Lattice associated with Stickler

Degenerative Vitreopathies
FEVR (Mutation of FZD4 Gene)

Retinal Breaks (Holes, Tears)
- With and Without Symptoms
- With and Without PVD
- With and Without RRD
Chronic Atrophic Hole
Subsequent RRD

RRD Management

RT- After PPV

Chronic RRD
Asymptomatic

Laser added at Demarcation Line

Past Laser Recent RRD

Demarcation Line(s) Sign of chronicity

Acute PVD RT No RRD
Retinal Dialysis

PVR-Subretinal Band

Surgery Outcome

RRD-Buckle

PVR

RRD-Buckle
Diabetic Retinopathy

PDR

PDR-TRD
Sickle Cell Retinopathy

Peripheral Retinal Hemorrhages

Peripheral Hemorrhage

Ocular Ischemic Syndrome

S/p Endarterectomy
Peripheral Exudative Hemorrhagic Chorioretinopathy

Telangiectasia

OIS

Coat’s Disease

Vascular Tumors
Peripheral Retina in Inflammatory and Infectious Disease

Peripheral Vasculitis

Infiltrates and Vasculitis
OHS, MCP, Toxoplasmosis, West Nile

Peripheral Pigmented Lesions

Iatrogenic

ROP
Associated with genetic conditions

Heavily CHRPE

CHRPE (RPE)

Non-pigmented CHRPE

CHRPE with Lacunae

Suspicious CHRPE with secondary melanocytic proliferation
Other RPE Hypertrophic Lesions

Choroidal Nevi

Choroidal Melanoma

Nevus VS CMM

Elevated Nevus

Peripheral Retina In an Injured Eye
Commotio Retinae

Commotio (sclopetaria)

Hemorrhages

Hemorrhage and Choroidal Rupture
Searching for IOFB

Avulsed Vitreous Base and RT

RTs, Dialysis, RD, MH

Conclusion

• Importance of examination of peripheral retina for variety of conditions

• Thank you

Avulsed Vitreous Base