

# Principles of Giant Retinal Tears Treatment

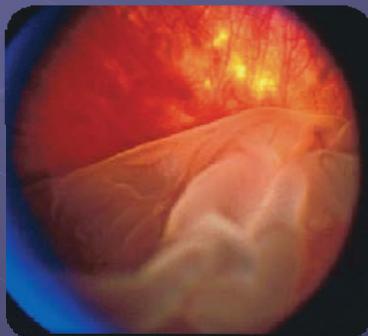
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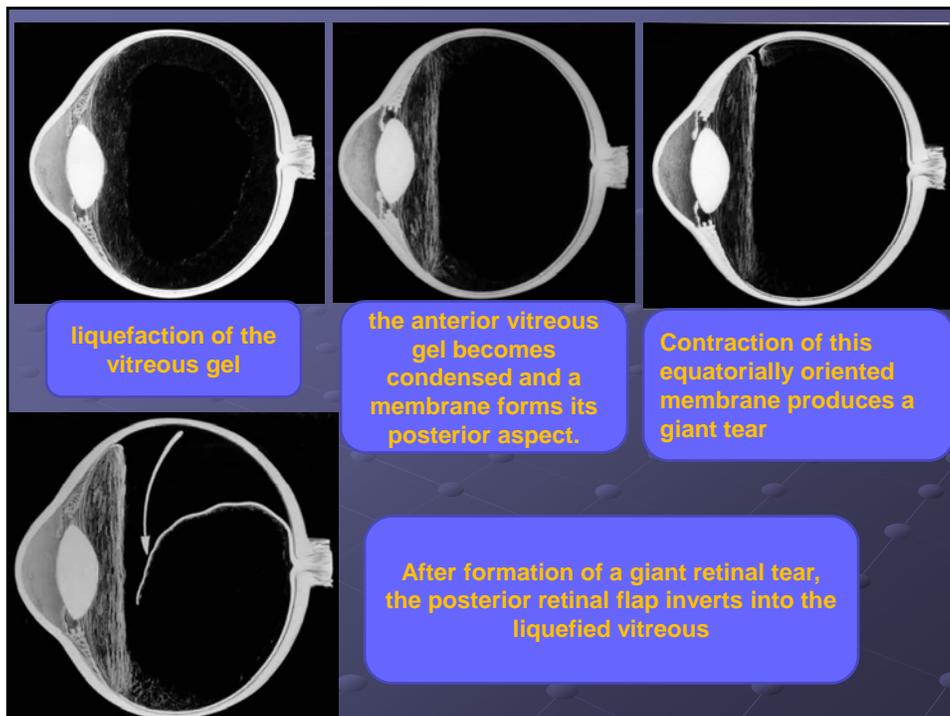
## Giant retinal tears

- A giant retinal tear is defined as a retinal break that extends 90 degrees or more around the circumference of the fundus.



## ETIOLOGY AND PATHOPHYSIOLOGY

- **Idiopathic ( non traumatic )**
  - Account for approximately 77% of giant retinal tears
  - 84% of cases involved males with the average age was 32 years
  - bilateral in 8% of cases
  - highly associated with myopia 71%



## ETIOLOGY AND PATHOPHYSIOLOGY

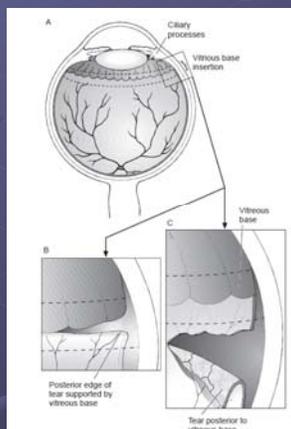
- **Traumatic giant retinal tear**
  - 74% occurred in young males (median age, 17 years)
  - Less highly associated with myopia 30%
  - Unilateral
  - Extends more than 180 degrees
  - Vitreous base may be avulsed

## Dialysis

- A retinal dialysis is a subcategory of giant retinal tears. Tractional forces at the vitreous base can result in a dialysis or a tearing of the retina at the ora serrata.

### Dialysis

- Unfolded edge
- Less RD
- Less PVR



### GRT

- Folded edge
- More RD
- More PVR

## Clinical Evaluation

- Accurate localization of a giant retinal tear relative to the vitreous base is an essential element to guide the surgical management provide the patient with a realistic prognosis.
- Retinal dialysis is associated with an excellent reattachment rate and a good visual prognosis.

## Clinical Evaluation

- 270-degree giant retinal tear with an inverted or scrolled posterior edge , posterior radial tears, and PVR represents one of the most challenging retinal detachments

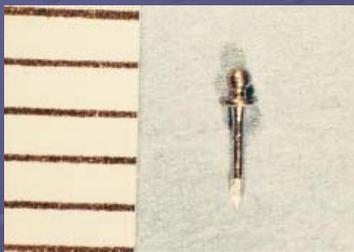


# Surgical Technique

## EARLY ATTEMPTS AT SURGICAL REPAIR

- Different modalities have been introduced to help unroll the inverted retinal flap and reappose it to the retinal pigment epithelium and choroid.

1- retinal tacks

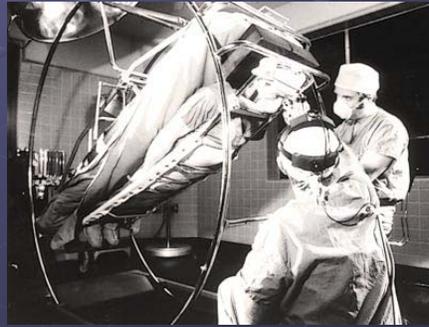


## EARLY ATTEMPTS AT SURGICAL REPAIR

2-specific patient positioning with rotating or circular operating beds

3-retinal microincarceration with penetrating diathermy

4- sodium hyaluronate



## GRT without PVR



## GRT with radial extension



## 360° GRT



## GRT with PVR



## GRT with macular hole and PVR



## GRT with rolled edge



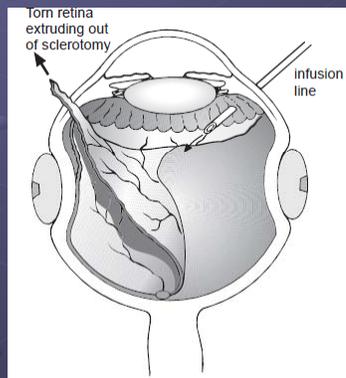
## *Vitrectomy*

- infusion cannula
- inspection of the infusion tip prior to turning on the infusion
  - Inadvertent subretinal infusion may extend the tear and further detach the retina.
- site of the infusion cannula
  - It should not be placed in an area near the apex of a retinal tear

## Vitrectomy

- Infusion bottle

A torn edge of the retina may extrude or incarcerate into the sclerotomy when removing instruments from the sclerotomies



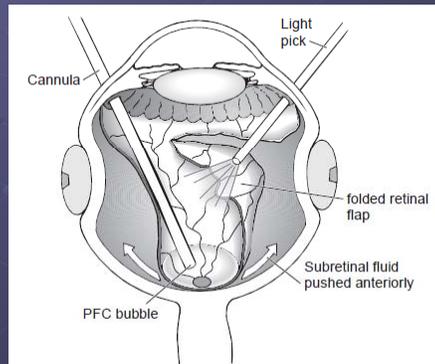
## Vitrectomy

- core vitrectomy
- posterior vitreous detachment (TA stain)

## Vitrectomy

### ● **Perfluorocarbon Liquid**

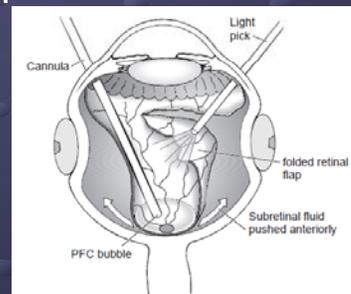
- PFC is injected through a cannula in a slow and deliberate manner several millimeters over the optic nerve



## Vitrectomy

### ● **Perfluorocarbon Liquid**

- The tip of the cannula should remain below the PFC meniscus to achieve a single bubble.
- Initially, the level of PFC should be limited to stabilization of the posterior pole.



## Vitrectomy

### ● *Perfluorocarbon Liquid*

#### ➤ Objectives achieved with this technique

- 1-The posterior part of the retina including the macula is supported and reattached.
- 2-the risk of retinal incarceration through the sclerotomies is diminished.
- 3-the anterior part of the retina is stabilized for further vitrectomy.
- 4-areas of residual posterior subretinal traction are identified and addressed with further dissection.

## Vitrectomy

### ● *Retinectomy*

**Anterior flap of torn retina** ( has no useful purpose)  
**should be excised as completely as possible**

- Remains firmly adherent to the vitreous base and may serve as scaffolding for anterior PVR
- The anterior flap may fold anteriorly over the ciliary processes → anterior proliferation may subsequently lead to ciliary body detachment and postoperative hypotony.
- Traction may be exerted toward the apices of the retinal tear, resulting in its extension.

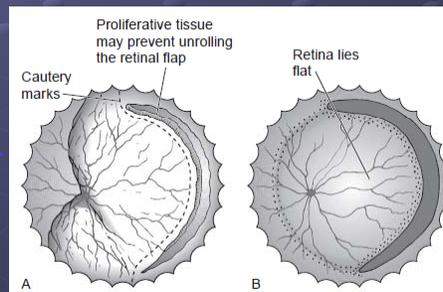
## Vitrectomy

### ● Retinectomy

#### Torn posterior retinal edge

- configuration of the tear appears unstable

This profile will decrease the stress at the apices of the tear and minimizes the potential for future contraction to extend the tear



## Vitrectomy

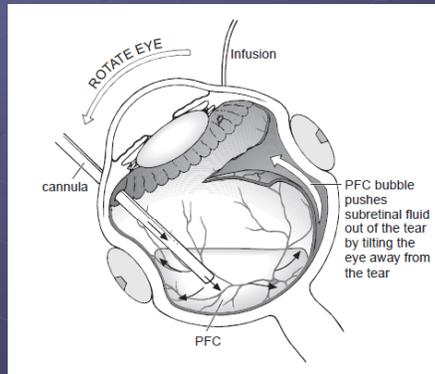
### ● Retinectomy

#### Torn posterior retinal edge

- presence of proliferative tissue at the torn retina
- low vacuum and a high cutting rate → minimize the risk of engaging viable retinal tissue posterior to the cauterized demarcation line.

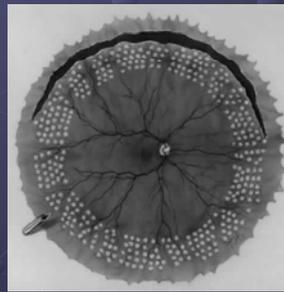
## Vitrectomy

- PFC liquid can be added above the level of the tear.



## Vitrectomy

- ***Establishing a Chorioretinal Adhesion***
  - Endophotocoagulation is applied to the edge of the GRT and extended 360 degrees along three to five rows wide, and spaced approximately one burn width apart.
  - Using a curved probe



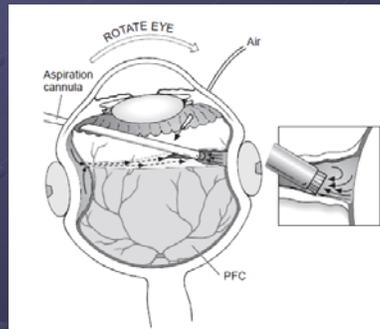
## Vitrectomy

### ● Retinal Tamponade

#### 1- Gas e.g. perfluoropropane(C<sub>3</sub>F<sub>8</sub>)

➤ A nonexpansile concentration of C<sub>3</sub>F<sub>8</sub> gas (16%) will provide effective short-term tamponade that does not require a secondary procedure for removal.

➤ Slippage of the GRT may occurs



## Vitrectomy

### ● Retinal Tamponade

#### 2-Silicone oil indications

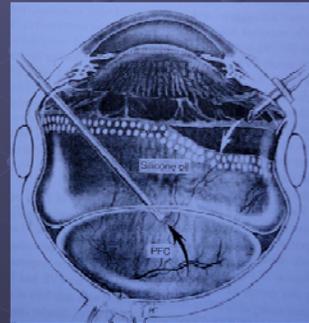
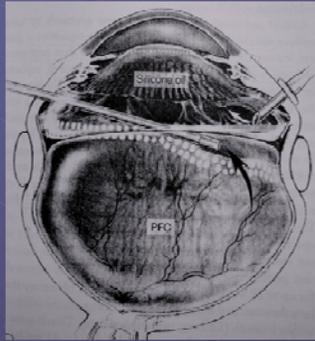
- Monocular patient when prompt visual rehabilitation is necessary
- Extensive PVR
- Reoperations.
- children or patients who have difficulty with positioning.
- when high-altitude travel is necessary.
- when postoperative hypotony is a concern.

## Vitrectomy

### ● *Retinal Tamponade*

2-Silicone oil

- Reduce the chance of posterior slippage

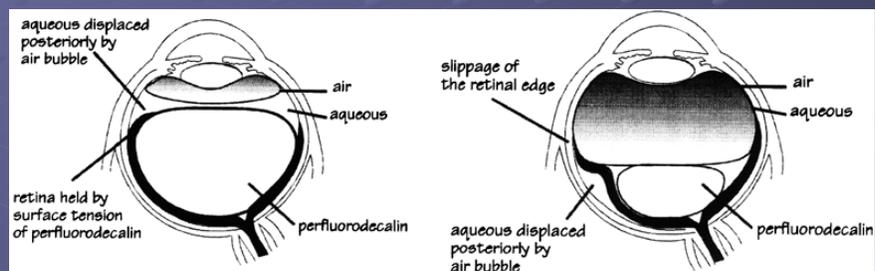
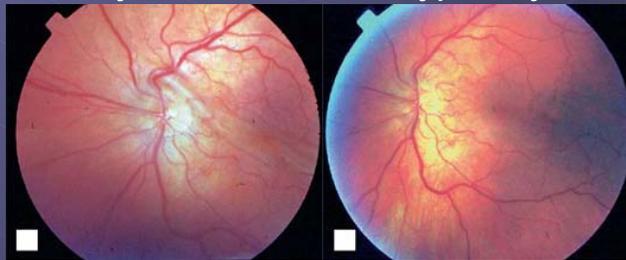


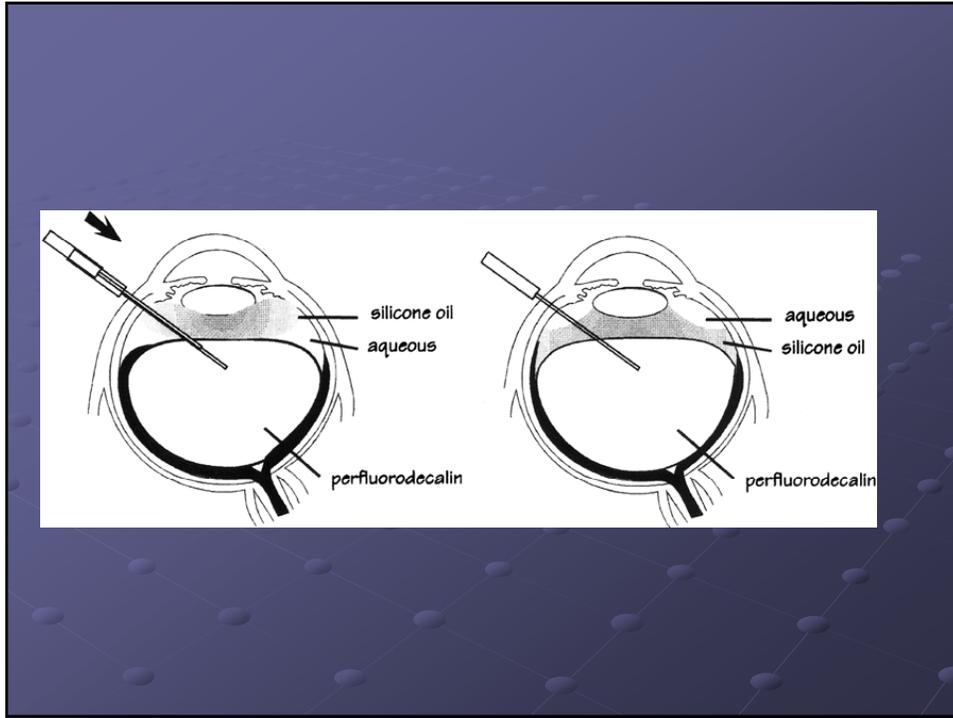
## Slippage of the GRT

- Slippage is the posterior displacement of fluid underneath the retina. It occurs during the fluid exchange procedure and is caused by an incoming bubble of endotamponade such as air or silicone oil.

● Slippage can result in the following:

1. Subretinal fluid will be loculated around the posterior pole.
2. The peripheral retinal edge of a giant retinal tear will be displaced posteriorly.
3. This will in turn leave an area of exposed retinal pigment epithelium and may increase the tendency toward PVR or hypotony.





**Thank You**

## Vitrectomy

### ● Argument for the use of a scleral buckle

Use of a scleral buckle in the management of GRT repair is controversial.

May be needed in GRT with PVR

#### Advantages

- ❖ to support the area of retina that is still connected anteriorly at the ora serrata.
- ❖ Supporting the ends of the retinal tear may lower the risk of extension
- ❖ In the presence of PVR buckle may decrease the internal circumference and allow the retina to lie flat

## Vitrectomy

### ● Argument for the use of a scleral buckle

#### Disadvantages of buckling

- ❖ Greater potential for posterior retinal slippage, radial infolding, or a fish-mouth configuration with subsequent redetachment
- ❖ Increased ocular manipulation.
- ❖ Anterior-segment ischemia.
- ❖ Refractive changes.

# Vitrectomy

## ● *Lenticular Status*

### *Lensectomy* indications

- 1-Anterior PVR to remove the anterior vitreous and membranes more completely.
- 2-Lens subluxation.
- 3-Cataract that prevent sufficient intraoperative visualization .