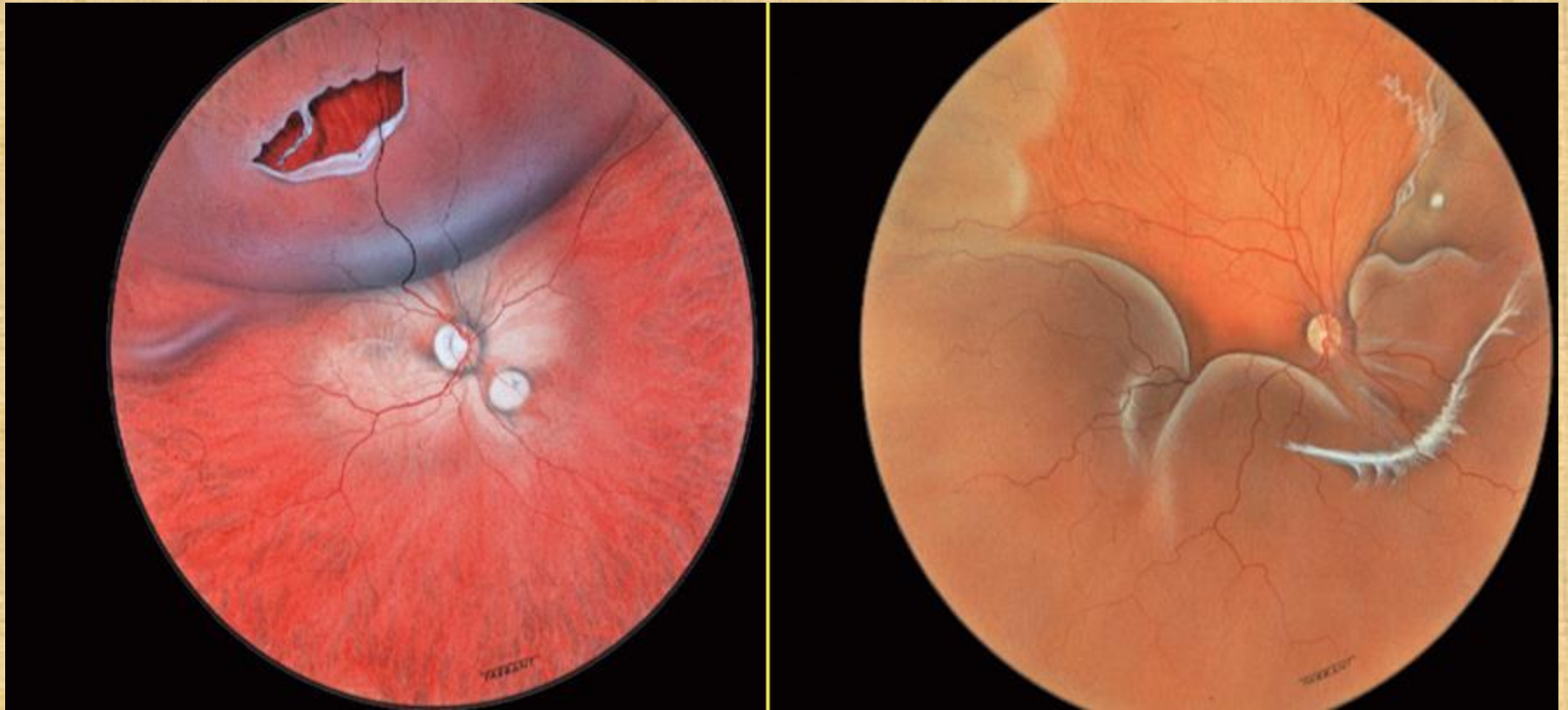


RETINAL DETACHMENT



Dr Nyamori JM

MBChB, Mmed-opth (Nairobi), FEACO, ICO, Retina (Calgary, Ab, CA)

MB Ch B IV Lecture- 15th February, 2016, University of Nairobi, LT III

Outline

- Epidemiology
- Anatomy
- Classification
- Assessment
- Management



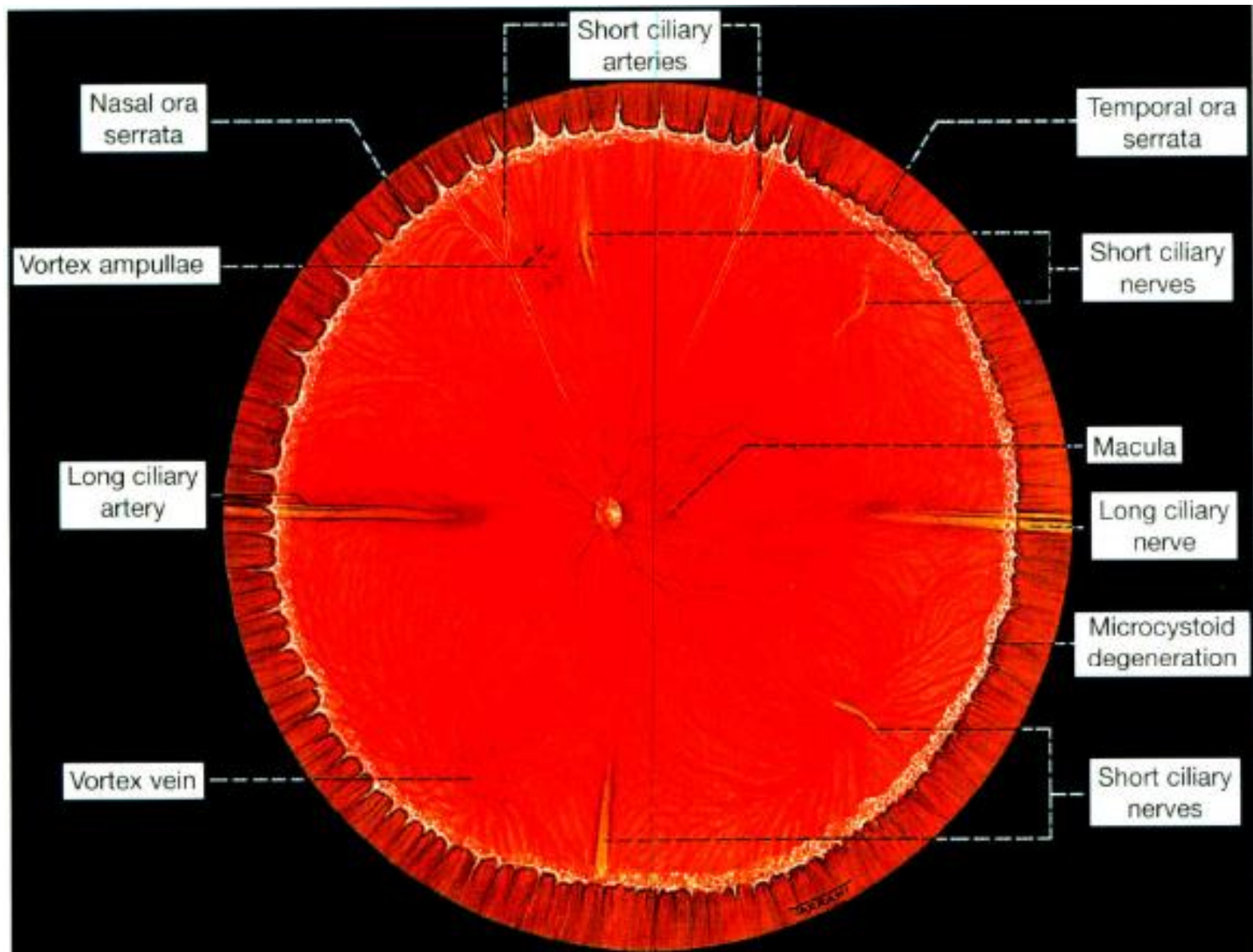
Retinal detachment-Epidemiology

Incidence:

- USA: incidence of RRD is 12 cases per 100,000.
- Scandinavia: 7-10 cases per 100,000.
- Japan: 10.4 cases per 100,000.
- China: 11.6 cases per 100,000
- India: 3.9 cases per 100,000



Anatomy: Retina landmarks

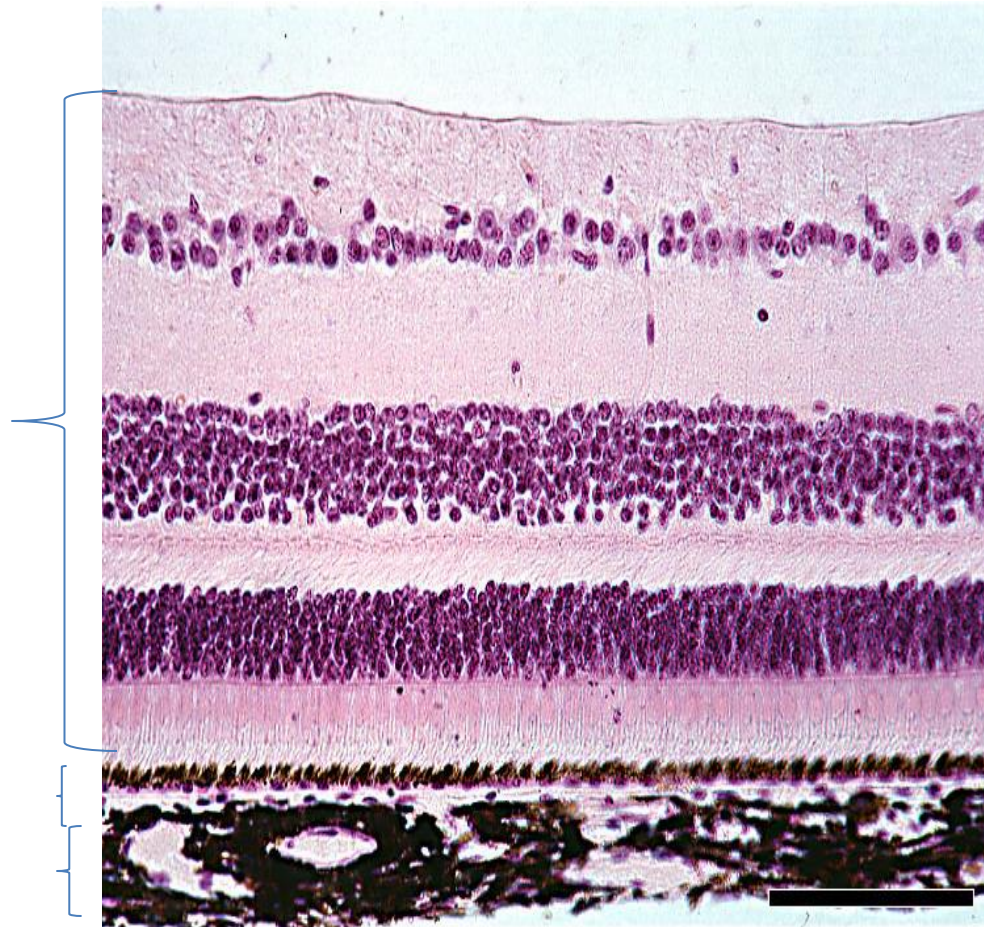


Anatomy-Retina 10 layers

Neurosensory
Retina

RPE

Choroid



Classification-3 Types

1. Rhegmatogenous RD (RRD)

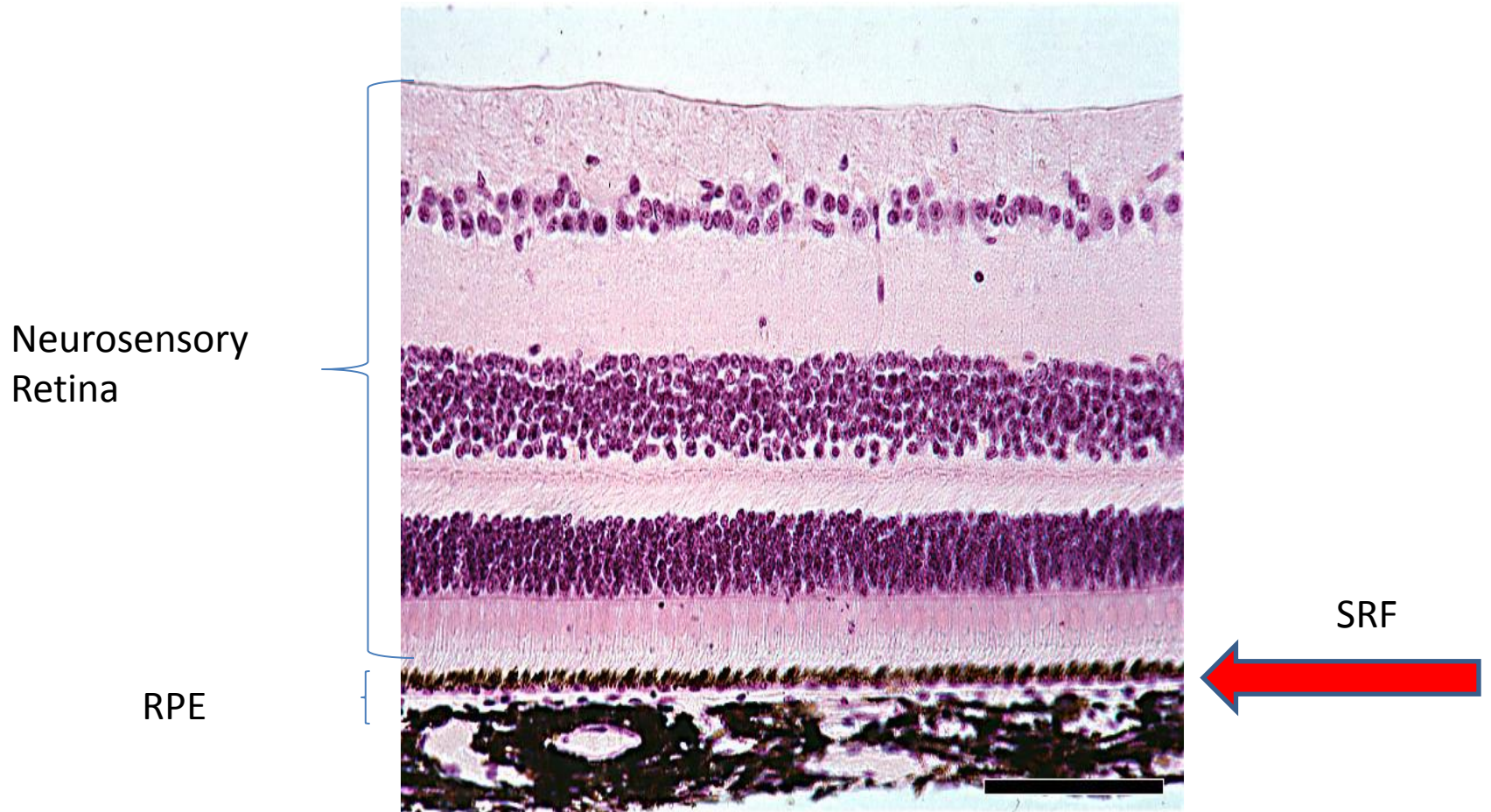
2. Tractional RD (TRD)

3. Exudative RD (ERD)

*Combined Rhegmatogenous-tractional RD


A. Rhegmatogenous RD

Tear + Separation of sensory retina from RPE by subretinal fluid (SRF)

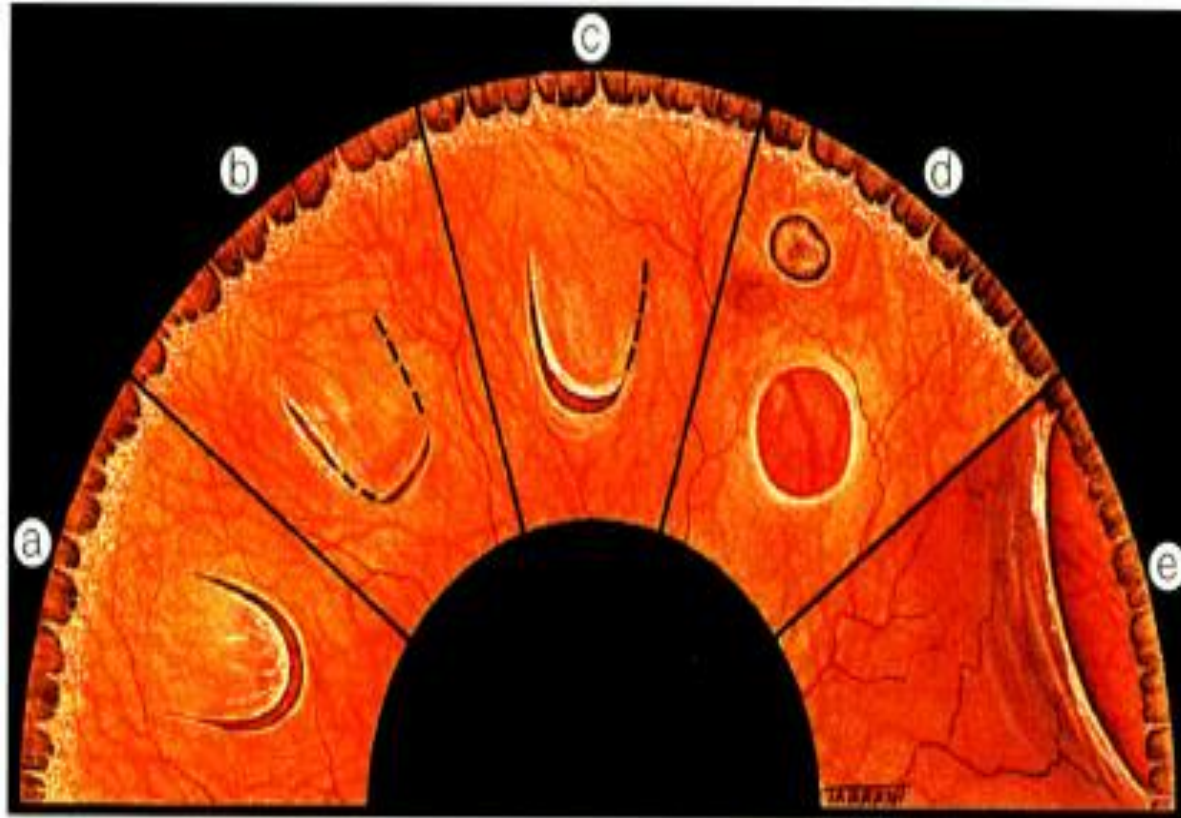


Retinal breaks-2 Types

A full thickness defect in the Neurosensory retina is either termed:

- a. **Tears:** dynamic vitreoretinal traction 
- b. **Holes:** chronic atrophy of retina, round or oval

Retinal Breaks-Morphology



- a. Complete U-shaped
- b. Linear
- c. L-shaped
- d. Operculated
- e. Dialysis
- f. Giant $>90^\circ$



Tear-Pathogenesis.

Dynamic Vitreoretinal Traction

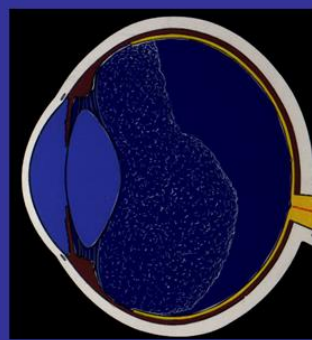
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Predisposing peripheral retinal degeneration

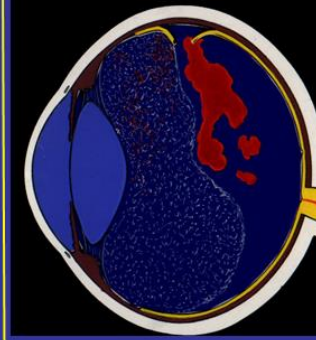
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Retinal Break + Subretinal fluid = Retinal Detachment

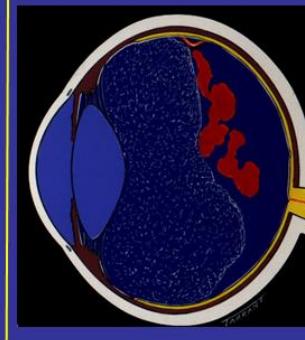
Possible sequelae of acute PVD



Uncomplicated PVD
(85%)



Retinal tear formation
and haemorrhage (10-
15%)



Avulsion of retinal
vessel and haemorrhage
(uncommon)



Tear-Predisposing degenerations

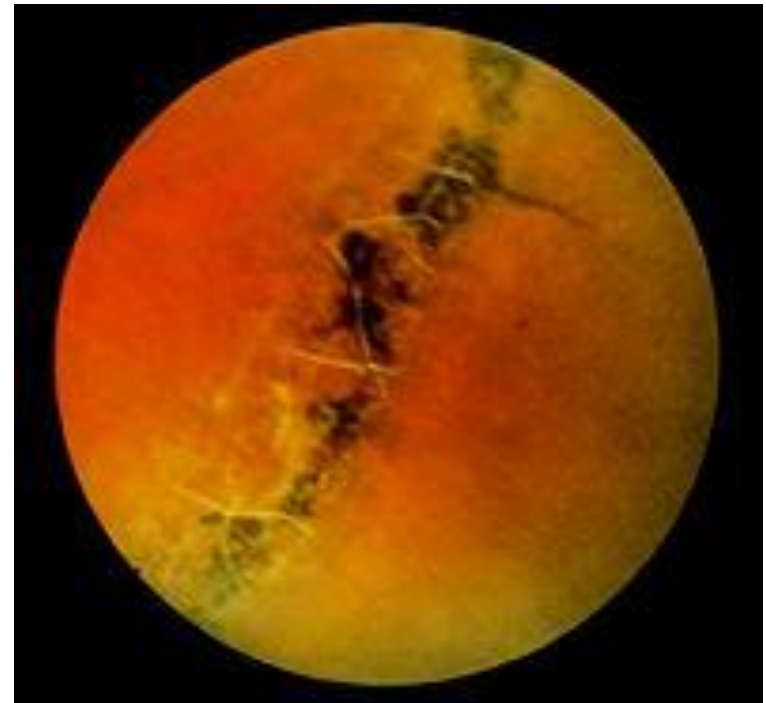
- Lattice degeneration.
- Snailtrack degeneration.
- Degenerative retinoschisis
- Diffuse chorioretinal atrophy



1. Snail tracks. 2. Retinoschisis.

Tear-Lattice Degeneration

- 8% of all eyes.
- 40% of eyes with RRD.
- More common in moderate to high myopia.



Tear-Significance of myopia

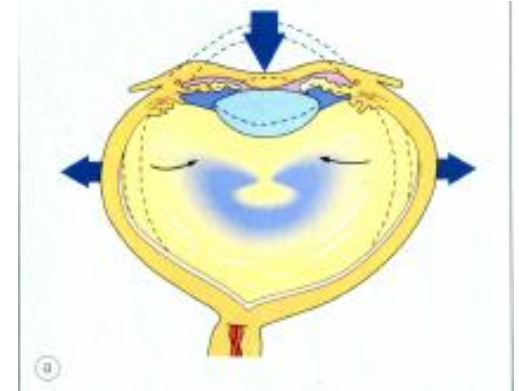
- Myopes: 10% of population, 40% of detachments
- **Why do Myopes Detach?**
 - Lattice degeneration.
 - Snailtrack degenerations.
 - Diffuse chorioretinal atrophy.
 - Macular holes.
 - Vitreous degeneration and PVD.
 - Vitreous loss during cataract surgery.
 - Laser posterior capsulotomy.

Retinal tears due to Trauma

- Penetrating injuries
- Severe blunt injury



- Dialysis
- Equatorial tears
- Macular holes



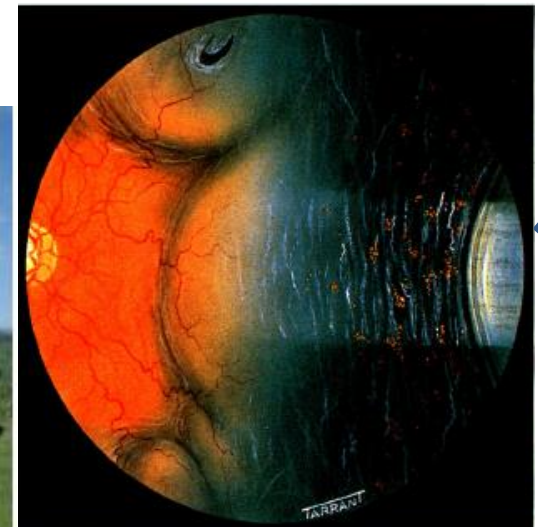
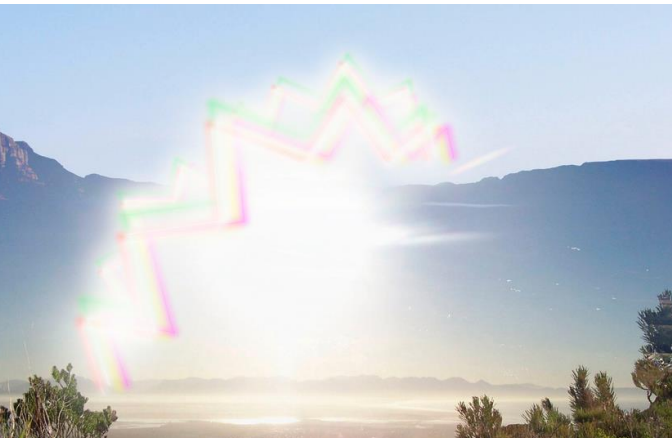
Clinical Diagnosis of Retinal tears

- Symptoms

- Photopsia-"Flash"
- Floaters-"Flies"
- Visual field defect.

- Signs:

- Pupil: Marcus Gunn
- ↓ Intraocular Pressure
- Iritis
- Tobacco dust -Shafer sign
- Retinal breaks.



Retinal Tear: Clinical signs



Fresh Detachment

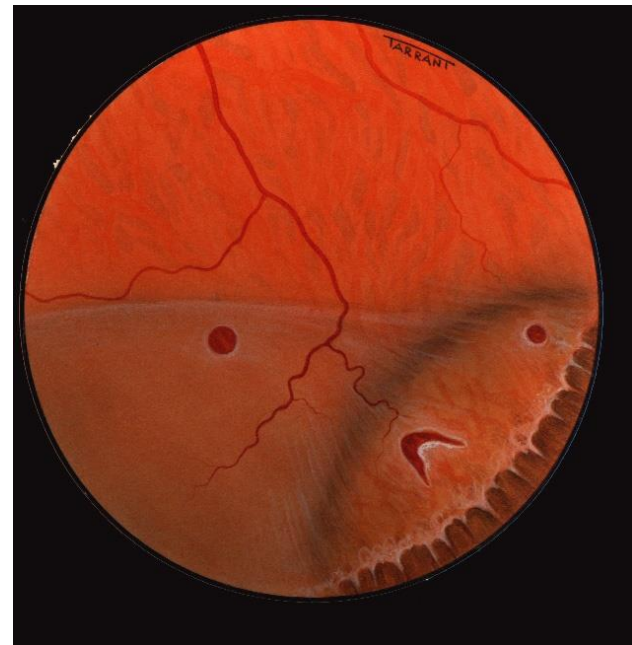
- Mobile, pink
- Good prognosis



Old Detachment

- Stiff, cyst, pale
- Dermacation
- Poor prognosis

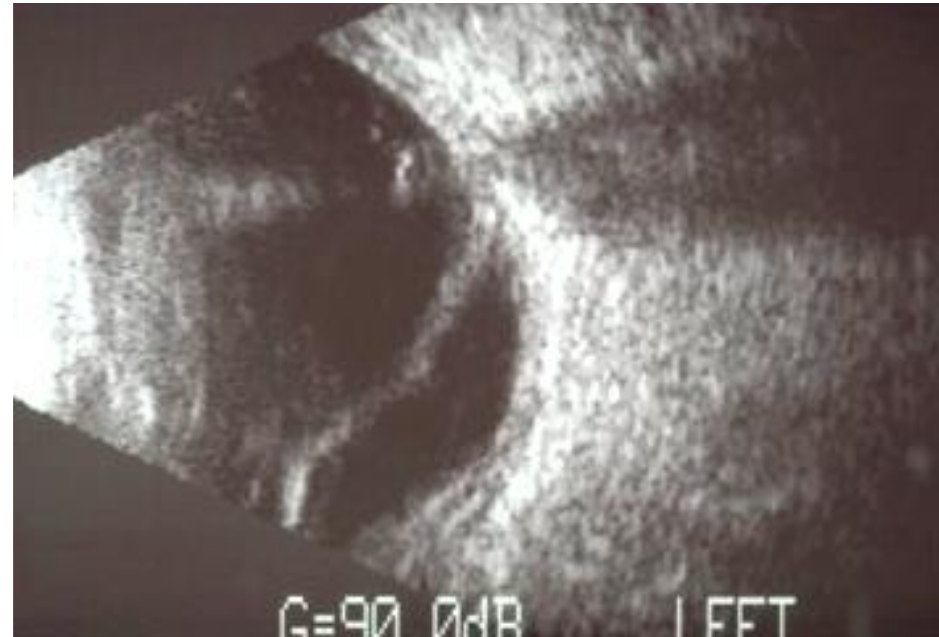
Assess: Indirect Fundoscopy



Assess: Slit Lamp + 78/90D

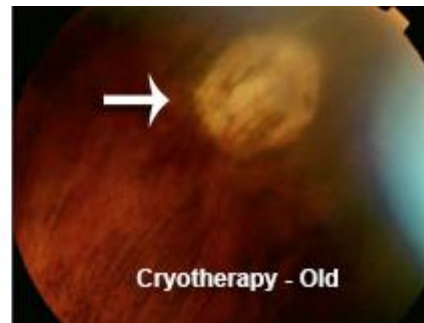
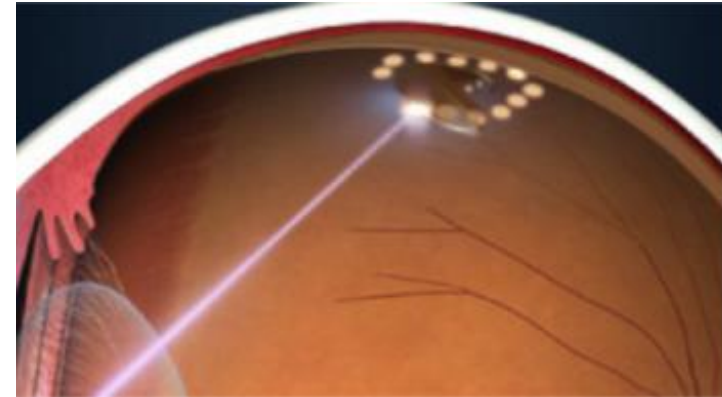
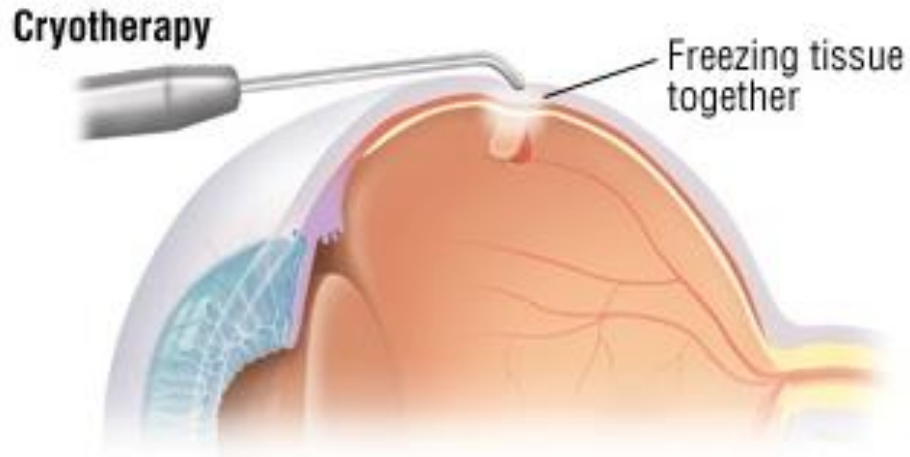


Assess: Contact mirror & B-scan



Prophylaxis of Tears/detachment

- Anterior tear: **Cryotherapy**+indentation
- Posterior tear: **Laser**, pneumatic retinopexy.



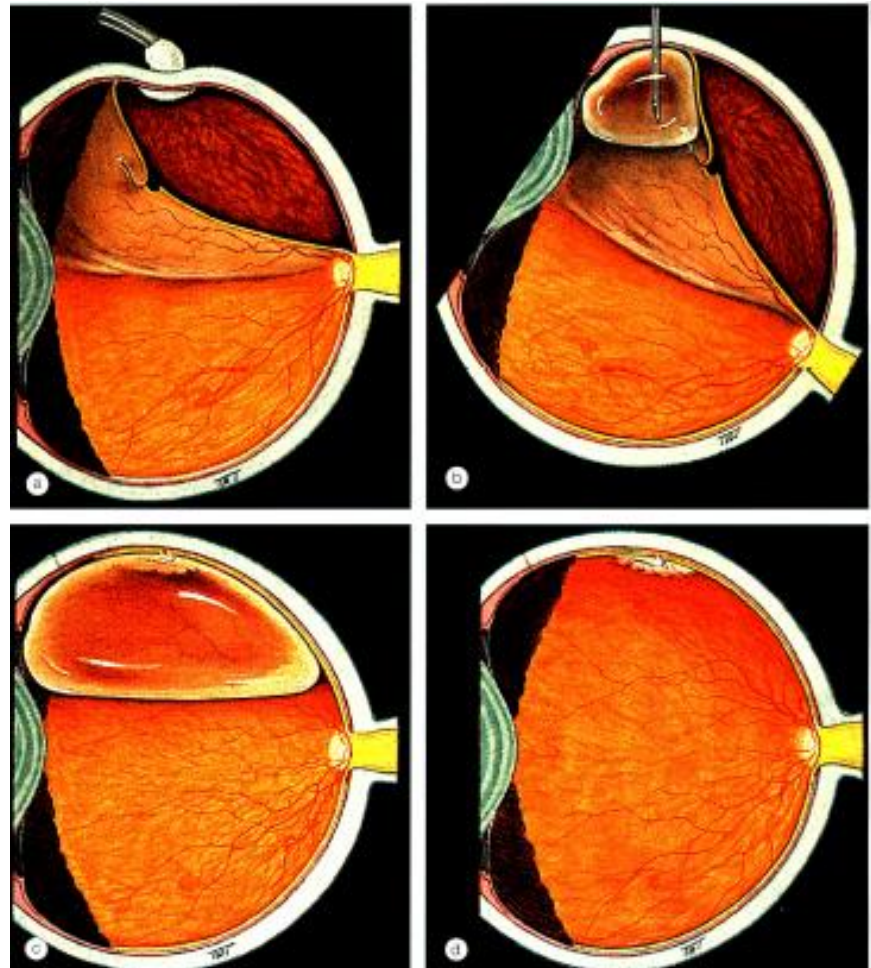
1.RRD Surgery: Retinopexy

- Pneumatic SF_6 , C_2F_6 gas injected into vitreous
- For Simple breaks

Pneumatic retinopexy

Gas bubble rises and pushes the detached part of the retina back up against the RTE

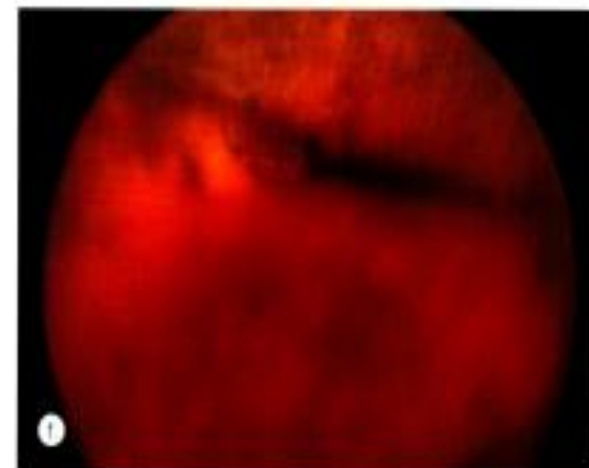
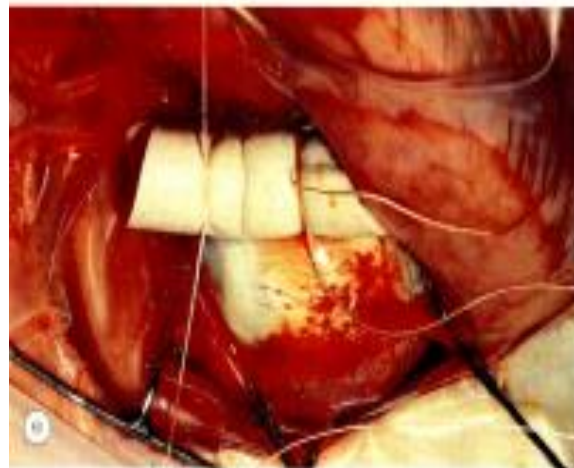
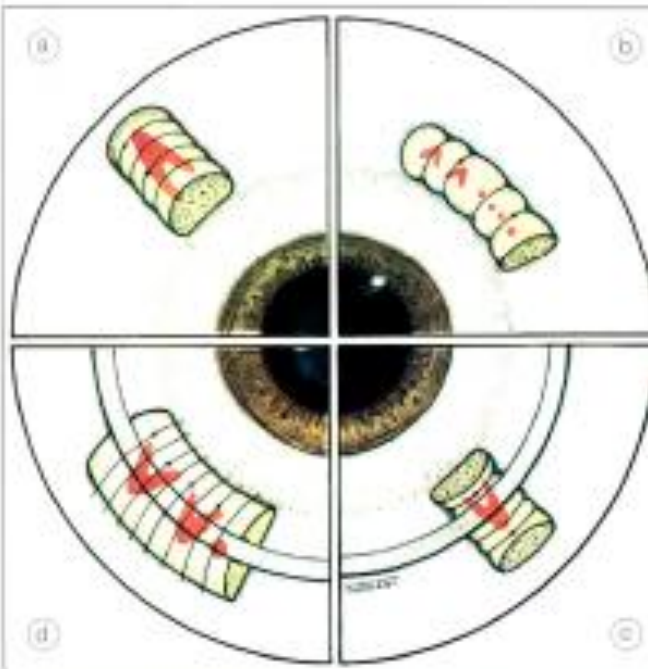
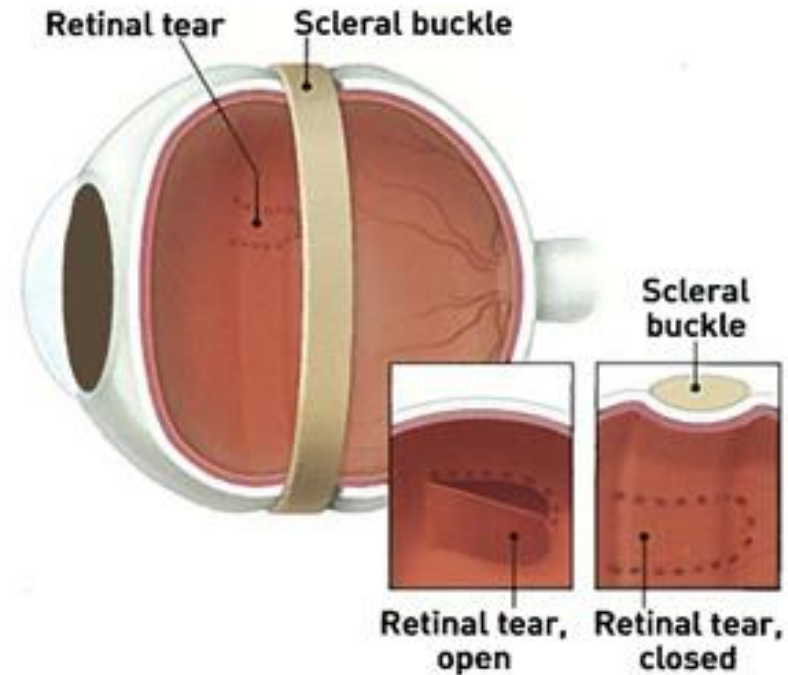
Head down position keeps bubble up against detached part of retina



2.RRD Surgery: Buckle

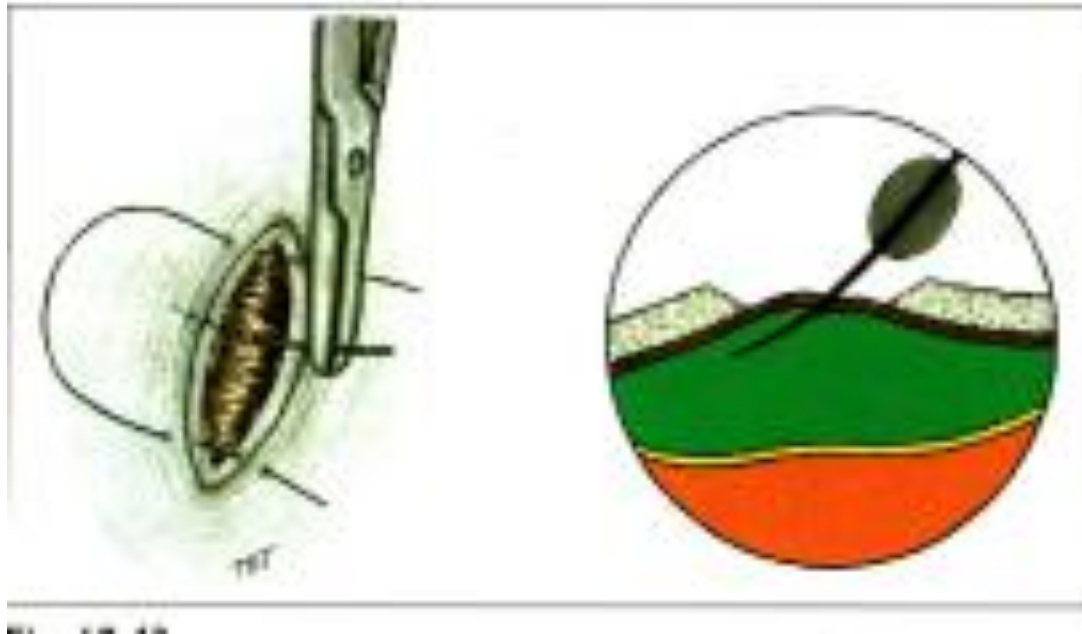
Aim of Scleral buckle:

- Close retina breaks
- ↓ dynamic traction



3.RRD Surgery: D-ACE

- **D**rain fluid-**A**ir-**C**ryotherapy-**E**xplant(buckle)
 - Aim: drain subretinal fluid in large detachment

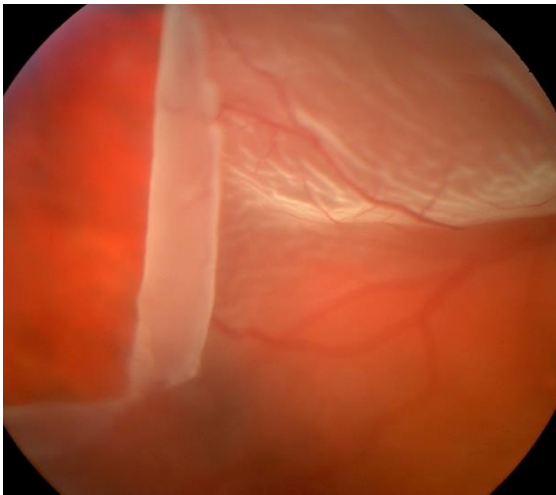


4. Pars Plana Vitrectomy (PPV)

- Indications of PPV in Rhegmatogenous RD
 - where breaks cannot be visualized
 - where buckle not suitable



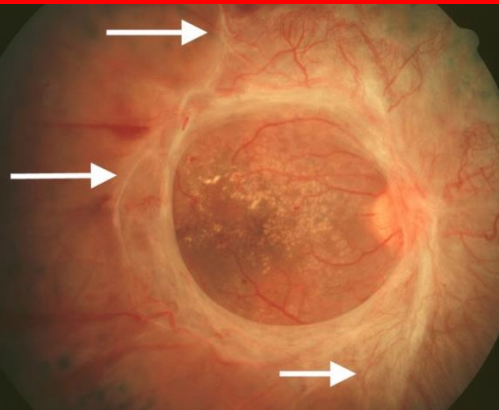
- Giant tears: $> 90^\circ$, large
- Posterior breaks: accessibility
- Proliferative Vitreoretinopathy (PVR): membranes



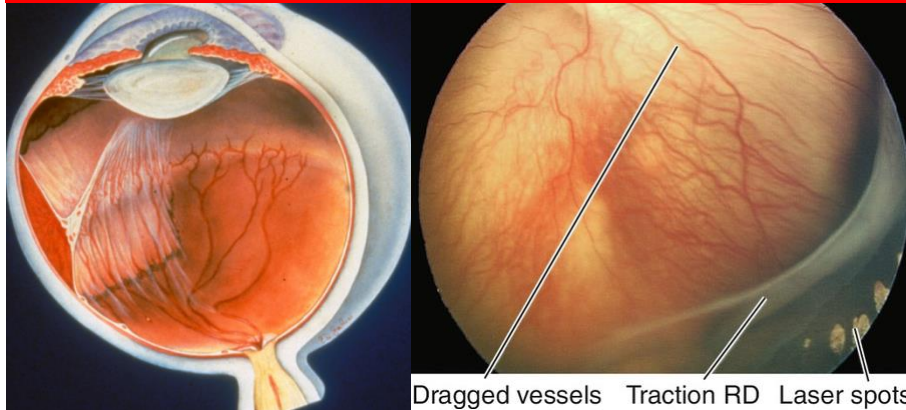
B. Tractional RD-main causes

- **Proliferative retinopathy**
 - Diabetes(VEGF).
 - Retinopathy of prematurity (ROP)
 - Sickle cell
 - PVR
- **Trauma of Posterior segment**
 - Blunt
 - Penetrating

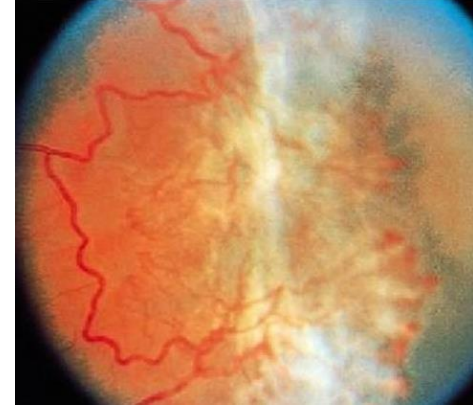
Diabetes -TRD



ROP-TRD: Preterm baby received Oxygen

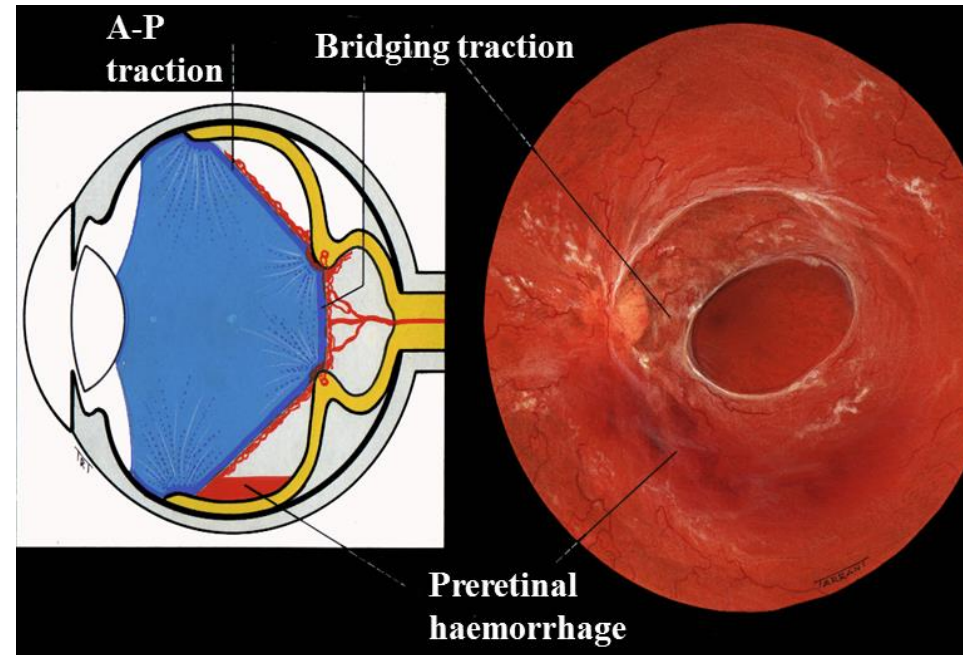
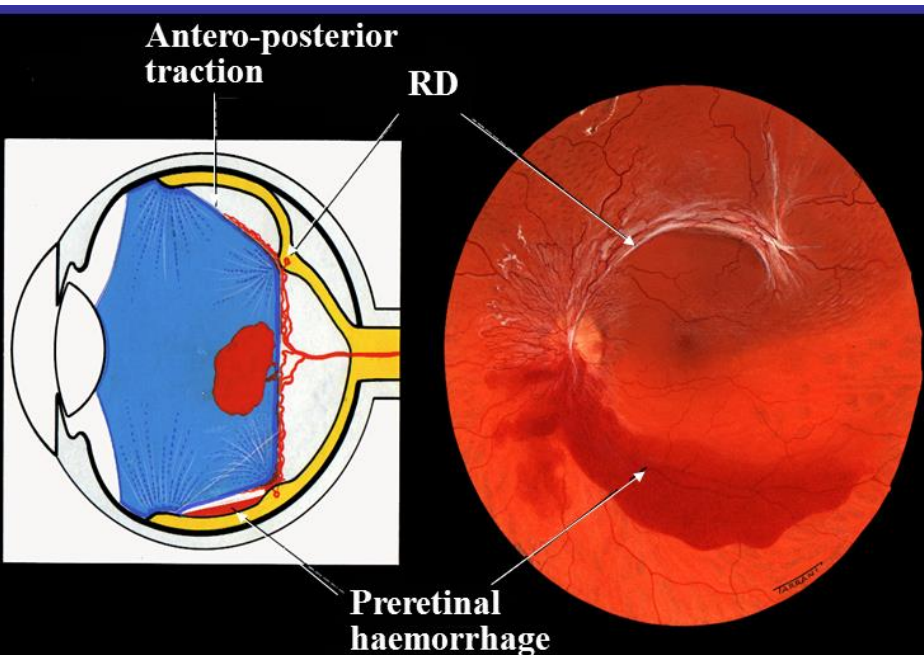


Sickle Cell-TRD

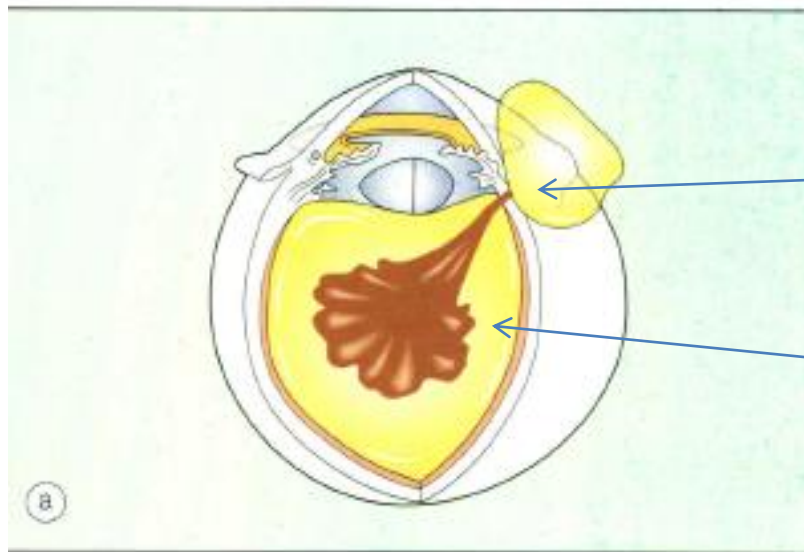


Traction RD-Pathogenesis

- Contraction of fibrovascular membranes over large areas of vitreoretinal attachment.

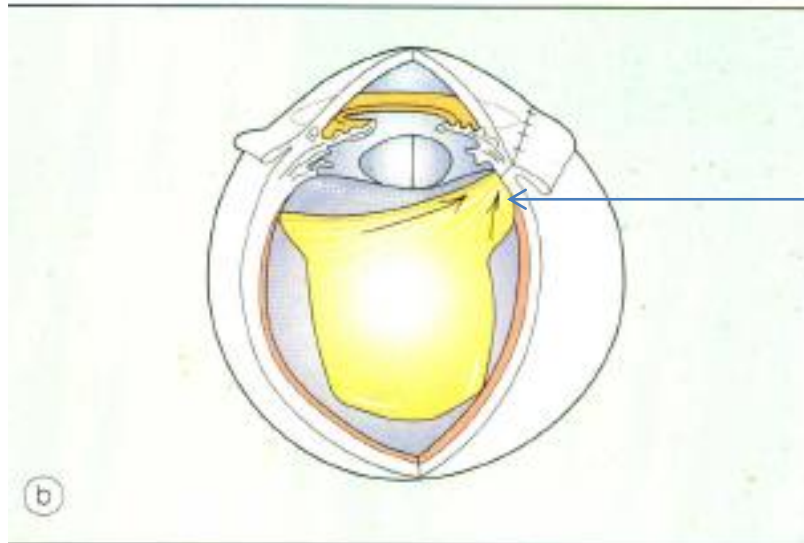


TRD in Traumatic Perforated globe



Vitreous incarceration

Vitreous
haemorrhage-
stimulus for
fibrovascular
proliferation



Anteroposterior
contraction.

Traction RD-Clinical Features

Symptoms

- Slowly progressive Visual field loss

Signs.

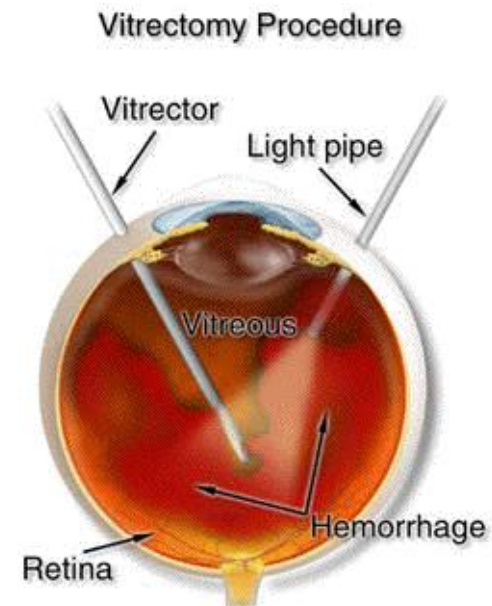
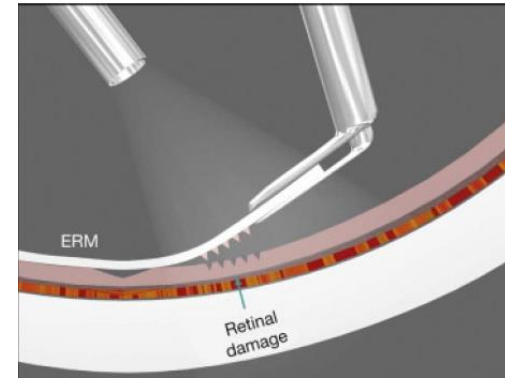
- **Concave** detachment
- **No retinal breaks**
 - ↓ Retinal mobility
 - No shifting fluid-“rigid”

Tractional RD-Surgery

Pars plana Vitrectomy + membrane peel + Gas or Oil:

- Diabetic retinopathy
 - with traction involving macula.
 - with combined Traction-Rhegmatogenous RD.
- Prevention of TRD after trauma.
- Late TRD after IOFB or retinal incarceration.

Traction RD-Pars Plana Vitrectomy



PPV-Tamponading agents

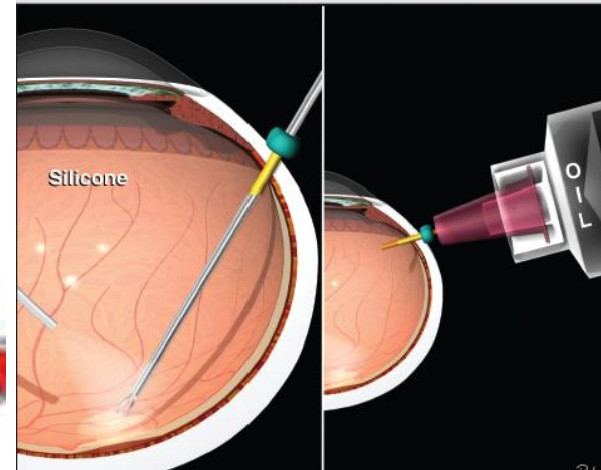
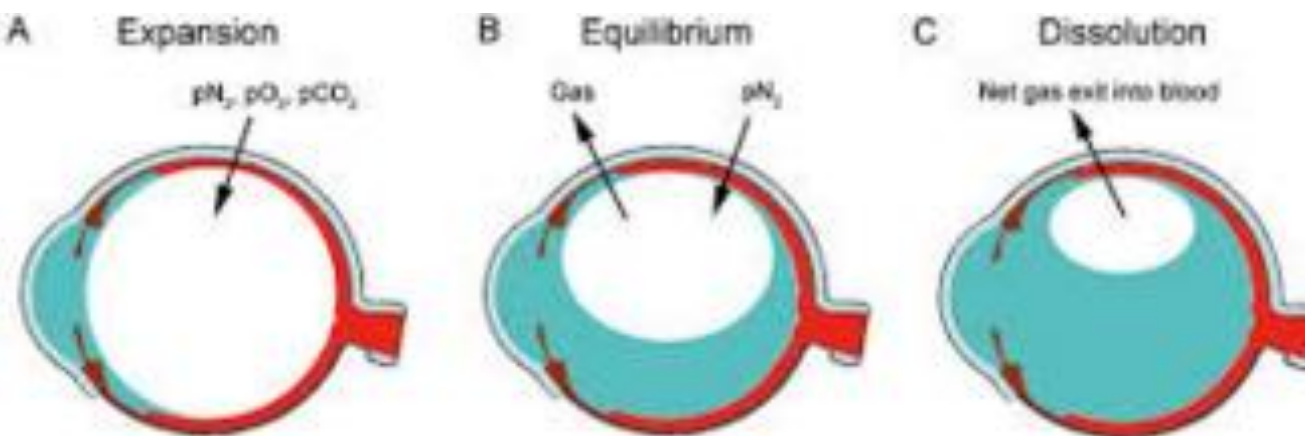
- Expanding Gases:

Strictly Do NOT fly!

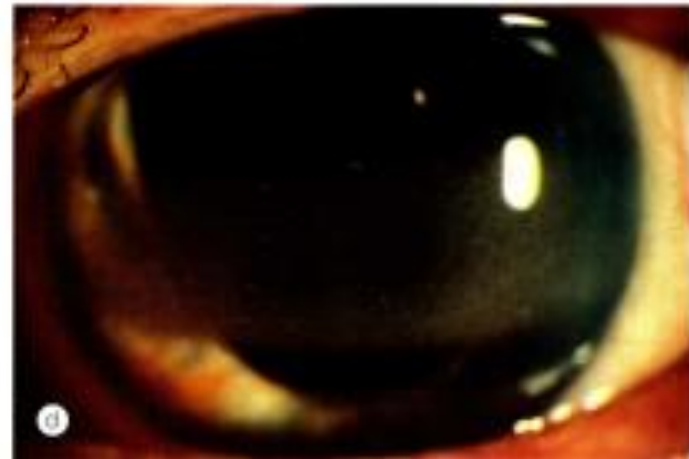
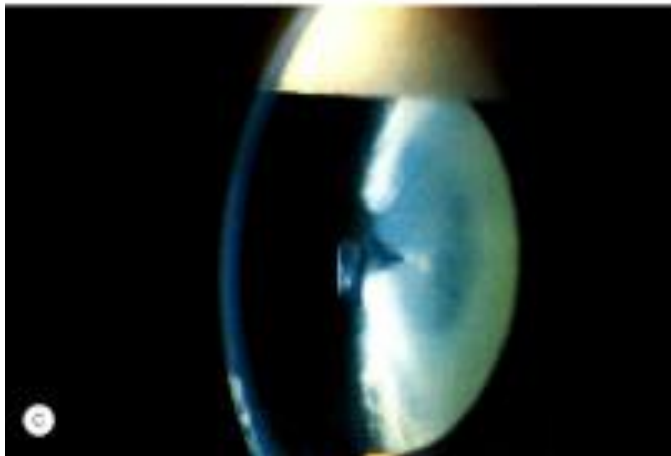
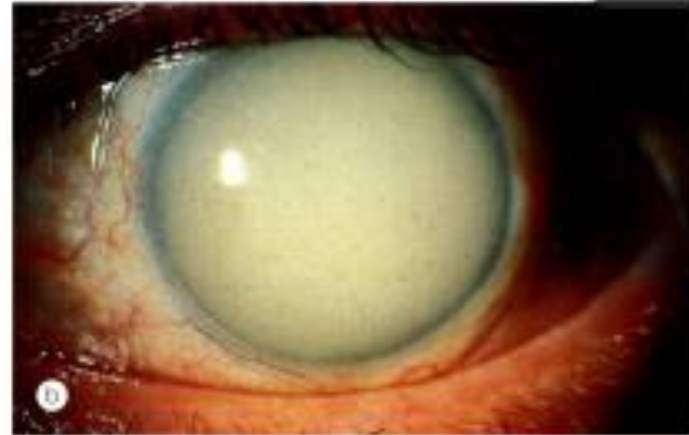
- SF_6 (Sulfur hexafluoride)
- C_2F_6 (Hexafluoroethane)
- C_3F_8 (Octafluoropropane)

- Silicone oil

- Allow to fly, no effect
- Remove after 3 months



PPV-Complications of silicon oil



a. Oil in AC. b. Emulsification. c. Inverted hypopyon. d. Band keratopathy

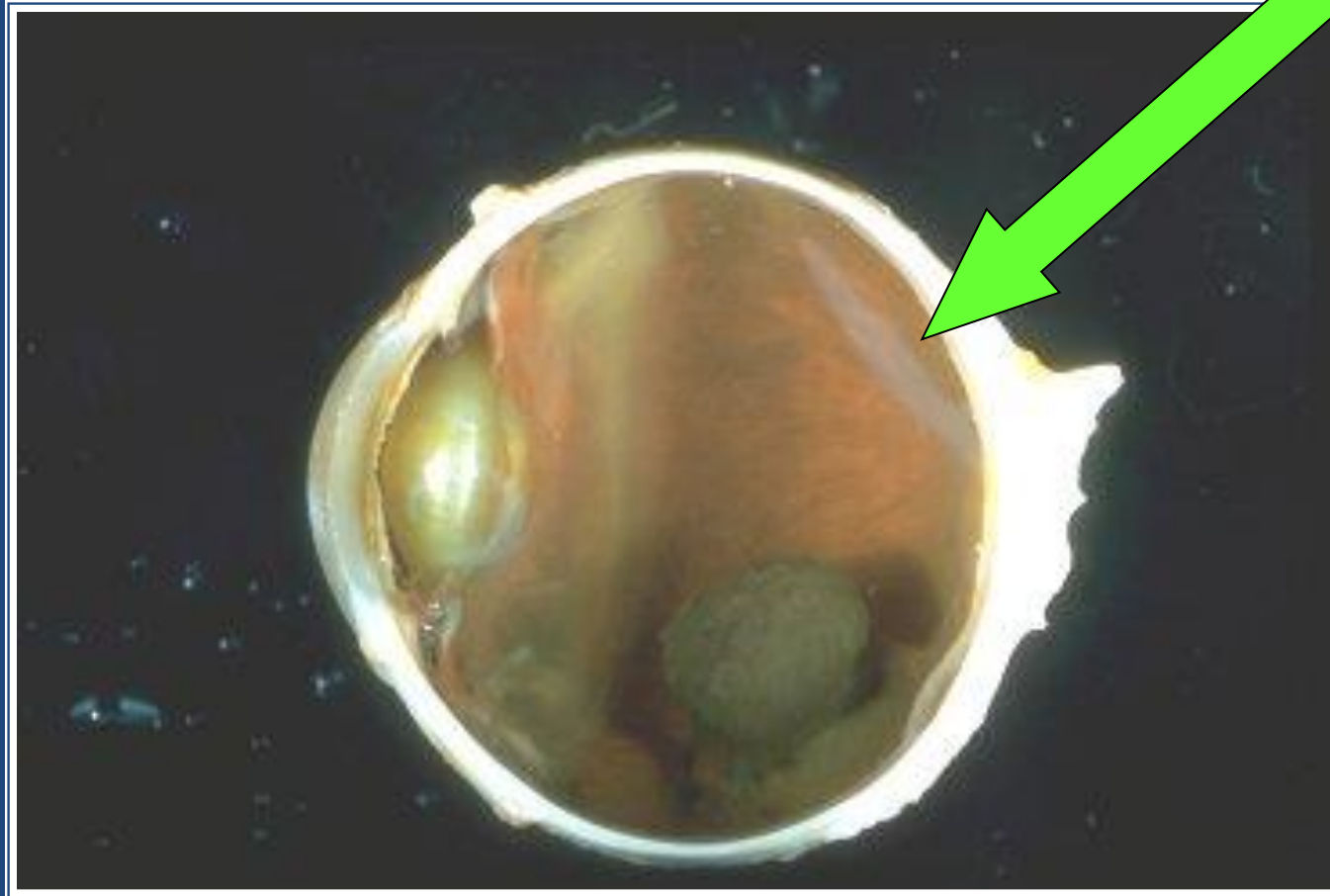
C. Exudative Retina Detachment

- Pathogenesis.
 - Accumulation of Sub retinal fluid in the absence of retinal breaks or traction.
 - Inflammatory or neoplastic diseases of the NSR, RPE or choroid.

Exudative retinal detachment

Choroidal melanoma :

Exudative
detachment:



Pathogenesis and Causes of Exudative RD

- Damage to RPE by subretinal disease
- Passage of fluid derived from choroid into subretinal space

1. Choroidal tumours

- Primary
- Metastatic

2. Intraocular inflammation

Posterior scleritis

3. Systemic

- Toxaemia of pregnancy
- Hypoproteinaemia
- Hypertensive Choroidopathy

4. Iatrogenic

- RD surgery
- Excessive retinal photocoagulation

5. Miscellaneous

- Choroidal neovascularization
- Uveal effusion syndrome

Diagnosis of ERD

Symptoms

- Visual Field defects

Signs.

- Smooth convex.
- Shifting fluid
- Associated cause of ERD
- **Leopard spots**-resolved



Management of Exudative RD

Treat the cause!

- Inflammation- **Steroids.**
- Bullous central serous retinopathy-argon **laser**
- Iatrogenic: RD surgery,PRP-spontaneous resolution
- Choroidal neovascularization- **Anti-VEGF**
 - Avastin or Lucentis