RETINAL DETACHMENT (R.D)

R.D. is a separation of the sensory retina from the retinal pigment epithelium (R.P.E) by sub retinal fluid (S.R.F)

Two main types
1) Rhegmatogenous or Primary R.D
2) Nonrhegmatous or Secondary R.D

Types

Two main types
1. Rhegmatogenous or Primary R.D
2. Nonrhegmatous or Secondary R.D
   - Tractional R.D.
   - Exudative (Serous) R.D
**RHEGMATOGENOUS R.D**

In Greek word, Rhegma meaning a rent or fissure

- is a condition in which fluid from vitreous cavity passes through a full thickness retinal defect in to the sub retinal space to cause separation of the neural retina from the underlying R.P.E
- It affects about 1:10,000 of the population each year

**PATHOGENESIS**

Acute posterior vitreous detachment
Trauma

Predisposing
retinal degenerations
Aphakia
retinal break
degenerated vitreous passes via this break between sensory retina and RPE collected as SRF

Retinal detachment

**CLINICAL FEATURES**

History
- age: Common age group is 40-70 years
  No age is bar
• Sex: 60% case comprises by males
• Hereditary: although a no. of pedigree shows familial detachments, most cases are sporadic

**SYMPTOMS:**

Classic premonitory symptoms present in 60% of patients with Spontaneous rheg.R.D are

1) Flashes of lights (Photopsia)
2) floaters - may be
   - Solitary ring shaped opacity (Weiss Ring)
   - Cobwebs
   - Sudden shower of minute red colored or dark spots

Contd...

Localized relative loss in field of vision - early
   - less aware of superior than inferior field defect
   - highly specific for localization of R.D
   - cause - spread of SRF behind the equator
   - perceived by the patient as black curtain

4) sudden painless loss of vision – in case of large or central R.D

Contd...

• Blurring of distant vision
  40-45% R.D occurs in myopic patients

History of trauma:
(Surgical/Accidental)
Surgical details
a) Aphakia
b) Pseudophakia with vitreous loss
Ocular Trauma

Contd…

History of previous ocular disease
- similar problem in other eye
- glaucoma
  more in pigment dispersion syndrome
  Miotic drugs
- uveitis, vitreous hemorrhage, diabetic retinopathy
- Cytomegalovirus retinitis

Contd…

History of systemic diseases eg.
  Diabetes, tumors, angiomatosis of C.N.S, sickle cell disease, leukemia and
  Eclampsia
  Marfan's syndrome,
Family history

SIGNS

1) Visual Acuity
   • less if R.D extend up to fovea
2) Confrontation test; Visual field defect
3) External examination
4) Anterior segment examination
   • Cornea is usually clear but descemet's folds if hypotony
   • Mild flare and cells in Anterior chamber

SIGNS

Pupillary reaction
• Relative afferent pupillary defect in extensive R.D
6) Posterior segment
Tobacco dust in retrolental vitreous, haemorrhages

SIGNS

• Breaks may be in the form of holes, tears or dialysis
• Shape may be variable
• Can locate primary break by the shape of the R.D

SIGNS

Retinal signs depend on duration of R.D
A) Fresh R.D
Detached retina has a convex configuration, slightly opaque and corrugated appearance, undulates freely with eye movements

SIGNS

• Loss of underlying choroidal pattern
• Retinal blood vessels appear darker so color contrast vein and artery is less
• SRF extends up to ora serrata except caused by macular hole
• Pseudo hole in posterior pole detachment

SIGNS

Long standing retinal detachment
• Retinal thinning secondary to atrophy
• Secondary intraretinal cysts if more than 1 year
• Sub retinal demarcation lines present after 3 months.
Macula

- pigment of the macula may become more evident as a yellow colour due to intraretinal oedema or sub retinal fluid
- macular involvement is high in superior or temporal break or if in equatorial region

**SIGNS**

- Apparent holes in macula are relatively common
- Macular breaks leading to R.D are common in staphyloma of high myopia or following trauma

Associated retinal degenerations,
Intraocular pressure-low
Systemic evaluation

**DIFFERENTIAL DIAGNOSIS**

Includes R.D from other causes and retinoschisis

1) Tractional R.D
   - Symptoms
     - Photophobia and floaters usually absent
     - Visual field defect progressive

**Contd…**

- Signs
  - concave configuration, breaks absent
  - SRF - shallower, seldom extends to ora serrata
  - highest elevation at sites
of vitreo-retinal traction
   – severely reduced retinal mobility, shifting fluid absent

Contd…

Exudative RD:

- Symptoms
  – photopsia is absent
  – VF defects develop suddenly and progress rapidly
- Signs
  – convex configuration
  – breaks are absent
  – smooth surface, SRF deep, shifting fluid phenomenon present
  – Leopard spots – in resolved RD

Contd…

- Degenerative Retinoschisis:
  – Symptoms
    - photopsia and floaters absent
    - VF defects – absolute scotoma
  – Signs
    - Elevation is convex, thin, smooth, relatively immobile
    - Demarcation lines and secondary cyst absent
MANAGEMENT

• Diagnosis/Treatment

Diagnosis

▪ Clinical Feature
▪ Investigations

PROPHYLAXIS: Retinal Breaks

▪ INDICATIONS
A. Characteristics of break
B. Predisposing Peripheral retinal degenerations

▪ INDICATIONS
A. Characteristics of break
B. Predisposing Peripheral retinal degenerations

HIGH RISK BREAKS

1) Tears more dangerous than holes
2) Large break
3) Symptomatic tears
4) Superior breaks
5) Equatorial breaks
6) Sub clinical R.D

OTHER CONSIDERATIONS

Break with or without symptoms:
• Aphakia
• Myopia
• One eyed
• Family History
• Systemic Diseases e.g. Marfan Syndrome, Stickler Syndrome, Ehlers Danlos Syndrome.

PROPHYLAXIS...

• Predisposing Peripheral retinal degenerations (Lattice/Snail track)
  – R.D in the fellow eye
  – Aphakia or pseudophakia
  – High Myopia
  – Strong family history of R.D
  – Systemic diseases

Prophylaxis (Contd....)

• White without pressure with fellow eye - giant retinal tears

• Fellow eye aphakic retinal detachment (360 degree cryotherapy 4 weeks prior to cataract surgery)
TREATMENT OPTIONS

- seals the retina with the RPE and choroid around the break,
- 2-3 rows of nearly confluent laser burns around e.g. break in lattice.
- firm chorioretinal scar forms in 7-10 days.

CRYOTHERAPY/LASER THERAPY

- Location of lesion
- Clarity of the media
- Pupil size

Purpose of R.D surgery

- To close the retinal hole
- To relieve any vitreoretinal traction.

Treatment options: RRD

- Permanent scleral buckle, with/without drainage
  - radial, segmental or encirclage
- Temporary scleral buckle
  - Lincoff balloon, absorbable buckles
- Pneumatic retinopexy
- Primary vitrectomy
- Combinations of above
- Observation rarely
**Scleral buckling**

- **Purpose:** to close retinal breaks
  - to reduce VR traction
- **Explants:** material sutured directly onto the sclera
- **Implants:** intrascleral placement of buckle
- **Explant configuration**
  1. Radial
  2. Segmental circum
  3. Encirclage
- **Explant size**
  1. Buckle width/length
  2. Buckle height

**VITRECTOMY**

**Historical Review**

- Till 1960, believed that vitreous body should not be violated
- 1970. Machemer and Parel introduced the first vitrectomy machine and vitrectomy performed in diabetic patient

**Vitrectomy in RRD**

- Inability to visualize the break due to opacities
- Inability to close breaks due to
  - Very large breaks
  - Posterior break including a macular hole
  - PVR with severe VR Traction
TAMPONADING AGENTS

Purpose:

- To achieve intra operative retinal flattening by internal drainage of SRF and fluid gas exchange.
- To produce internal closure of retinal breaks during the post operative period.

Ideal tamponading Agents:

- High surface tension
- Optically clear
- Biologically inert

EXPANDING GASES

Sulphur hexafluoride (SF6)
Doubles its volume and lasts 10-14 days.

Perfluoroethane (C2F6)
Triples its volume and lasts 30-35 days

Perfluoropropane (C3F8)
Quadruples its volume and lasts 66-65 days

Heavy Liquid
Perfluorocarbons
Indications:
To stabilize the posterior retina
To unfold a giant retinal tear
To remove posteriorly dislocated lens fragments or intraocular lens implants

TAMPONADE...

SILICON OIL:
• Low specific gravity
• More controlled intraoperative manipulations
• Prolonged post operative intraocular tamponade

THANK YOU