RETINAL DETACHMENT

Dr Sanaullah Jan

16th Khyber EyeCon 2023 in conjunction with 7th PVRS conference

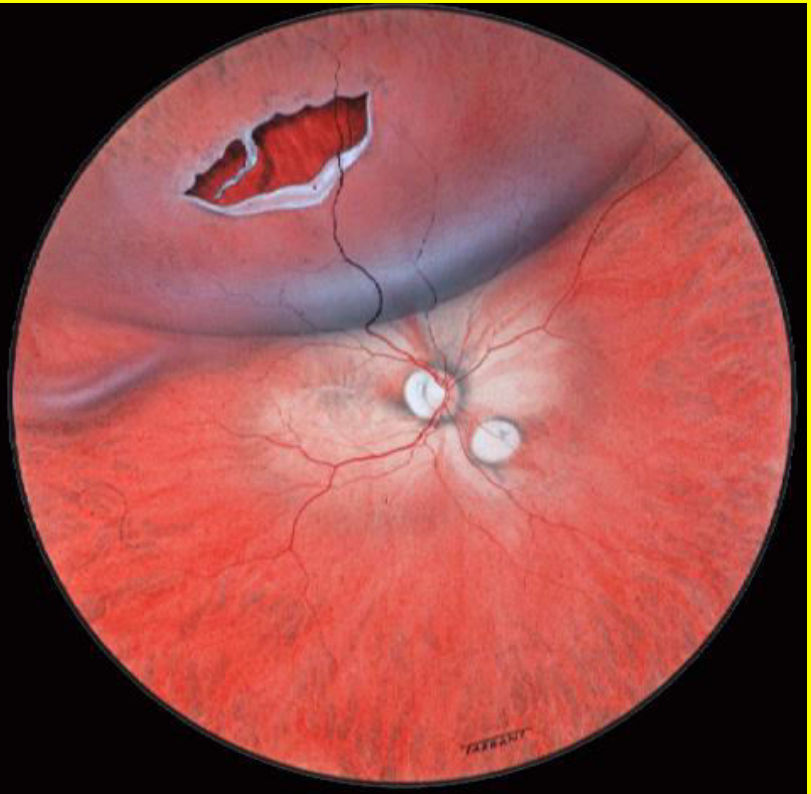
- 7th – 9th Feb 2025
- Serena Hotel, Peshawar

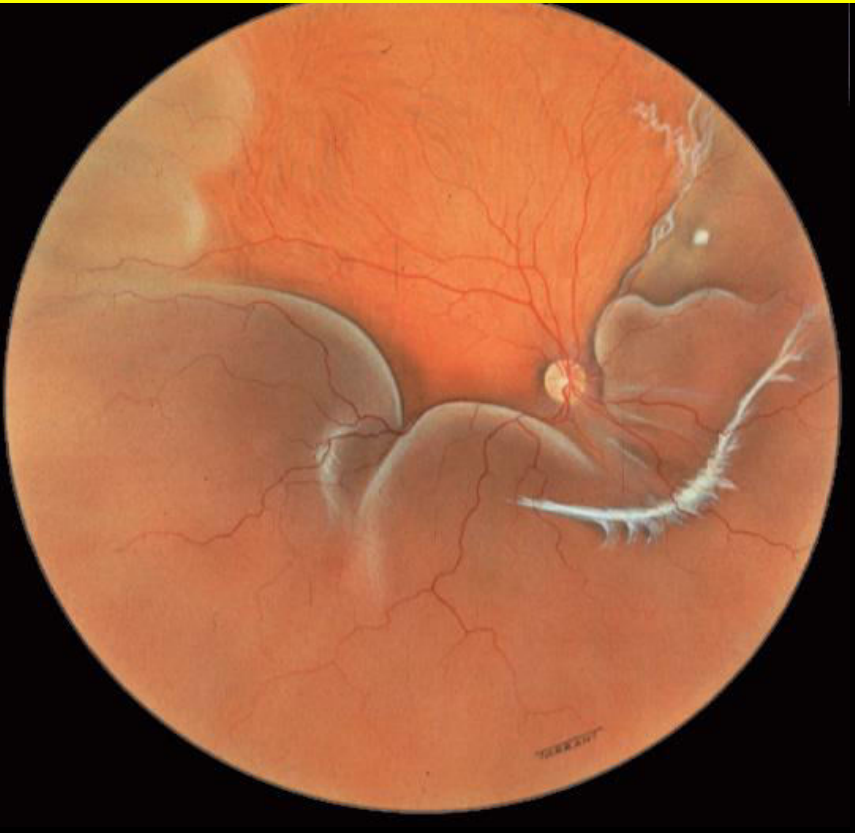
- Under Graduate Session
- Poster Presentation

Best Presentation/Poster Award

Retinal detachment (RD)

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





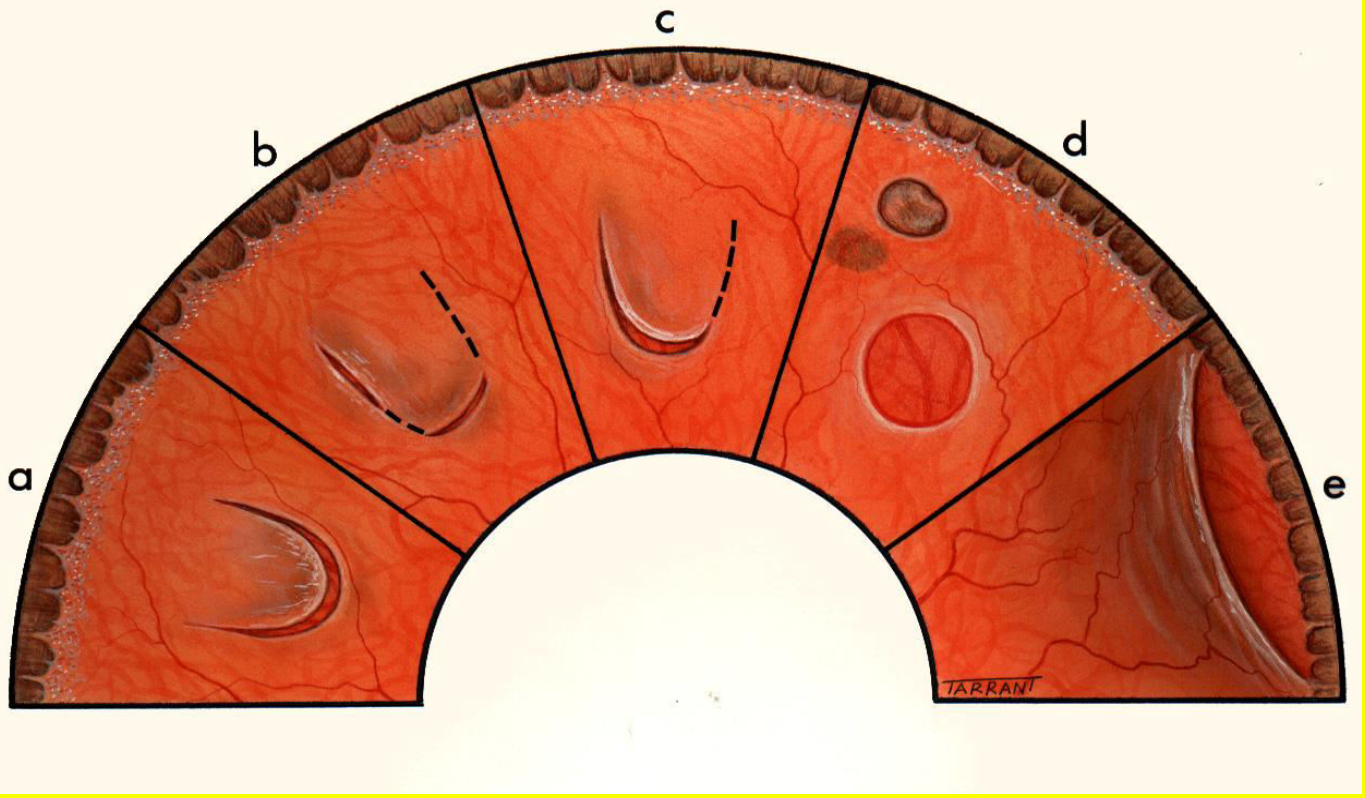
Rhegmatogenous - caused by a retinal break

Non-rhegmatogenous - tractional or exudative

Definition and classification

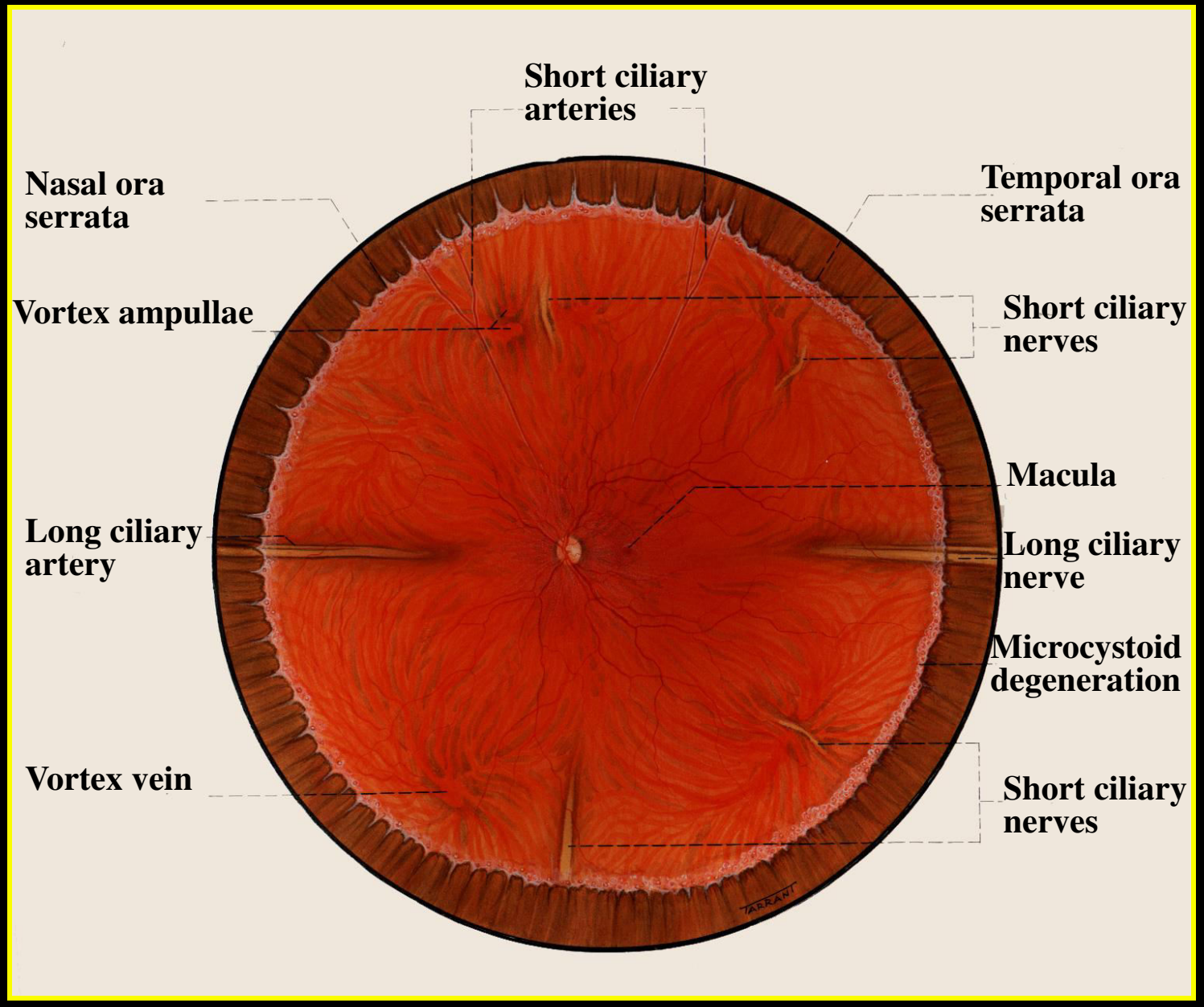
- Break - full-thickness defect in sensory retina
- Hole - caused by chronic retinal atrophy
- Tear - caused by dynamic vitreoretinal traction

Morphology of tears

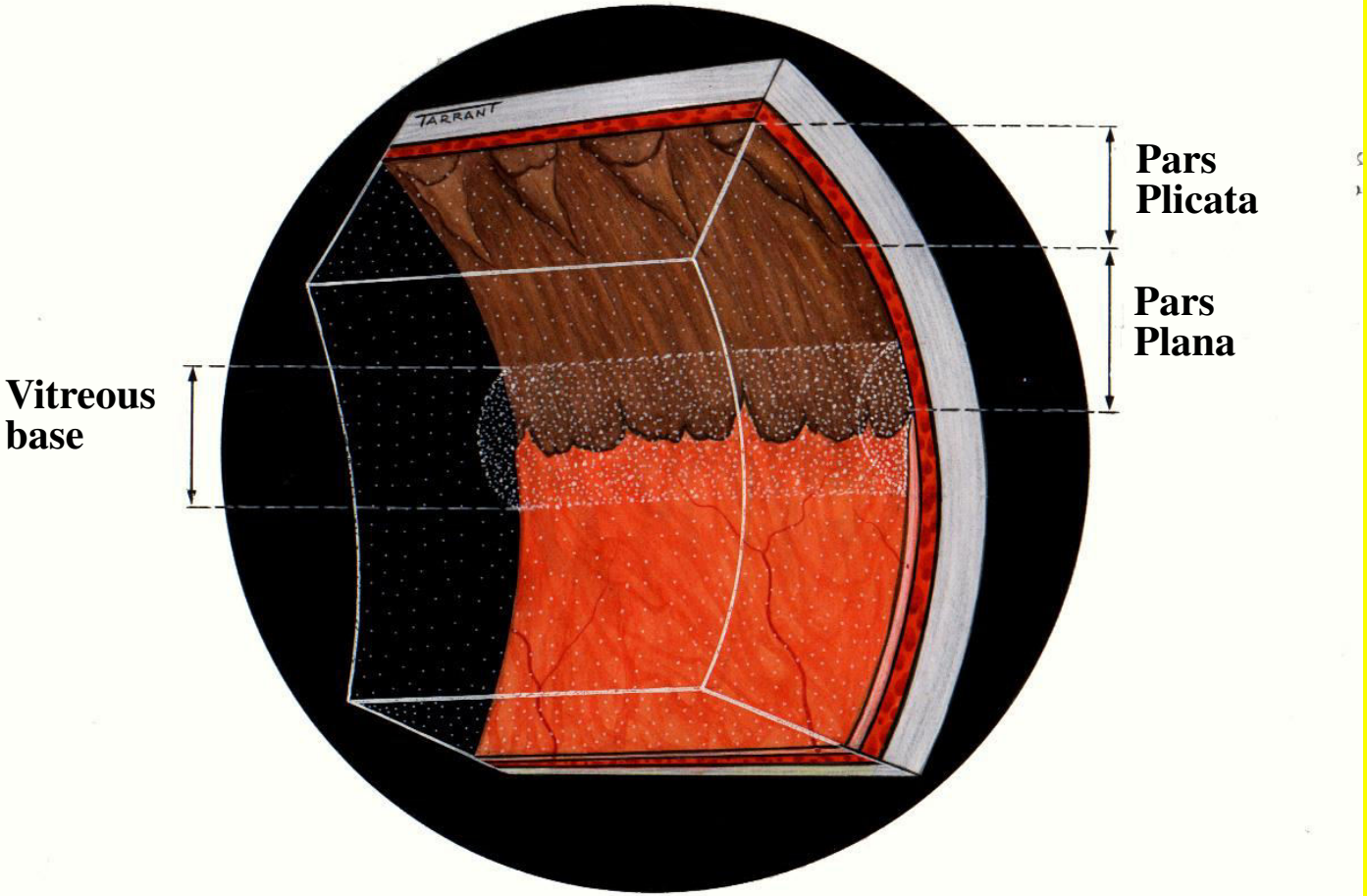


a. Complete U-tear
b. Linear
c. Incomplete L-shaped
d. Operculated
e. Dialysis

Normal anatomical landmarks



Anatomy of vitreous base



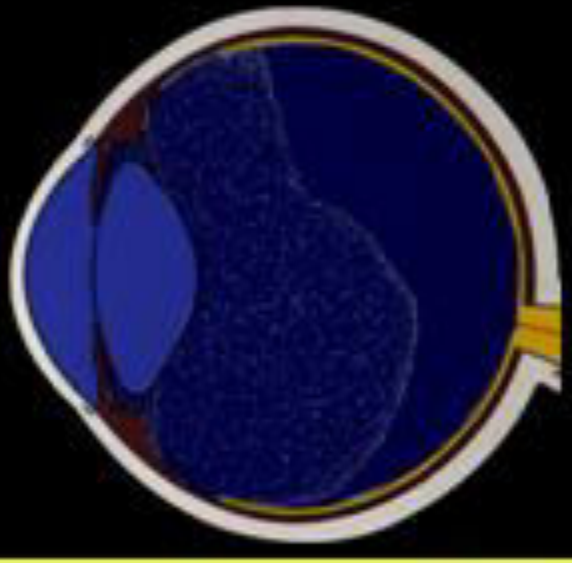
- 3-4 mm wide zone straddling ora serrata
- Strong adhesion of cortical vitreous
- Anterior limit of posterior vitreous detachment

Pathogenesis of rhegmatogenous RD

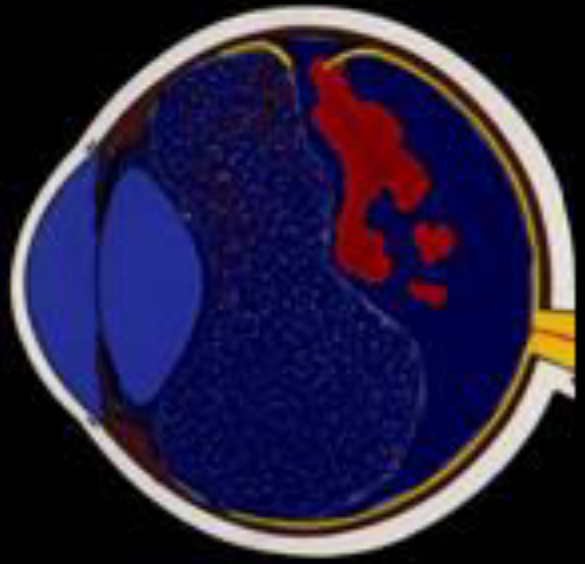
Two components for retinal break formation

- Acute posterior vitreous detachment (PVD)
- Predisposing peripheral retinal degeneration

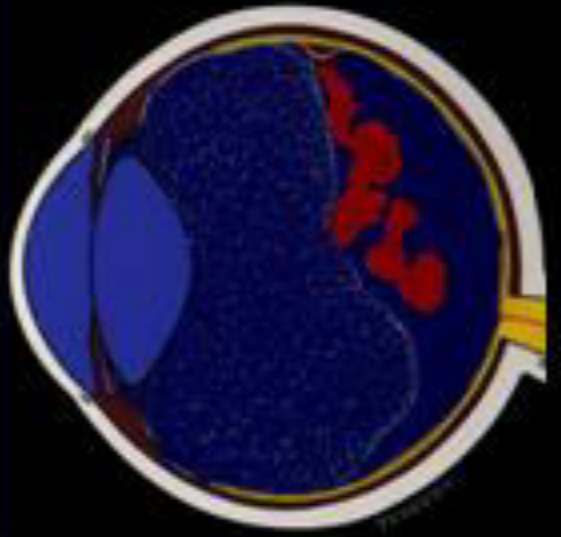
Possible sequelae of acute PVD



Uncomplicated PVD (85%)



Retinal tear formation and haemorrhage (10-15%)



Avulsion of retinal vessel and haemorrhage (uncommon)

Retinal Detachment

Annual incidence 10/10,000

Bilaterality 10 %

Symptoms:

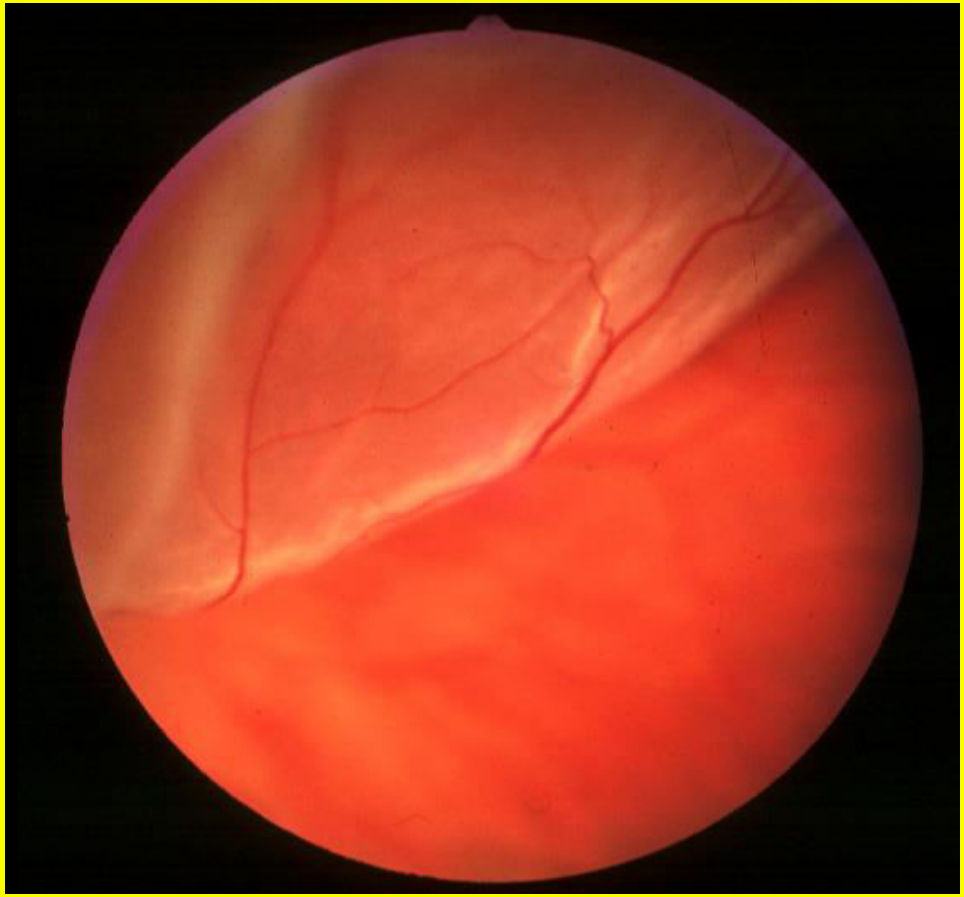
- Flashes
- Floaters
- Visual field defect
- Visual acuity

Retinal Detachment

- BCVA
- Visual field analysis
- A/C (cells+)
- Tobacco's dust
- PVD (Weis ring)
- IOP (hypotony/raised)

Fresh rhegmatogenous RD – signs

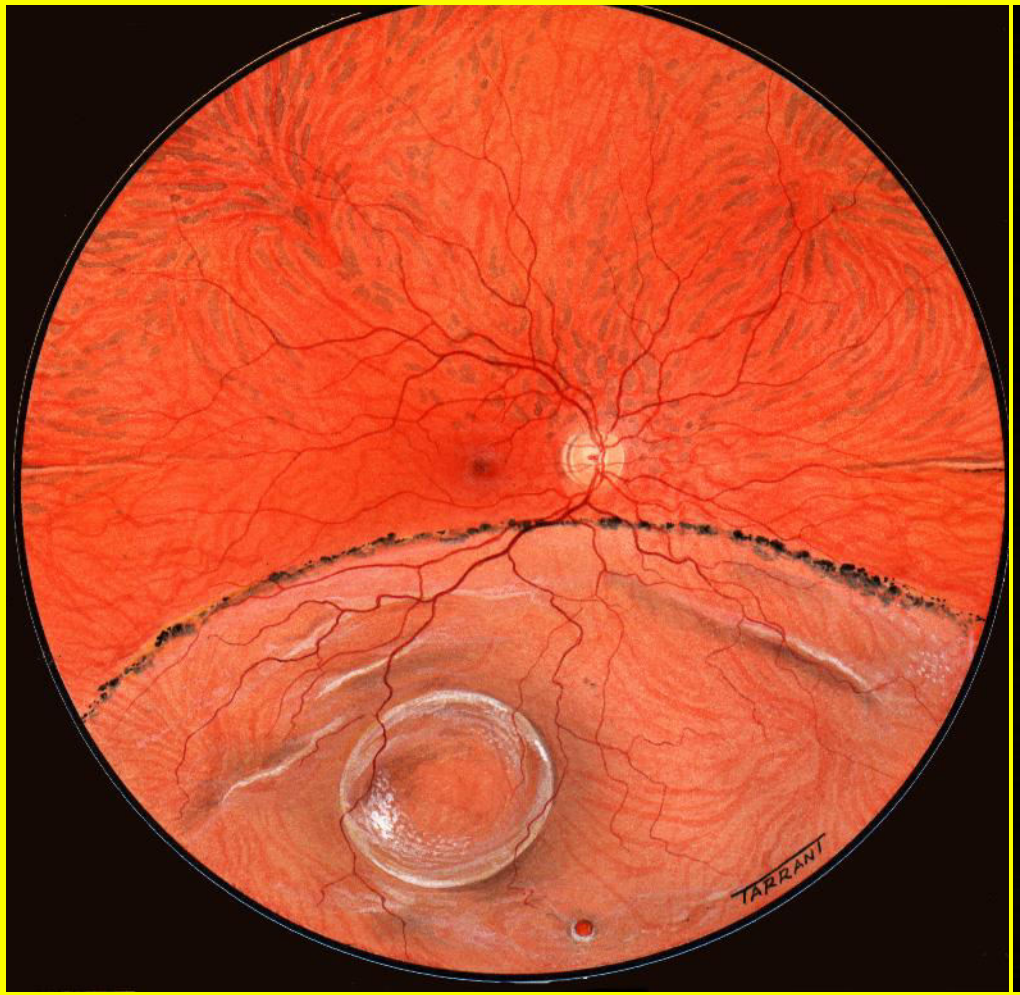
- Annual incidence - 1:10,000 of population
- Eventually bilateral in 10%

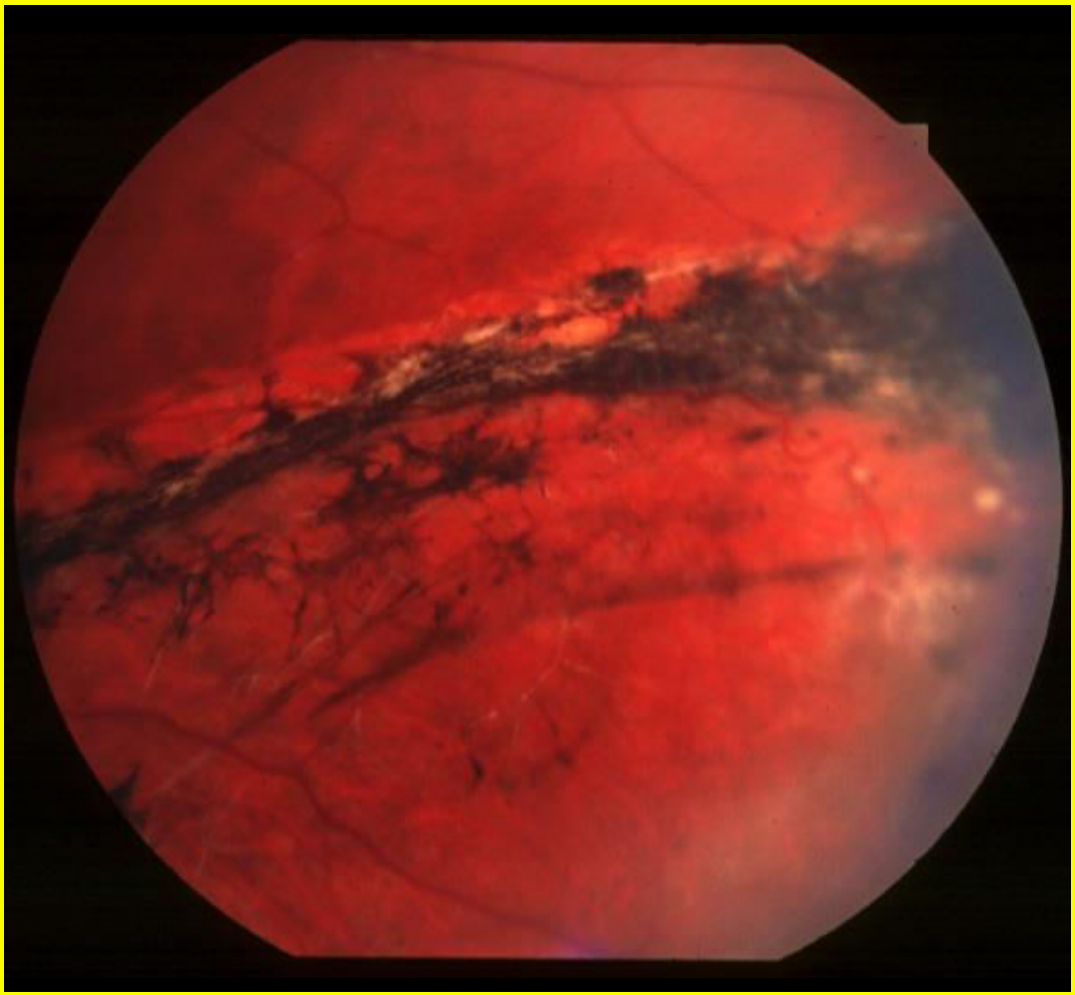


- Convex, mobile elevation extending to ora serrata and disc
- Slightly opaque with dark blood vessels

- Loss of choroidal pattern
- Retinal breaks

Longstanding rhegmatogenous RD - signs

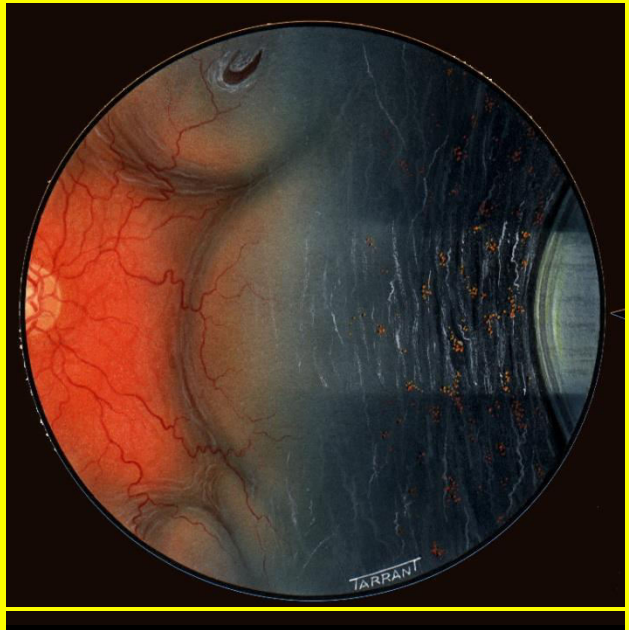
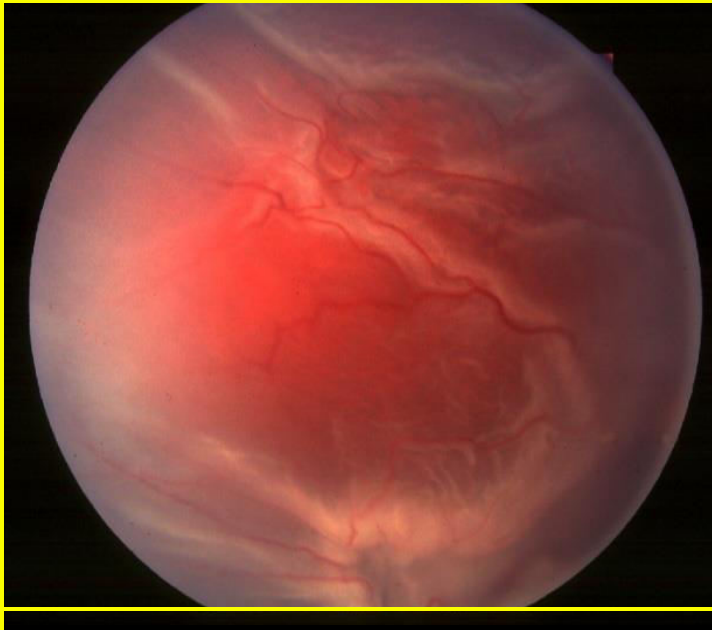
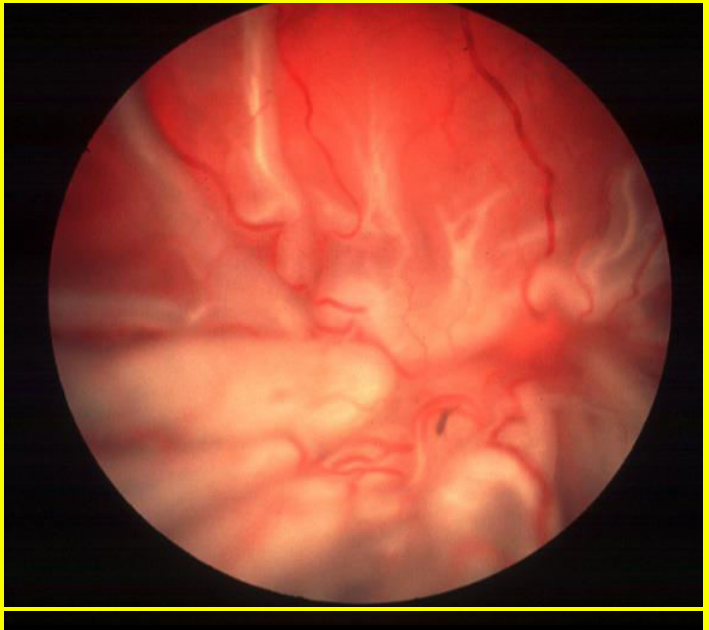




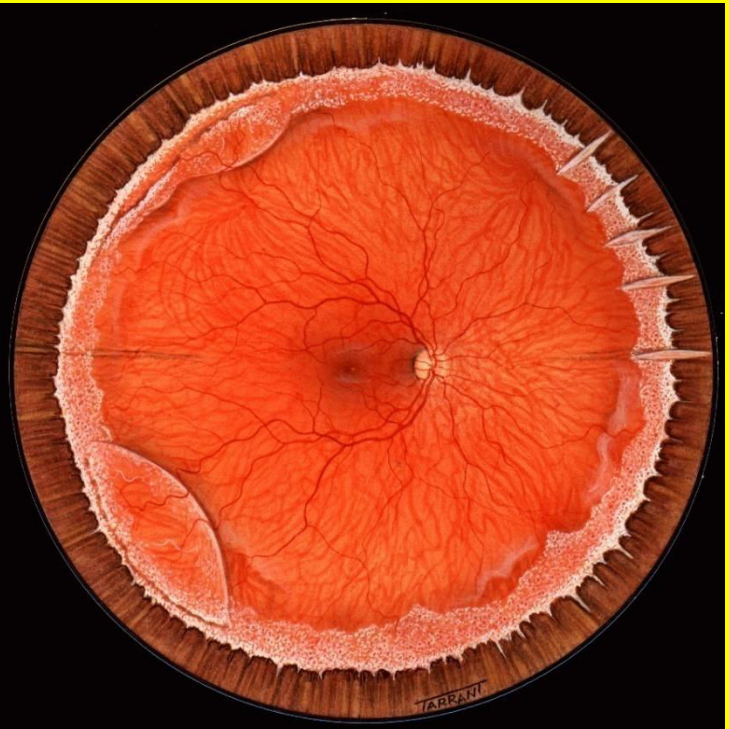
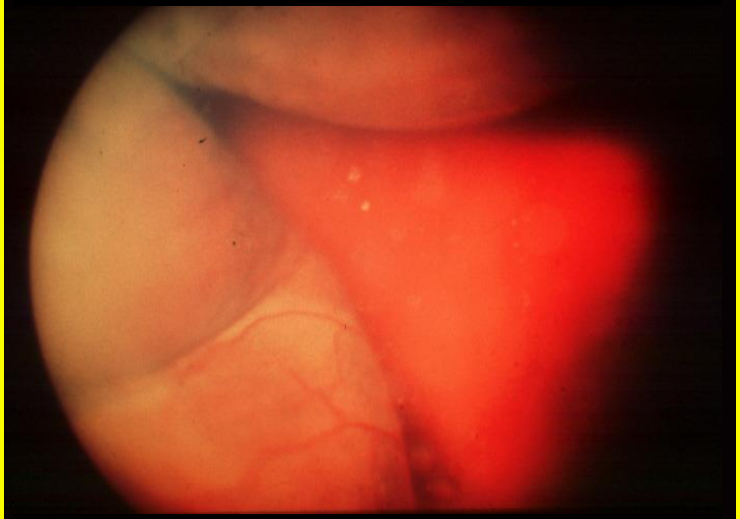
- Frequently inferior with small holes
- Very thin retina
- Secondary intraretinal cysts

- Demarcation lines (high-water marks)

Proliferative vitreoretinopathy

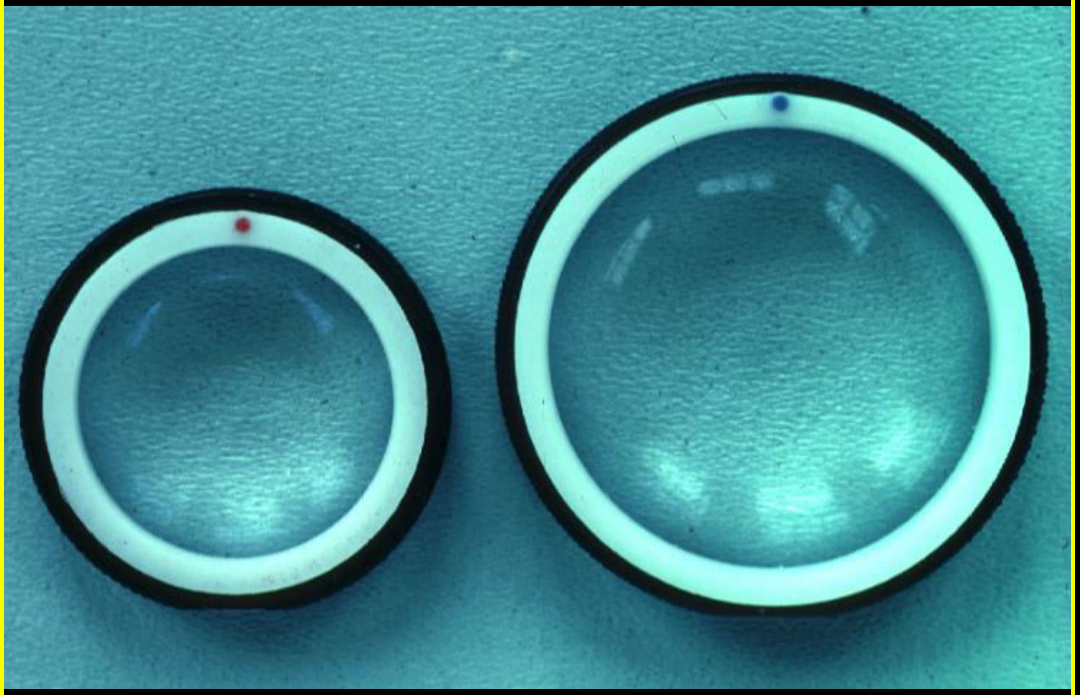
Grade A (minimal)	Grade B (moderate)	Grade C (severe)
		
• Vitreous haze and tobacco dust	• Retinal wrinkling and stiffness • Rolled edges of tears	• Rigid retinal folds • Vitreous condensations and strands

Differential diagnosis of RD

Degenerative retinoschisis	Choroidal detachment	Uveal effusion syndrome
		
• Frequently bilateral • Smooth, thin and immobile • Occasionally breaks in one or both layers	• Associated with hypotony • Unilateral, brown, smooth, solid and immobile • Ora serrata may be visible	• Idiopathic • Rare, unilateral • Combined choroidal and exudative detachments

Indirect ophthalmology

Condensing lenses

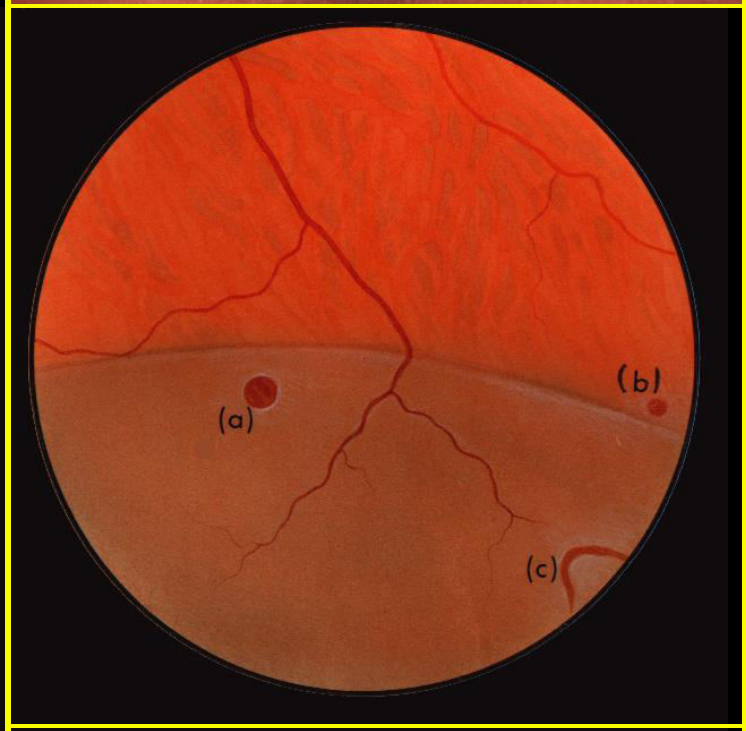


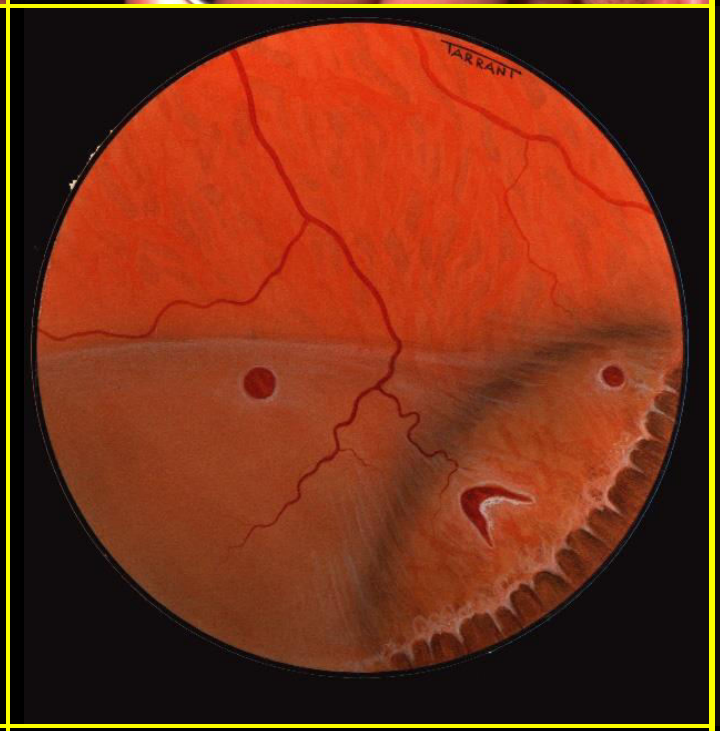
- The higher the power, the less the magnification, the shorter the working distance but the greater the field of view

Technique

- Keep lens parallel to patient's iris plane
- Avoid tendency to move towards patient
- Ask the patient to move eyes and head into optimal positions for examination

Scleral indentation





Retinal breaks in detached retina without indentation

Enhanced visualization of breaks with indentation

Fundus drawing

Technique

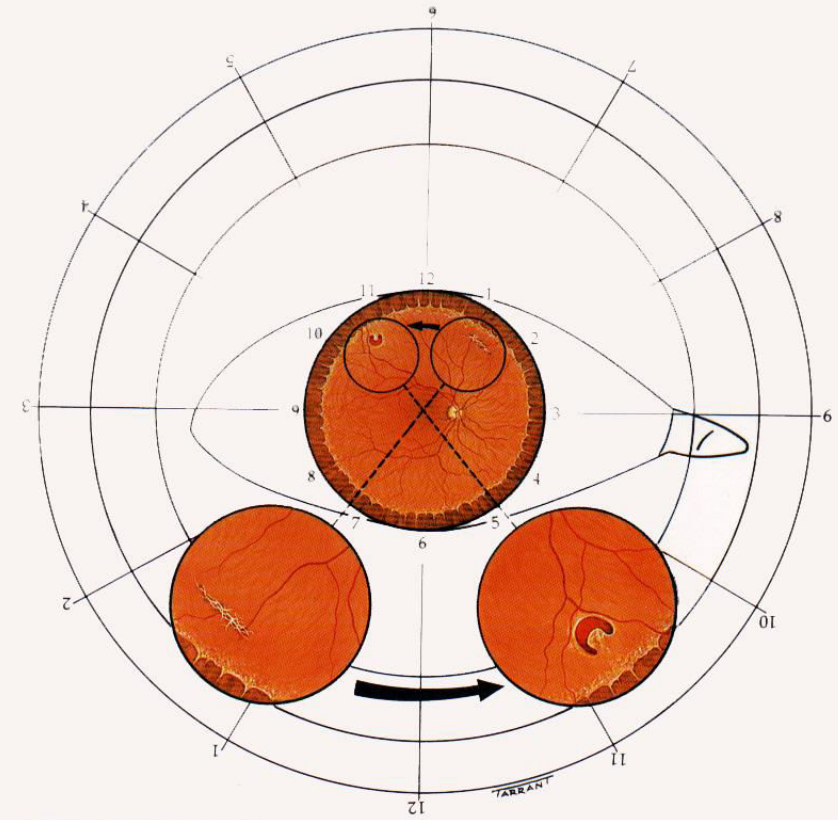
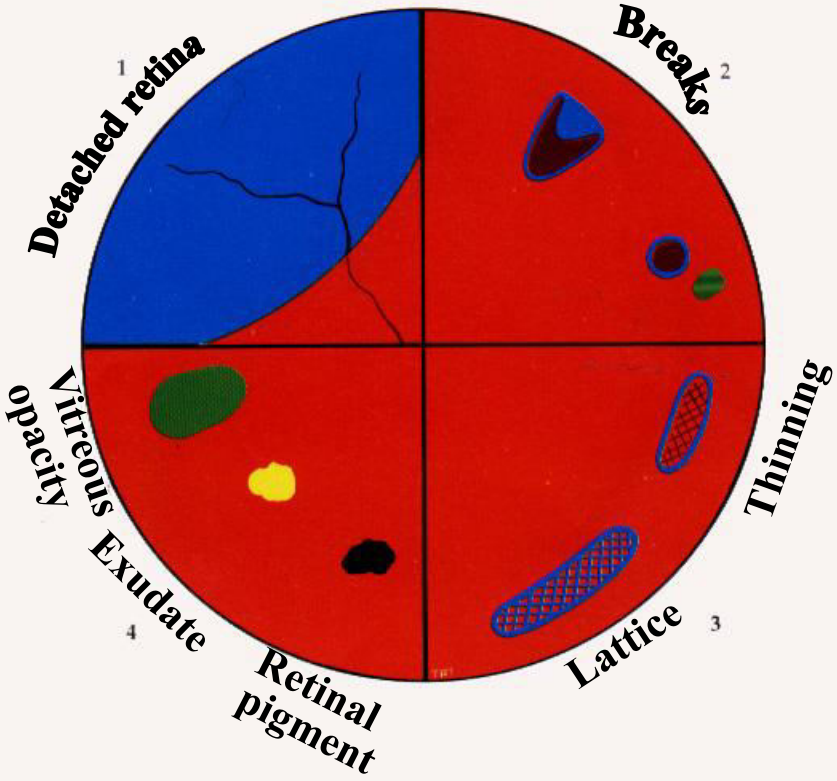


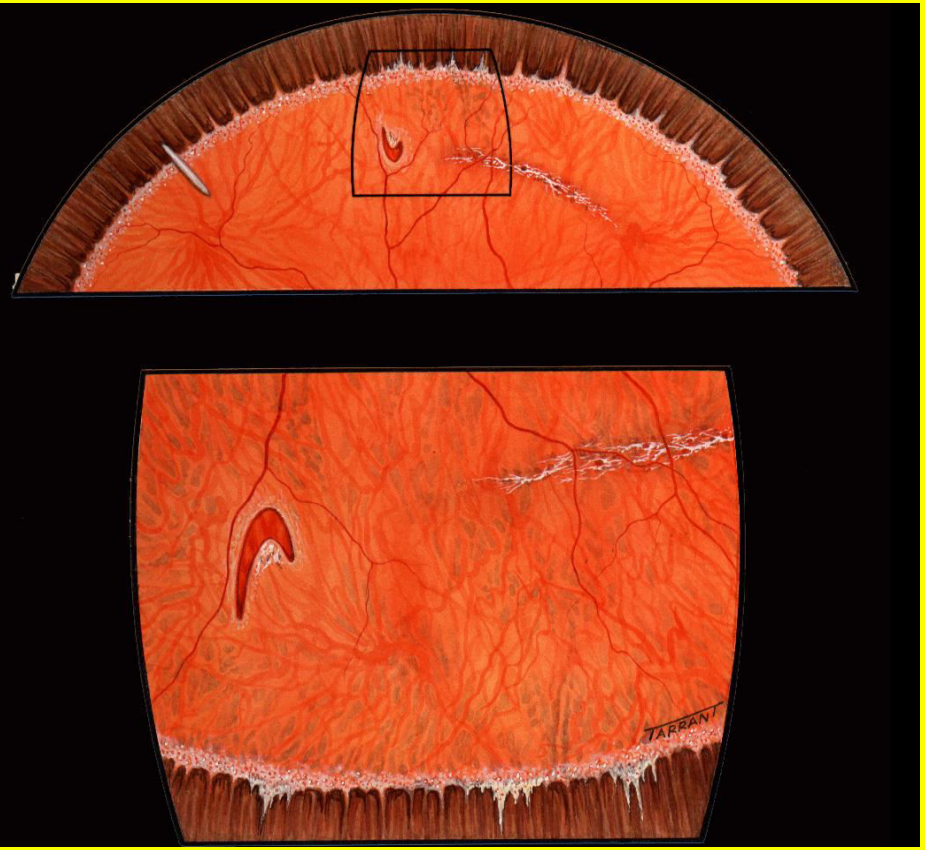
Figure 9.6 Drawing retinal lesions

Colour code



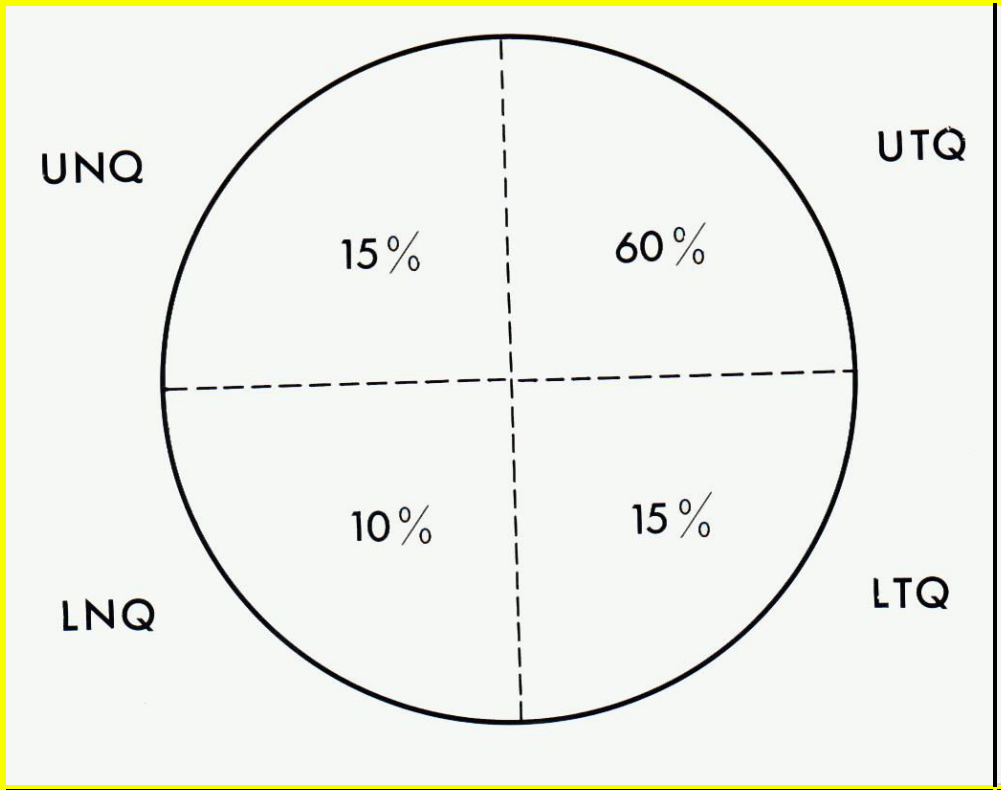
- Place chart upside down
- Draw what you see (Quadrant near you)

Slitlamp biomicroscopy

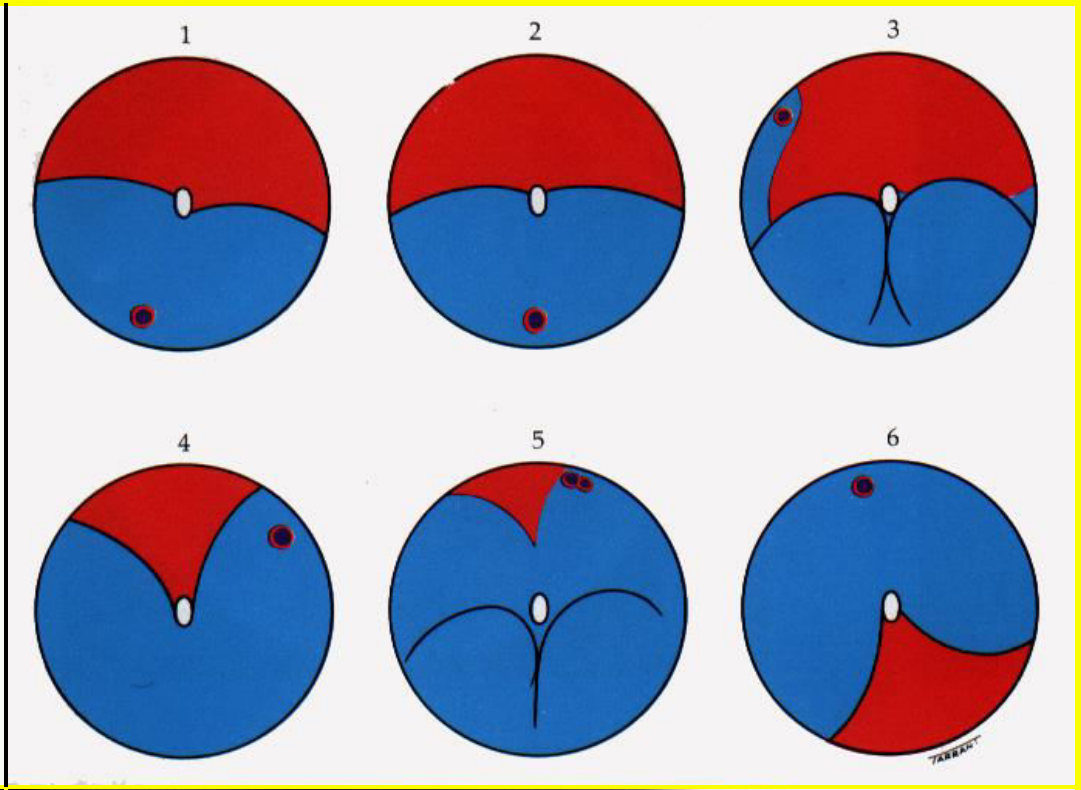
Goldmann triple-mirror lens	View of peripheral fundus
	
• Equatorial mirror (largest and oblong) - from 30 degree to equator • Peripheral mirror (square) - from equator to ora serrata • Gonioscopic (smallest)	• Vertical meridian's Image is upside down But not laterally reversed

Primary retinal break

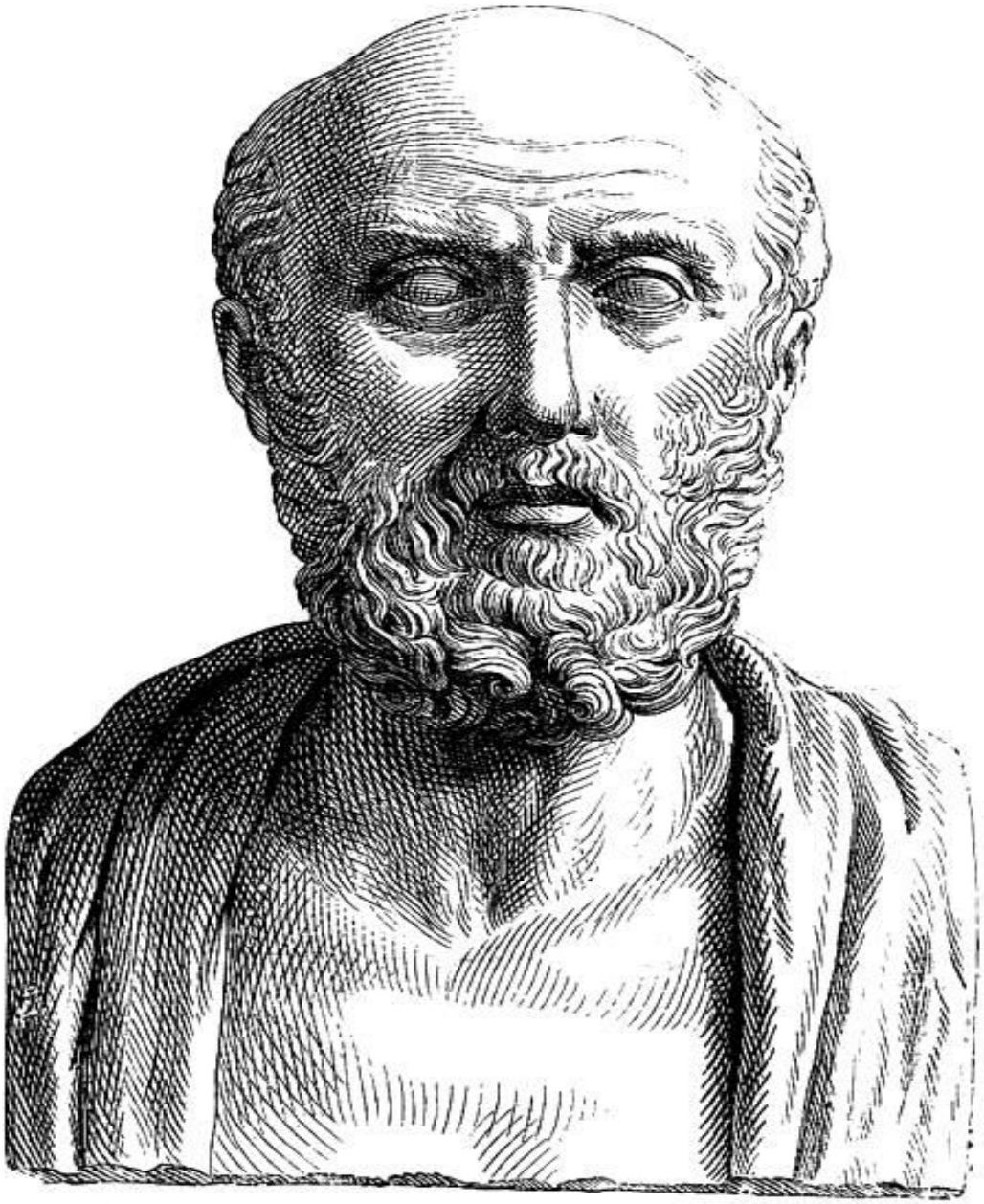
It is responsible for RD and determines configuration of SRF

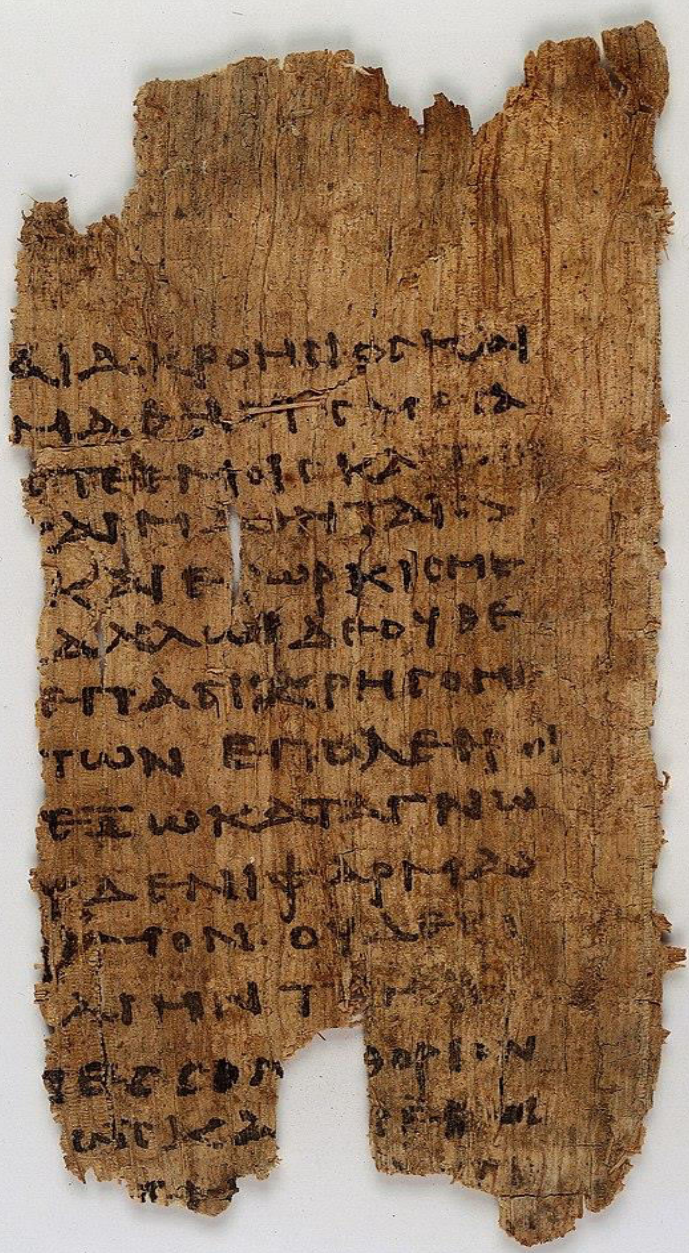


Quadratic distribution of breaks in eyes with RD



Configuration of SRF in relation to primary break

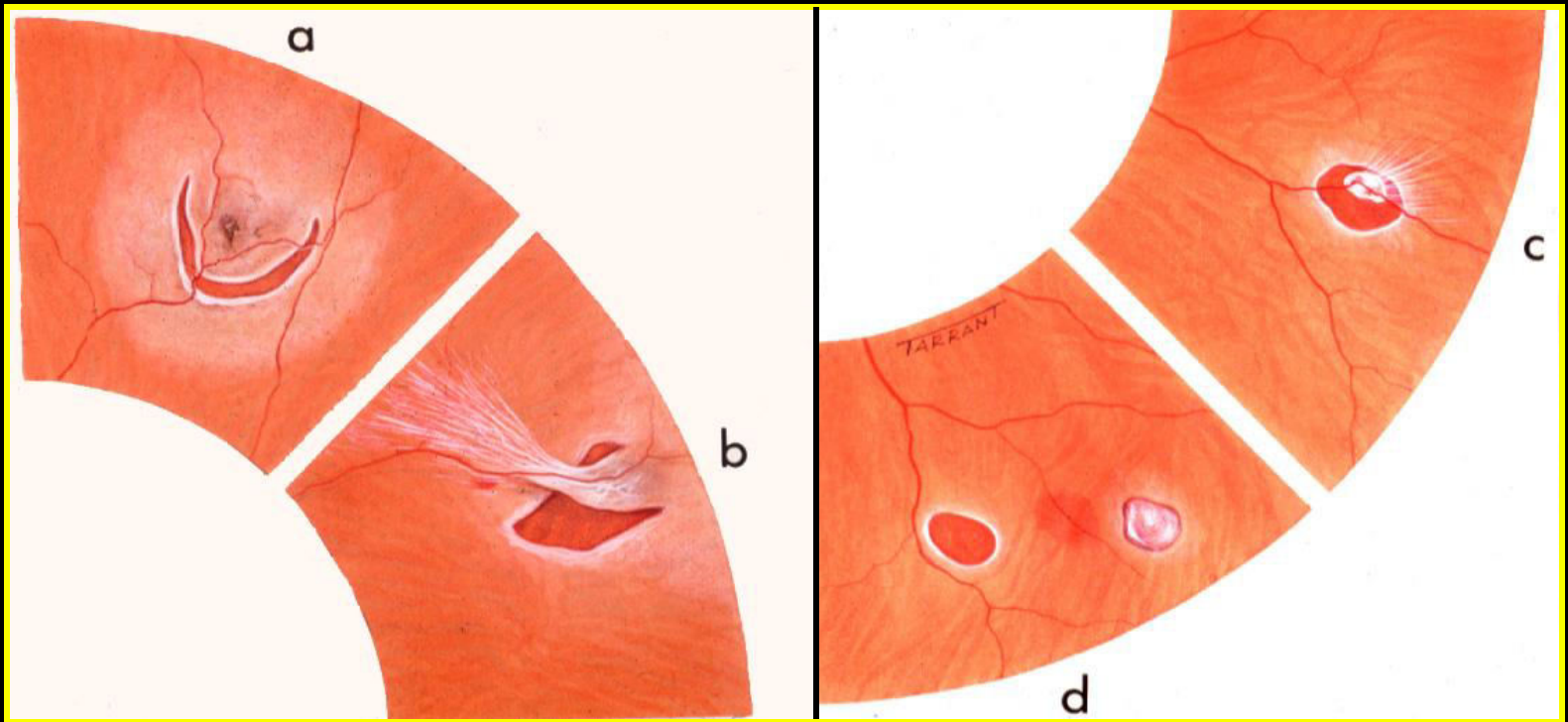




PROPHYLAXIS OF RHEGMATOGENOUS RETINAL DETACHMENT

1. **Retinal breaks**
2. **Predisposing degenerations**
   - Lattice
   - Snailtrack
   - White-without-pressure
3. **Treatment modalities**
   - Laser photocoagulation
   - Cryotherapy
4. **Benign peripheral degenerations**

Retinal breaks



a - Large U-tear with
‘ subclinical RD ’
- treat

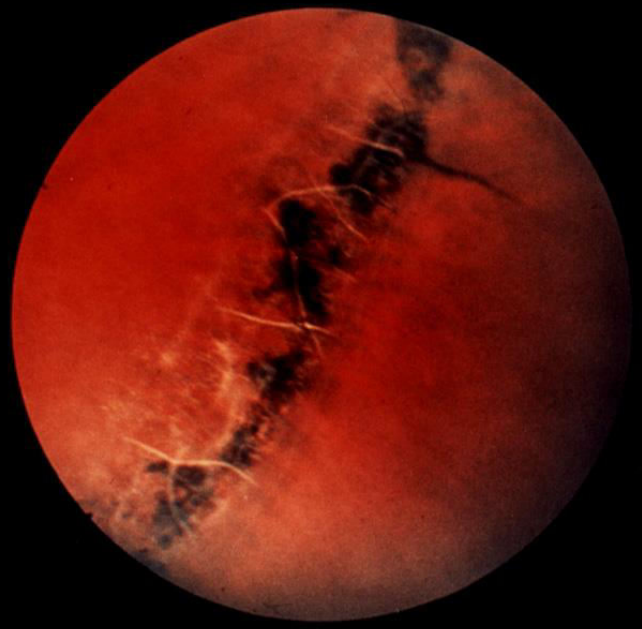
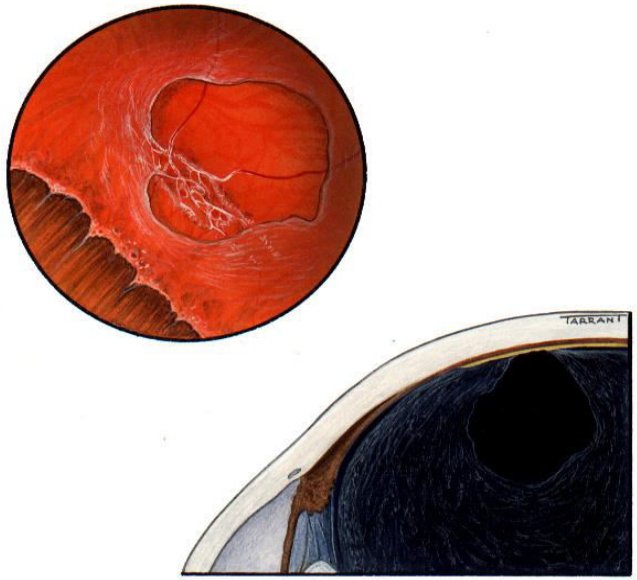
b - Large symptomatic U-tear
- treat

c - Operculated tear bridged by blood vessel
- treat

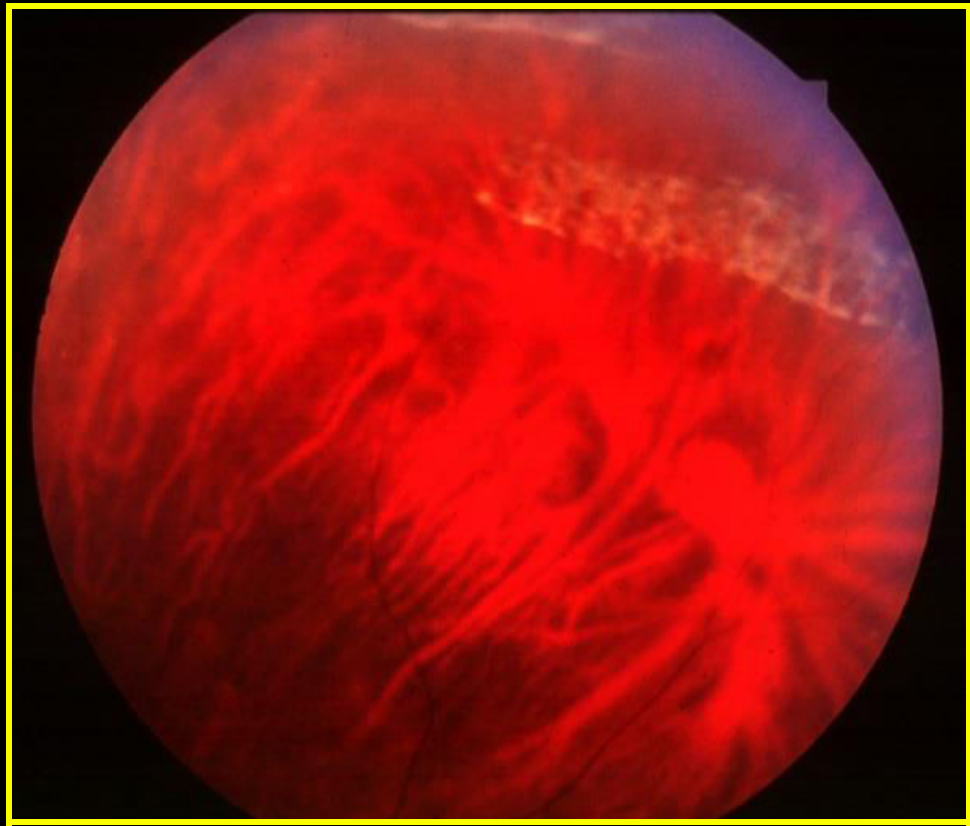
d - Asymptomatic operculated tear
- do not treat

Typical lattice degeneration

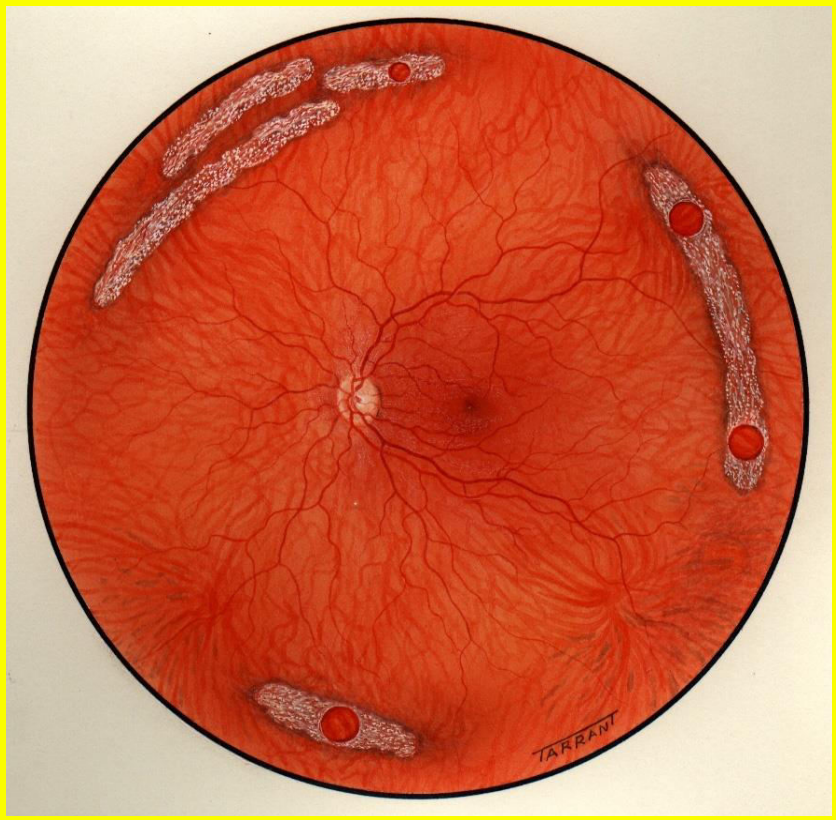
- Present in about 8% of general population
- Present in about 40% of eyes with RD

Retina	Vitreous
	
• Spindle-shaped islands of retinal thinning • Network of white lines within islands • Variable associated RPE changes • Small round holes within lesions are common	• Overlying vitreous liquefaction • Exaggerated attachments around margin of lesion

Snailtrack degeneration



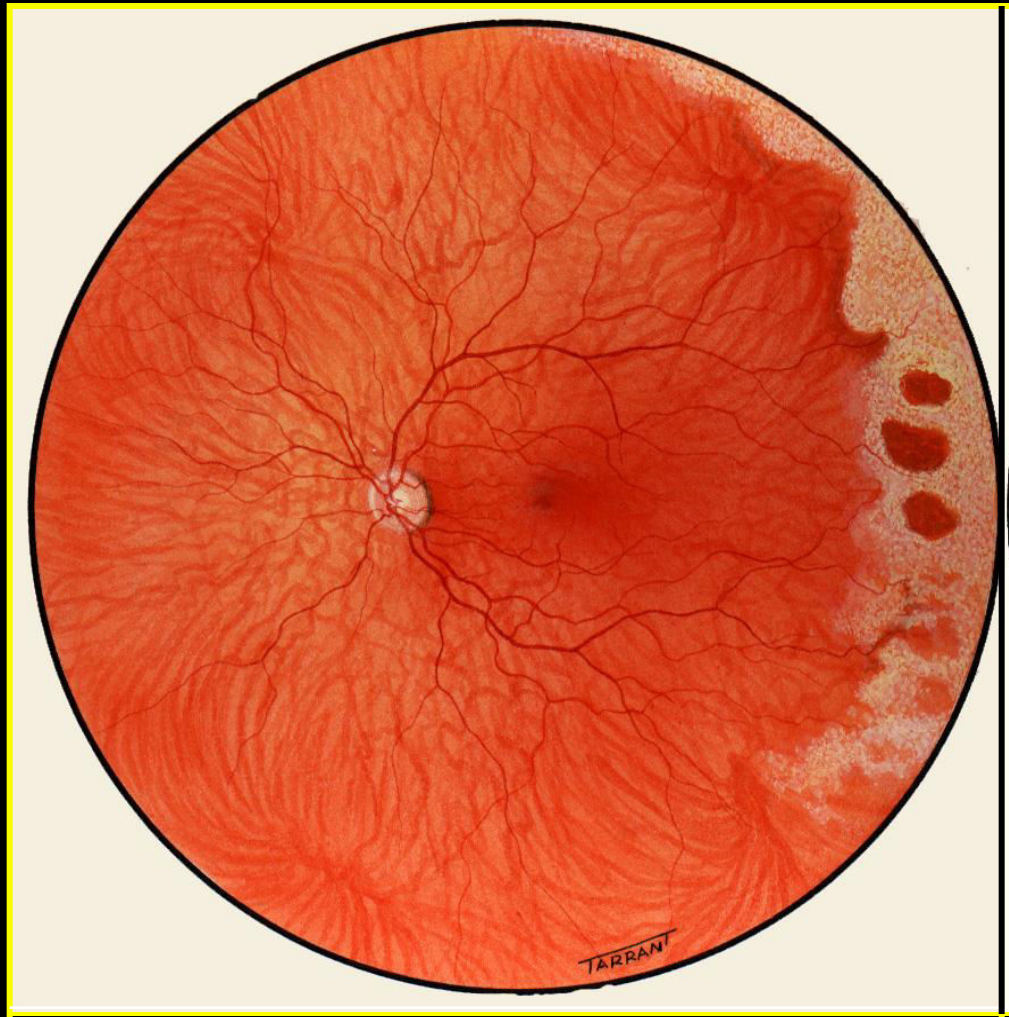
Sharply demarcated, frost-like bands which are longer than lattice



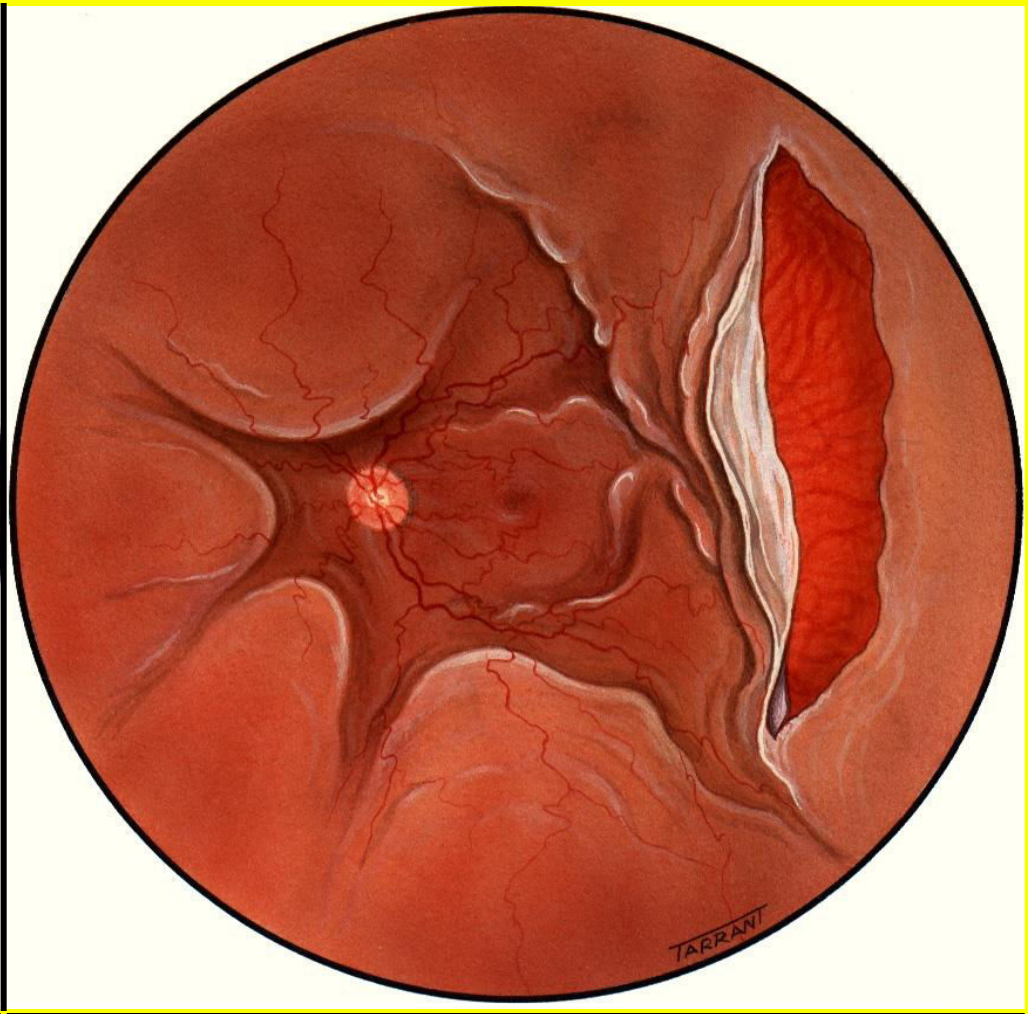
Large round holes which carry high risk of RD

Indications for prophylaxis - presence of holes

White-without-pressure



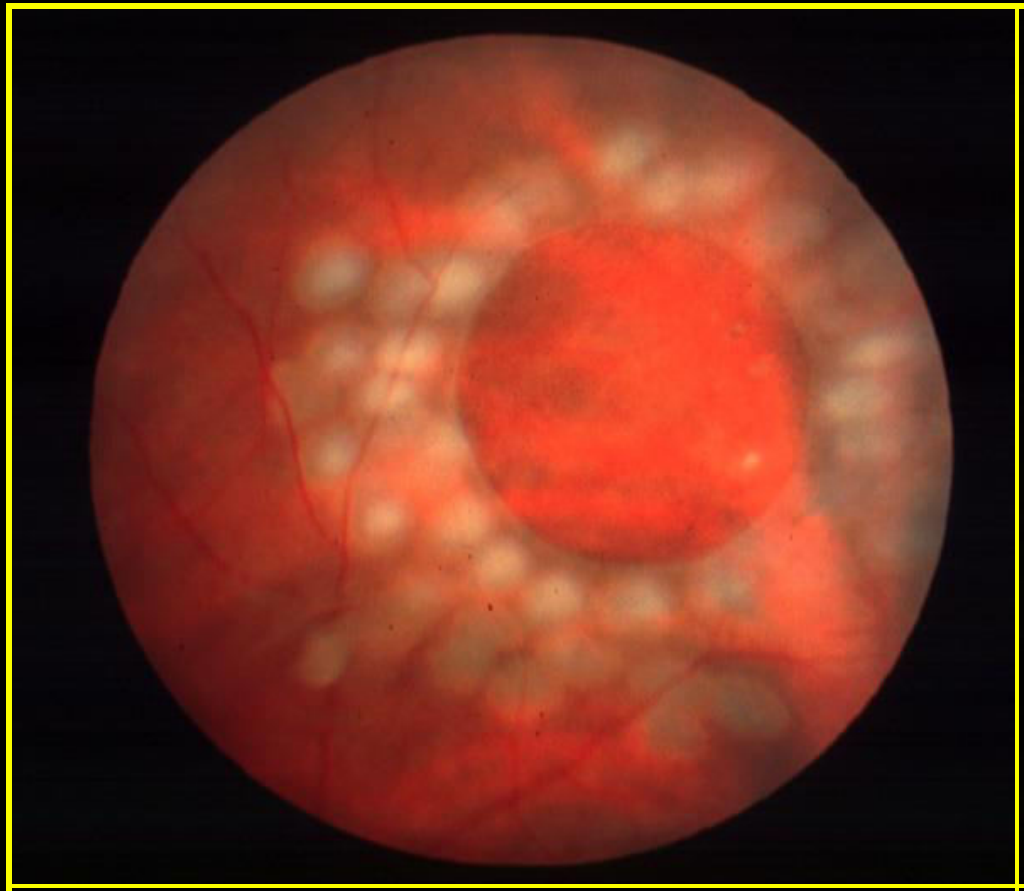
Translucent grey appearance of retina



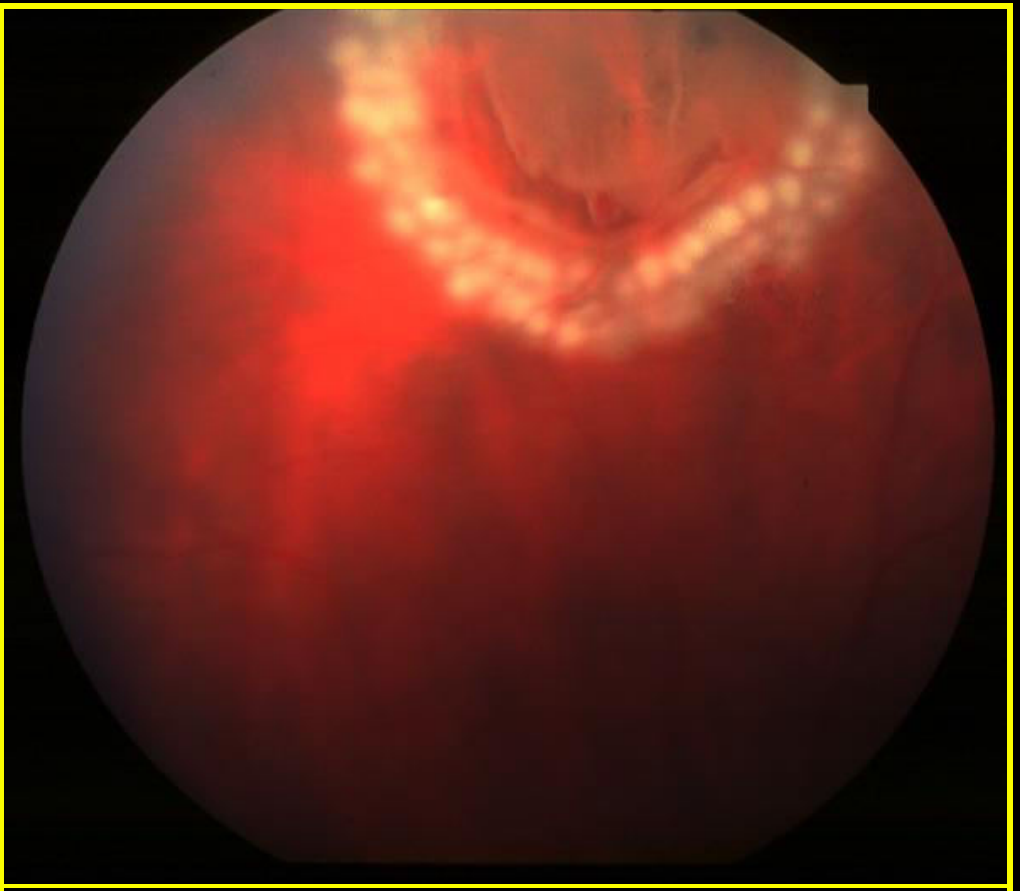
Occasional giant tear formation along posterior margin of lesion

Indications for prophylaxis - giant tear in other eye

Technique of laser photocoagulation

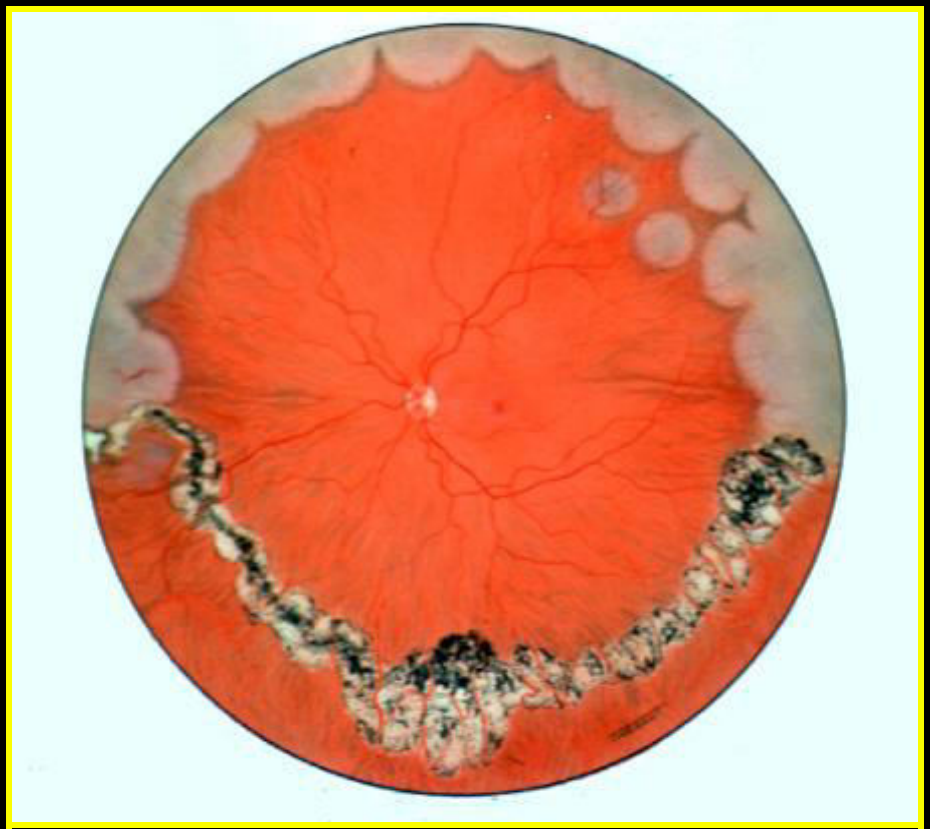


Surround lesion with two rows of confluent burns



Difficult for anterior lesions and if media hazy

Technique of cryotherapy



- Surround lesion with single row of cryo-applications
- Preferred for treatment of large areas

PRINCIPLES OF RETINAL DETACHMENT SURGERY

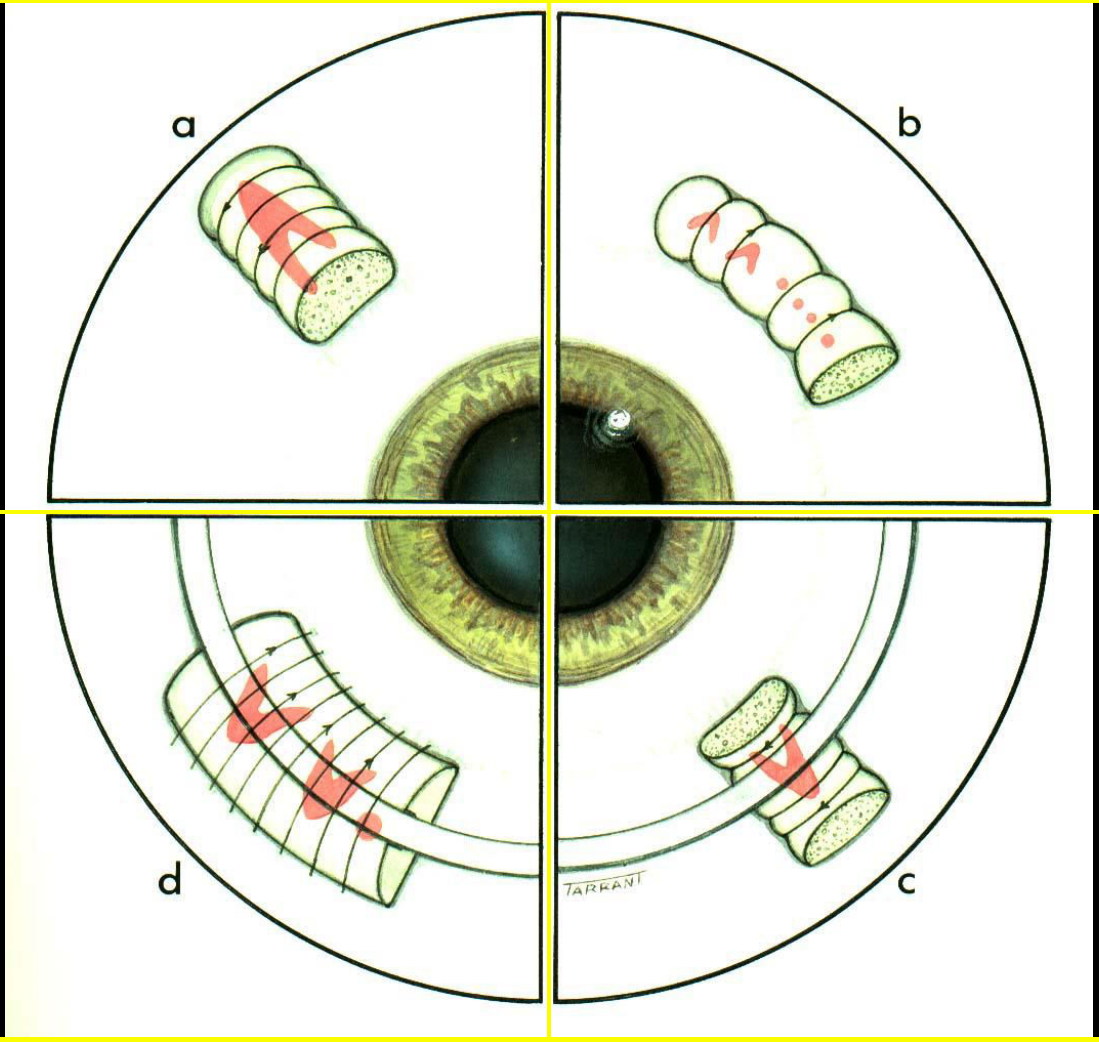
1. Scleral buckling

- Localization of breaks
- Aseptic inflammation (Cryotherapy/Laser)
- Sealing the break (Local explant/buckle)
- Encircling procedure
- Drainage of subretinal fluid

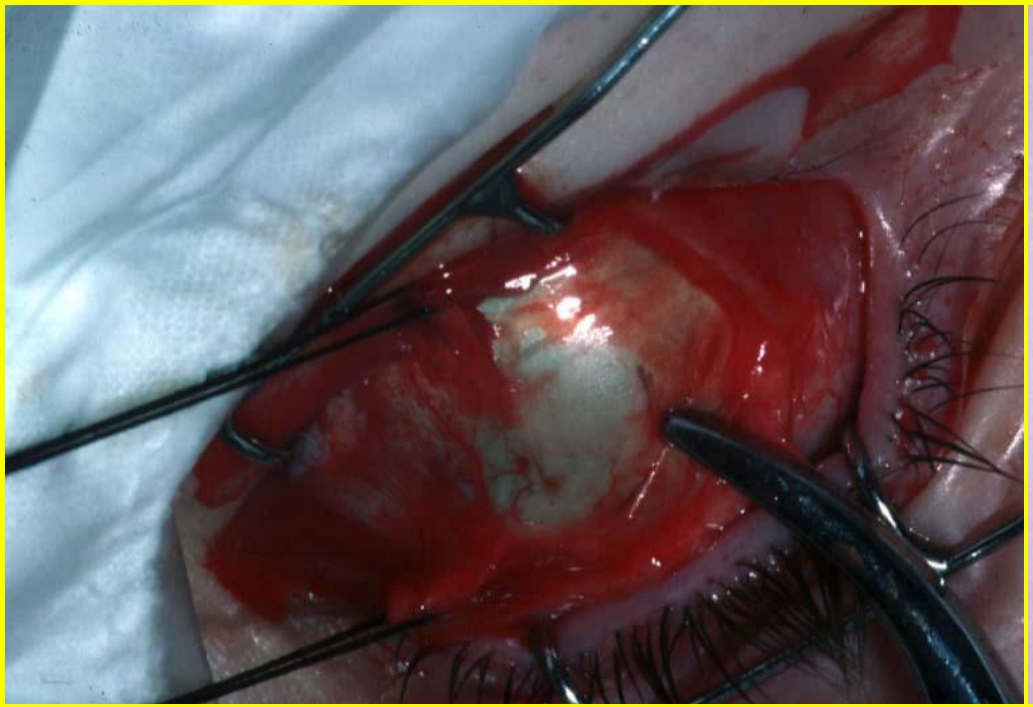
2. Vitrectomy

- Giant tears
- Proliferative vitreoretinopathy (PVR)
- Diabetic tractional RD
- Combined RD

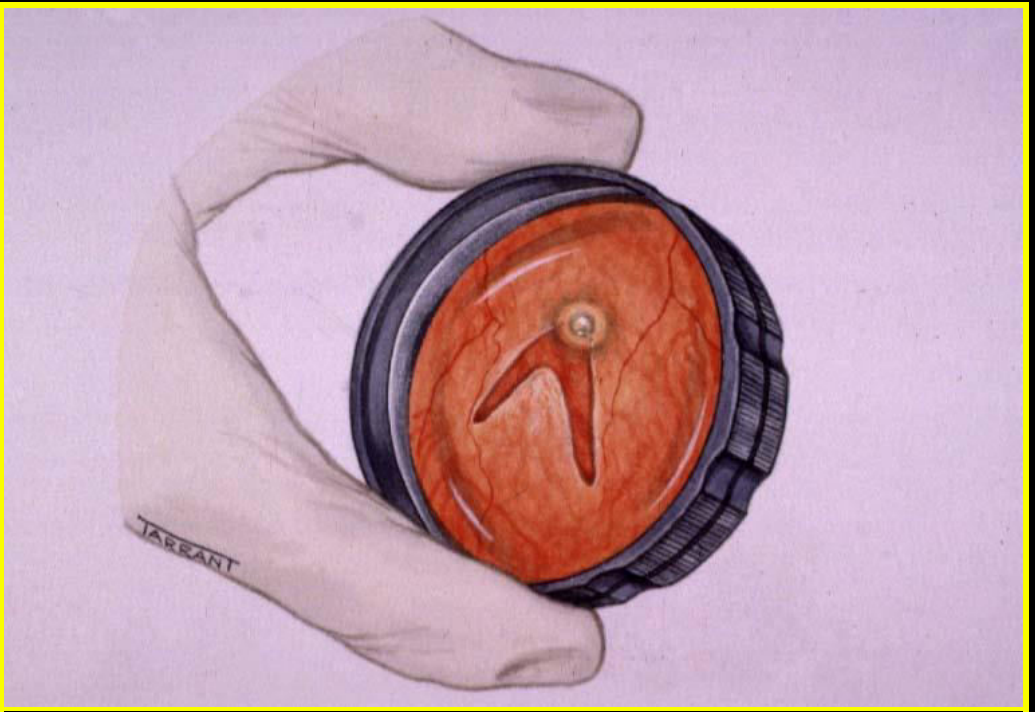
Configuration of scleral buckles

Radial		Segmental circumferential
Encircling augmented by solid silicone tyre		Encircling augmented by radial sponge

Localization of breaks

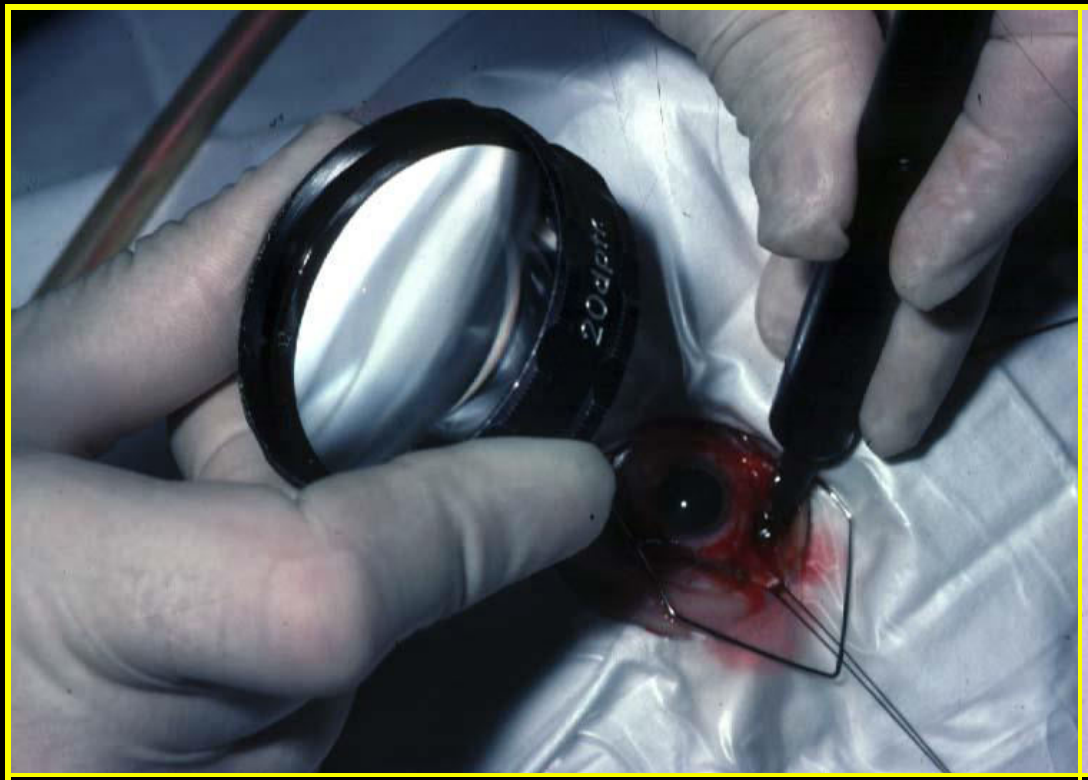


- Insert 5/0 Dacron scleral suture at site of apex of break
- Grasp cut suture with curved mosquito forceps close to knot

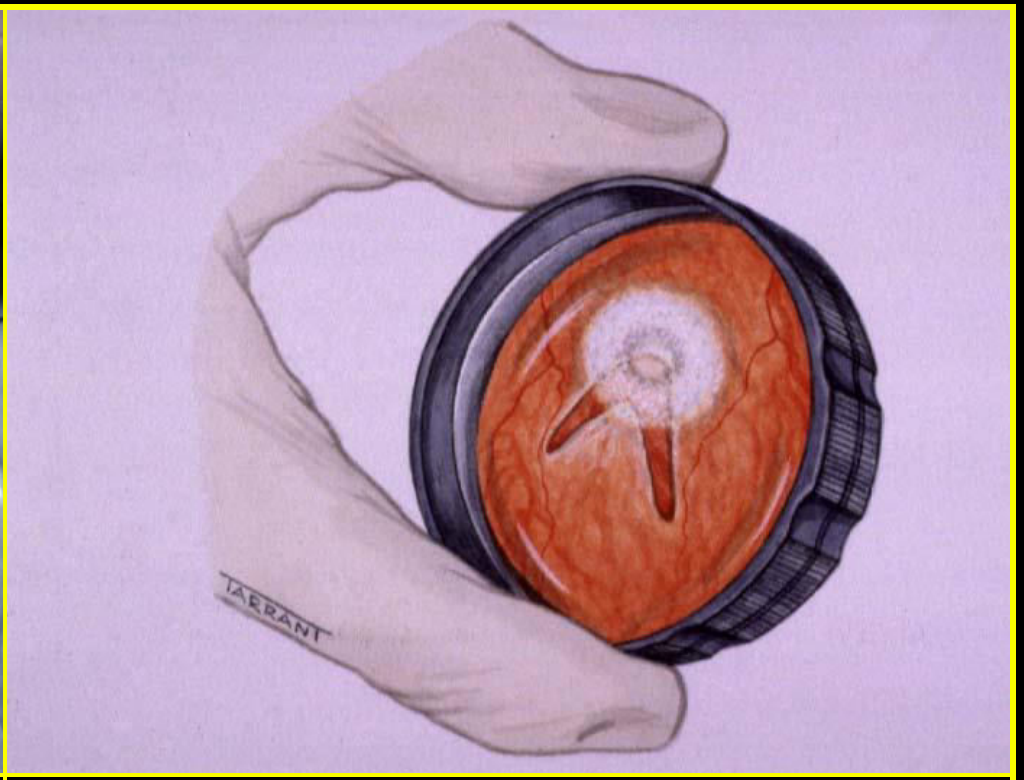


- While viewing with indirect ophthalmoscope check position of indentation in relation to break

Cryotherapy

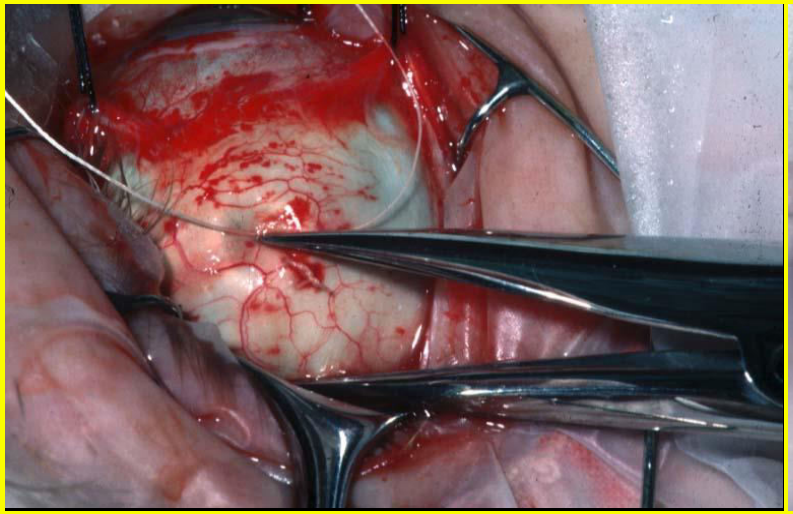


While viewing with indirect ophthalmoscope indent sclera gently with tip of cryoprobe

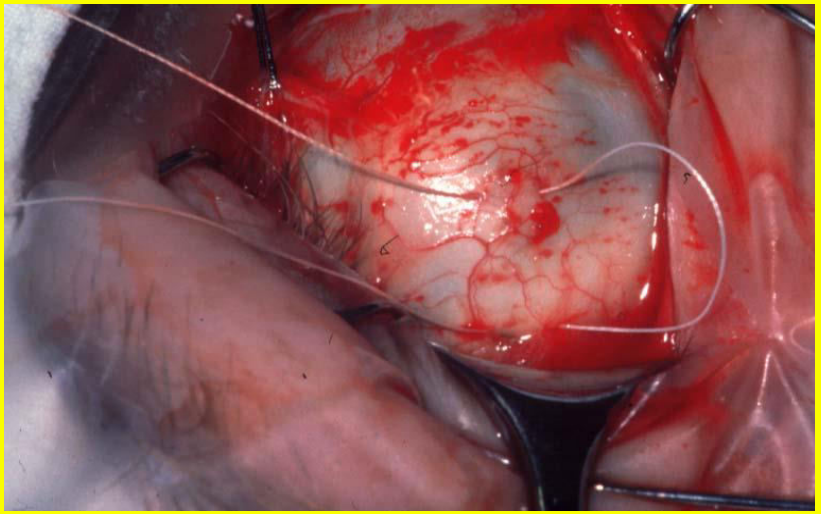


Freeze break until sensory retina just turns white

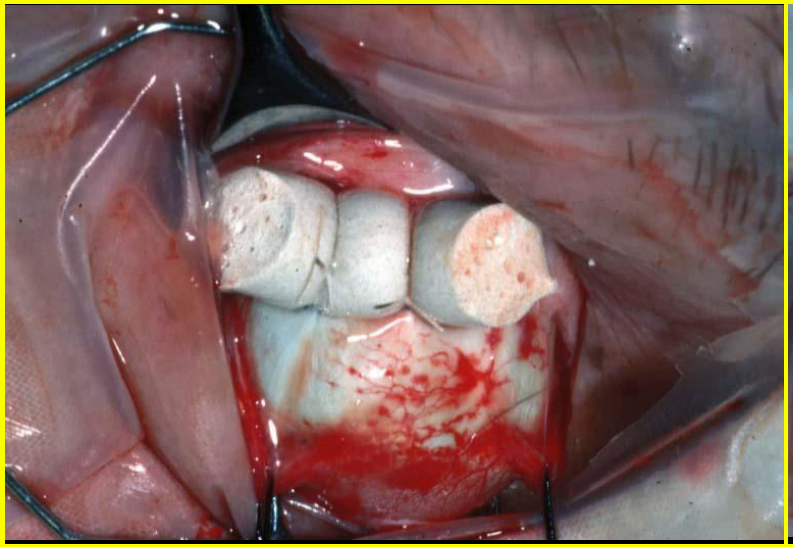
Insertion of local explant



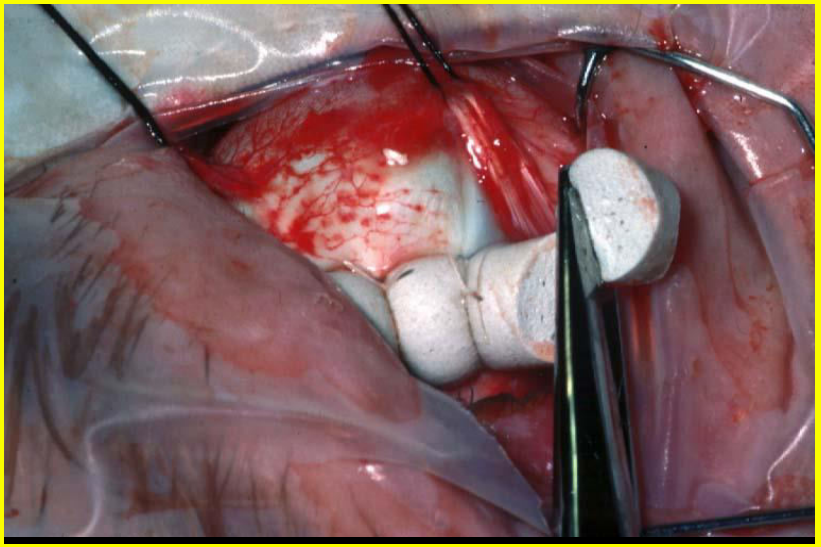
Distance separating sutures measured and marked



Insertion of mattress-type suture



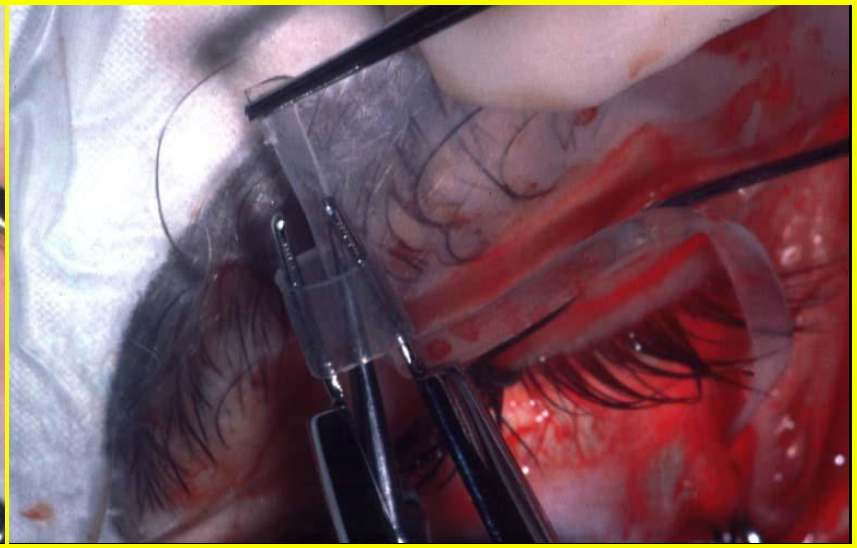
Sutures tightened over explant



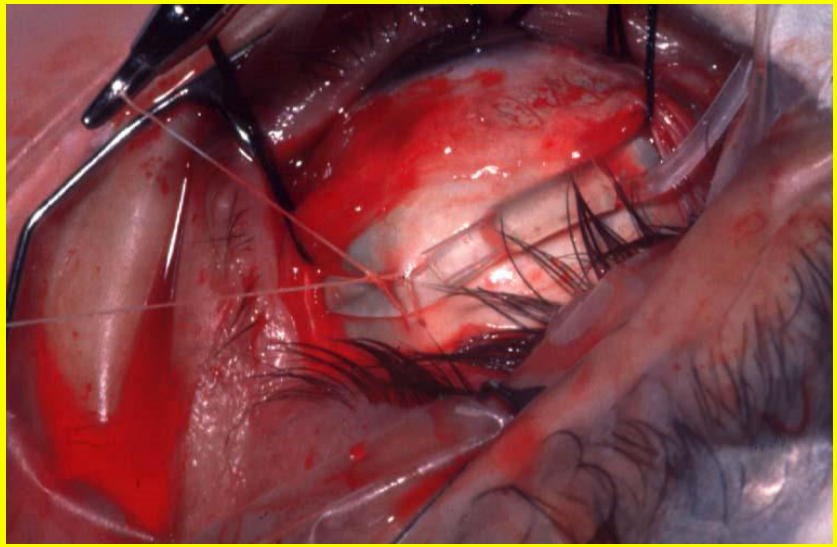
Ends trimmed

Encircling procedure

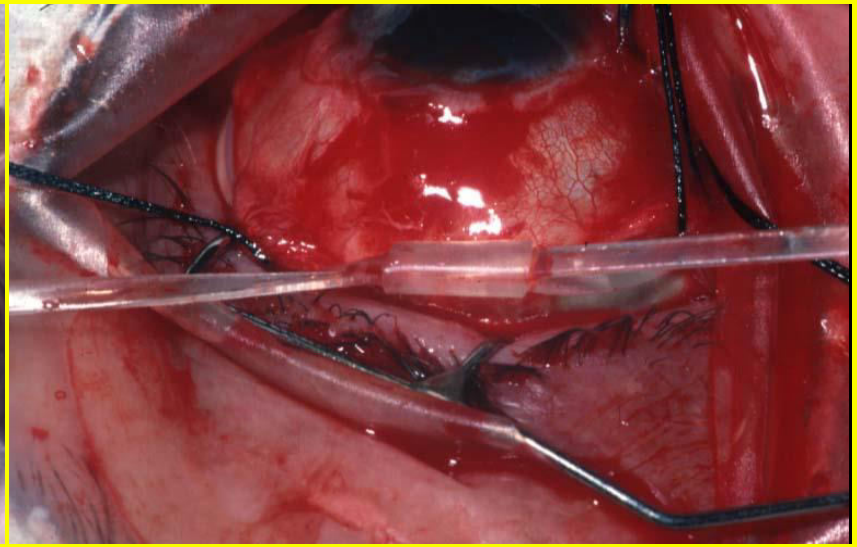
Strap fed under four recti



Ends secured with Watzke sleeve



Strap slid posteriorly and secured in each quadrant



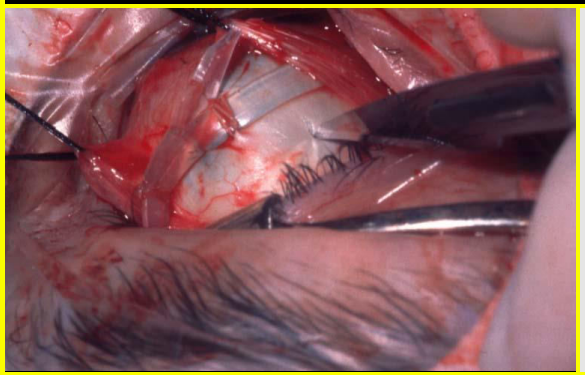
Strap tightened to produce required amount of internal indentation

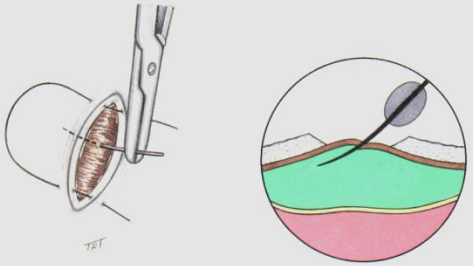
Drainage of subretinal fluid

Indications

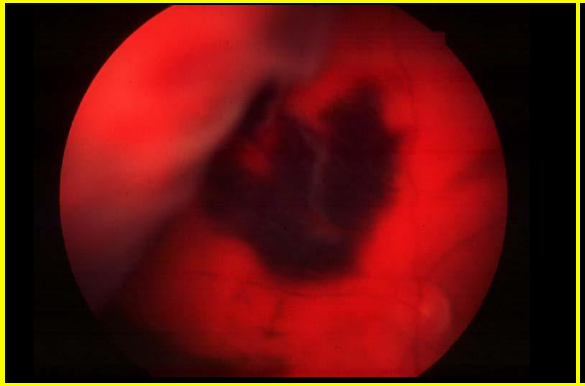
- Difficulty in localizing break
- Immobile retina
- Longstanding RD
- Inferior RD

Technique

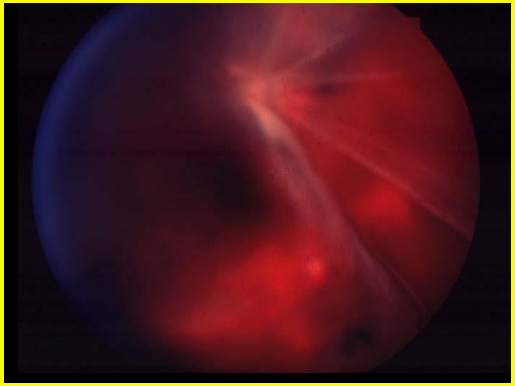




Complications



Haemorrhage



Retinal incarceration

Scleral Buckling
Surgical Principles/Tips

- Localization of breaks (Primary/Secondary)
- Aseptic inflammation: Cryotherapy, Laser
- Sealing of break: Buckle (Trye, Sponge, Solid rods, BB)
- SRF drainage
- Check CRA status

Scleral Buckling: Art To Learn

Our Experience

- Conventional retinal re-attachment surgery
- Success 80% (Including high PVR/PPK/Less experience)…. 2003

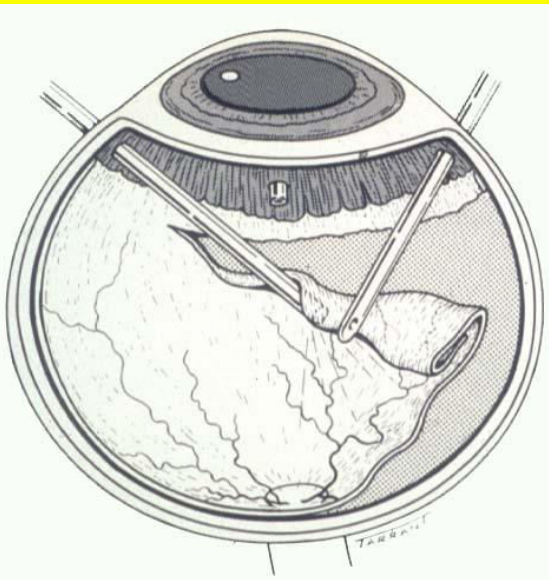
- Scleral buckling for primary rhegmatogenous RD
- Successful re-attachment in 85.7% cases….. 2010

- Scleral Bucling RD with retinal dialysis
- Surgical reattachment 95.8% …… 2015

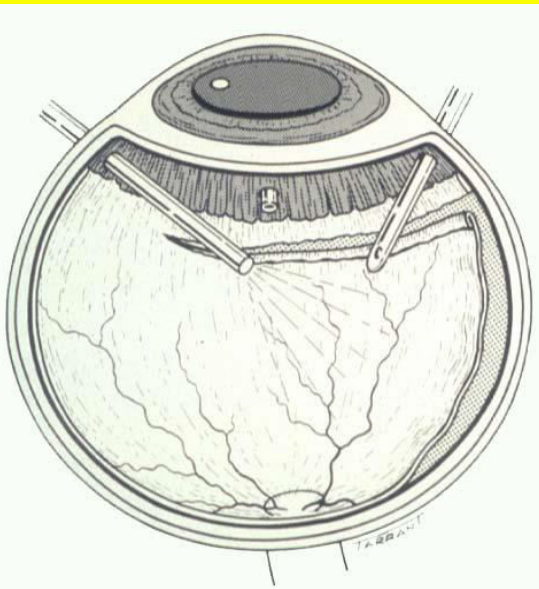
- Non drainage Scleral Buckling surgery
- Primary surgical success rate was 91% 2017

- Sanaullah jan, et al. Conventional retinal reattachment surgery. Journal of college of Physicians and surgeons Pakistan. August 2004;14(8): 470—473.
- Khan MT, Sanaullah Jan, et al. Outcome of scleral bucking procedures for primary rhegmatogenous retinal detachment. J Pak Med Ass. Sept 2010; 60(9): 754-7.
- Sanaullah jan, et al. Retinal detachment due to retinal dialysis: Surgical outcome after scleral buckling. Asia-Pacific J Ophthalmol. Sep-Oct 2015; Volume 4(5):259-262.
- Sanaullah Jan, et al. Non Drainage Scleral Buckling Surgery. OA J Ophthalmol 2017; 2(2):000123.
- Sanaullah Jan, et al. Complications of SRF drainage in Scleral Buckling. J Clin Community Ophthalmol. Jan-Jun 2023 1(1):11-14.
- Abdullah AS, Sanaullah Jan,et al. Complications of conventional scleral buckling during and after the treatment of rhegmatogenous RD. J Physicians & Surg Pak. May 2010, Vol 20 (5): 321-326.

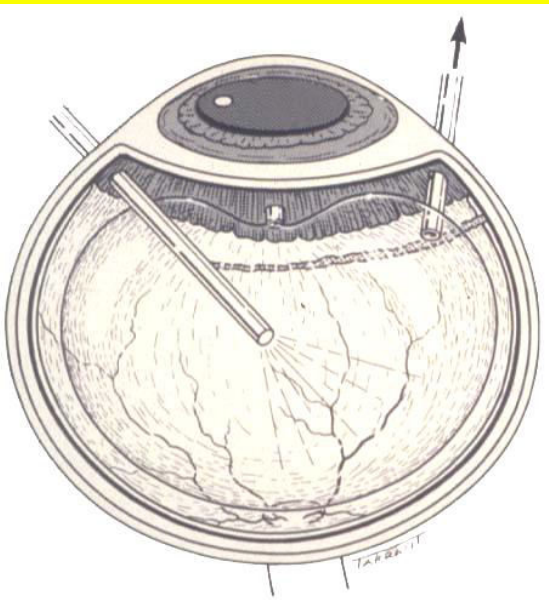
Vitrectomy for giant tears



Unrolling of flap with light pipe and probe

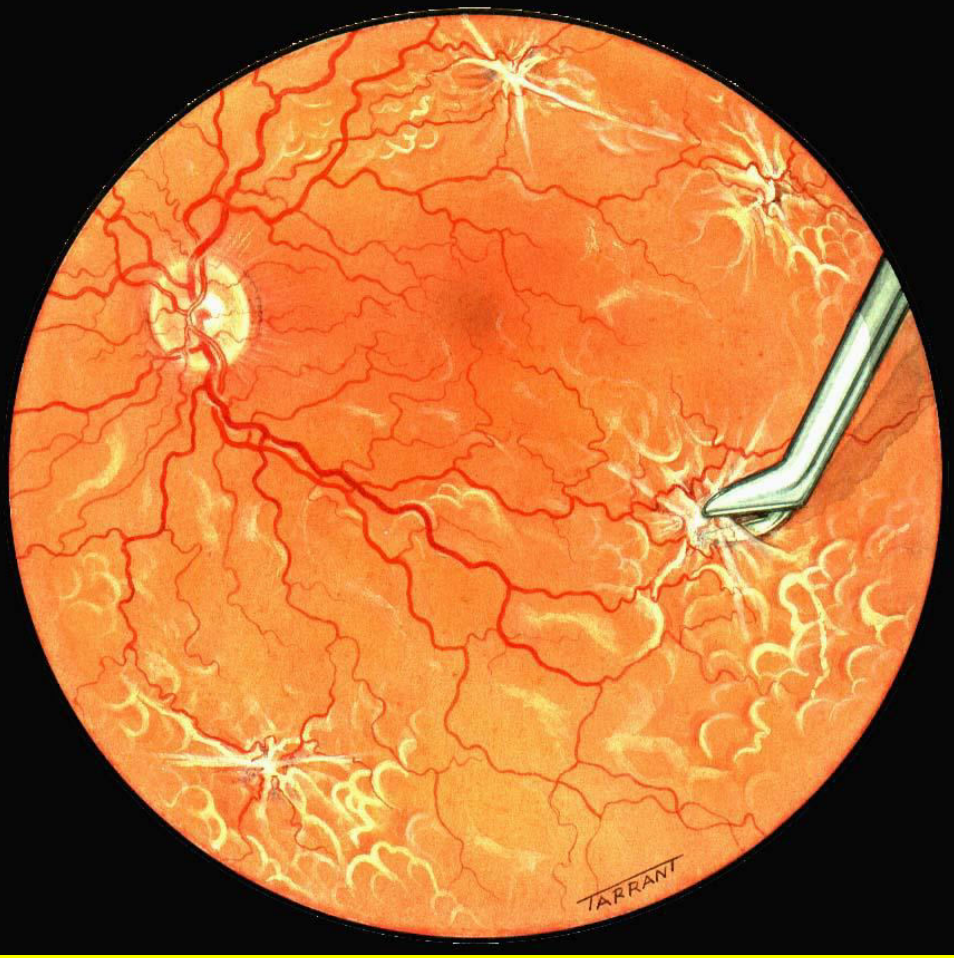


Completion of unrolling



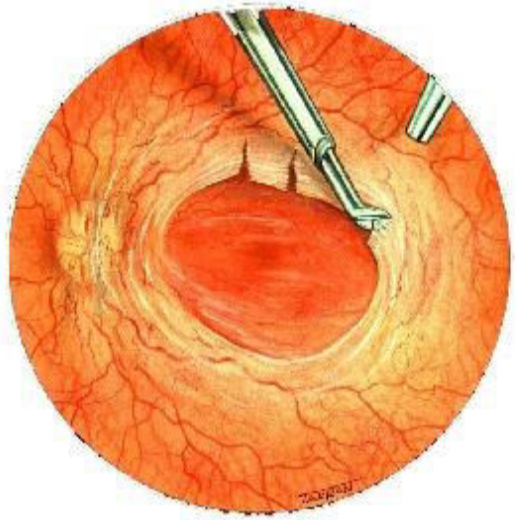
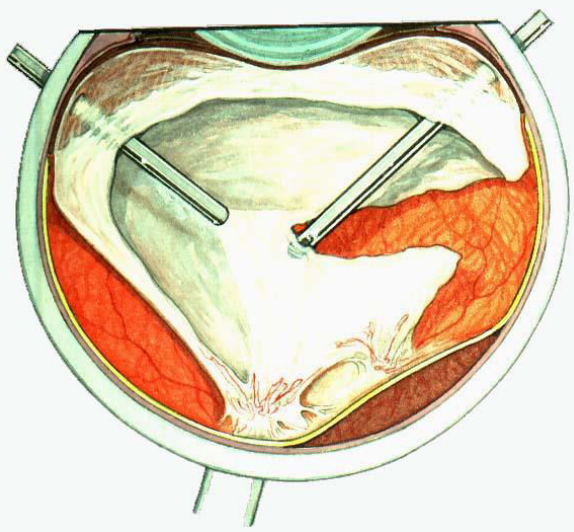
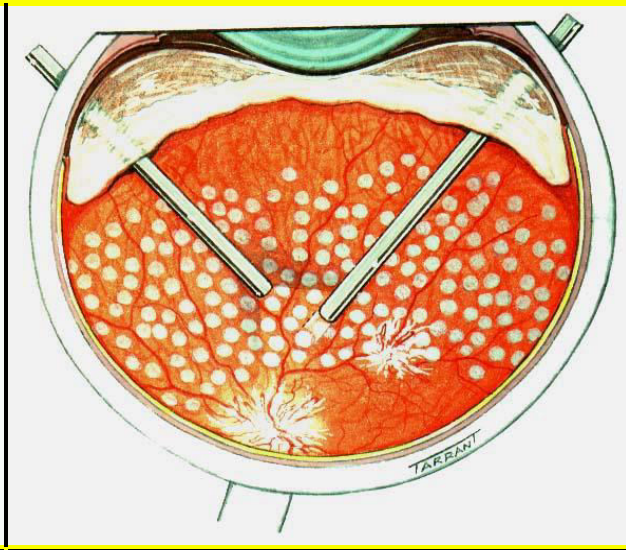
Injection of silicone oil or heavy liquid

Vitrectomy for PVR



- Dissection of star folds and peeling of membranes
- Injection of expanding gas or silicone oil

Vitrectomy for diabetic tractional RD

		
Release of circumferential traction	**Release of antero-posterior traction**	**Endophotocoagulation**

THANK YOU