

Acquired Macular Disease

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Robert P. Wooldridge, O.D.

Eye Foundation of Utah

201 East 5900 South, Suite 201

Salt Lake City, Utah 84107

rpwod@aol.com

Acquired Macular Diseases

Robert P. Wooldridge, O.D.

Epiretinal Membrane (ERM)

- Pre-retinal membrane
- Cellophane Maculopathy
- Surface Wrinkling Retinopathy
- Macular Pucker

Incidence

- 2% of eyes at age 50
- 20% of eyes at age 75

Symptoms

- VA: 20/15 to 20/400
- 85% \geq 20/70
- Usually stable
- 10-25% lose VA in 2 years

Symptoms

- Often asymptomatic
- Possible metamorphopsia
- Color, pupils, VF are normal

Appearance

- Increased reflex or sheen
- Distortion of vessels
- Gliotic membrane at retinal surface
- Generally no hemorrhages
- Pseudohole may form

Fluorescein Angiography

- Retinal vessels may leak but usually do NOT
- CME may be present

Treatment

- Pre-op. OCT +/- angiogram
- Possible medical treatment of CME
- Vitrectomy with membrane peeling (PPV/MP)

Partial Thickness Lamellar Holes

- Partial thickness hole
- Less defined, no cuff
- VA 20/25 - 20/60
- Generally do not progress

Full Thickness Macular Holes

- Affect approx. 100,000 in U.S.
- Usually occur in age 60-80
- More frequent in women than men
- 85% idiopathic, 15% traumatic

Etiology

- Earlier felt to be largely traumatic
- Cystoid degeneration
- Vascular theory
- Vitreous traction
- Involutional macular thinning

Gass Classification

- Tangential vitreofoveal traction
- Occurs in stages

I-A (Impending Hole)

- Central yellow spot
- Loss of foveal depression
- No vitreofoveolar separation

I-A (Impending Hole)

- Early serous detachment of fovea

1-B (Impending or Occult Hole)

- Yellow ring with bridging interface
- Loss of foveal depression
- No vitreofoveolar separation

I-B (Impending Hole)

- Serous foveolar detachment with lateral displacement of xanthophyll
- Occult foveolar hole may be present with larger ring

Stage 2

- Eccentric oval, crescent or horseshoe retinal defect inside edge of yellow ring
- Central round retinal defect (<400 mm) with rim of elevated retina
- With/without prefoveal opacity (?operculum?)
- Hole (tear) in contracted prefoveal vitreous bridging the hole, with no loss of foveolar retina

Stage 3

- Central round ≥ 400 mm retinal defect
- No Weiss's ring
- Rim of elevated retina
- With/without prefoveal opacity

Stage 3

- Hole with pseudo-operculum
- No PVD

Stage 4

- Central round retinal defect
- Rim of elevated retina
- Weiss's ring
- With/without prefoveal opacity

Stage 4

- Hole with pseudo-operculum and
- PVD from disc and macula

Pseudomacular Holes

- Hole in macular ERM
- No cuff or precipitates
- Ave. VA 20/30

Opercula

- May or may not include photoreceptors
- Fibrous astrocytes and muller cells

Natural History

Stage 1

- 40% progress to full-thickness hole
- Ave. time of progression: 4 months
- Risk higher if VA 20/50 or worse

Stage 2

- 67% - 96% progress to stage 3 or 4
- 0% - 33% spontaneously resolve
- Progression usually within 6 months

Stage 3, 4

- Hole may enlarge with further VA loss
- Rarely lead to full macular or retinal detachment
- Spontaneous resolution with increase in VA in 5-12%

Fellow Eyes

- Risk of involvement is 3-22%
- Less if PVD is present
- Less if fellow macula is normal

Management

- PPV with membrane peeling
 - Gas tamonade x 1 week
 - Anatomic success 73-90%
 - Visual improvement (2 lines) 58%
 - Visual improvement in 75% of anatomic successful eyes
- Vitrectomy for Treatment of Macular Hole Study Group**

- Stage 2

- Increased VA with PAM, word reading test

- No increase by ETDRS vision testing

Macular Hole Study Group

- Stages 3 and 4

- Some visual benefit

- More cataracts (83%)

- RPE changes

Indications for Surgery

- Small, full-thickness hole
- Preferably < 6 month duration
- Progressive loss of vision
- Able to maintain face down position

Complications

- Cataract 81% +
- Retinal detachment 14%
- Retinal tears 3%
- Enlargement of hole 2%
- Late re-opening 2-7%
- Visual field changes

Vitrectomy for Prevention of Macular Hole Study

- Stage 1A and 1B patients
- PPV and vitreous membrane peeling
- 37% in surgical group developed FTMH
- 40% in control group developed FTMH
- Study was terminated

Conclusion

- Surgery generally not recommended until a FTMH forms Stage 1
- If VA > 20/40, 30% progress to FTMH
- If VA 20/50 - 20/80, 66% progress to FTMH

Central Serous Retinopathy

- Age: 20 - 50 years
- M:F 8:1
- Stress component?

Natural History

- Spontaneous recovery in 4-8 weeks
- Recurrent episodes may occur (33-50%)

- Greater VA loss with more episodes

Type I

- Fluid under sensory retina

- 94%

Type II

- Fluid under RPE

- 3%

Intermediate Type

- Sensory retina and RPE elevated

- 3%

Clinical Features

- VA: 20/25 - 20/60
- Positive scotoma with distortion
- Pupils, color vision: normal

Retinal Appearance

- Serous detachment of sensory retina
- No hemorrhage, lipid or drusen
- Possible pigment epithelial detachment (PED)
- May be multifocal

Fluorescein Angiography

- Early phase: pinpoint RPE leak
- Midphase: leak enlarges
- possible but unlikely “smokestack”
- PED and/or serous detachment

Treatment

- Rule out neovascular membrane
- Follow
- Laser treatment with decreasing VA, recurrent, persistent episode(s)

Cystoid Macular Edema (CME)

- Extracellular theory (Gass et.al.)
 - Extracellular fluid
 - Inner plexiform and inner nuclear layers
 - Leakage from perifoveal capillaries

Cystoid Macular Edema (CME)

- **Intracellular Theory (Yanoff et.al.)**
 - Edematous Muller cells
 - Cell walls break down forming cysts
 - Anoxia a likely cause

CME Causes

- **Cataract extraction**
- **Diabetic retinopathy**
- **Age-related macular degeneration**
- **Retinal vein occlusion**

CME Causes

- **Uveitis**
- **Epiretinal membrane**
- **Choroidal tumors**
- **Perifoveal retinal telangiectasis**

Retinal Appearance

- **Clear fluid-filled cysts**
- **Macular thickening**
- **Central yellow spot (chronic)**

Fluorescein Angiography

- **Early - may be normal**
- **Mid - pinpoint leak**
- **Late - petaloid macular staining**
 - possible disc staining

CME Etiology

- **Inflammatory**
- **Breakdown of blood-retinal barrier**
- **Transudation of fluid into macula**

Treatment Principles

- **Determine and treat associated cause**
- **Anti-inflammatory medical approach**
- **Laser or surgical approach when indicated (PPV)**

Pseudophakic CME

- Pred Forte 1% q.i.d.
- Topical NSAID q.i.d.
- Consider prophylactic treatment for fellow eye

Other Treatments

- Oral NSAIDS
- Diamox
- Vitrectomy

Myopic Macular Degeneration

- Excessive axial elongation
- Thinning of retina and choroid
- Abnormal sclera ?

Retinal Appearance

- Macula
 - Posterior staphyloma
 - RPE, choroidal atrophy (thinning)
 - Hemorrhages possible
 - Lacquer cracks

Lacquer Cracks

- Breaks in Bruch's membrane
- Also involve RPE and choriocapillaris
- Irregular, yellowish-white lines
- Intact overlying retina
- Hyperfluorescent on F.A.

Macular Hemorrhages

- Often associated with lacquer crack
- Subretinal, round
- May be sign of underlying CNVM

Neovascularization

- Choroidal neovascular membrane (CNVM)
- Hemorrhage, subretinal fluid
- No drusen, lipid rare
- May be associated with lacquer crack