



## Clinical features and surgical outcomes in retinal detachment following Giant retinal tears

PIOUS

Department of Ophthalmology, INSTITUTE OF OPHTHALMOLOGY, JOSEPH EYE HOSPITAL

**Abstract :** Aim To study the clinical features and outcome following surgery for Rhegmatogenous retinal detachment (RRD) associated with giant retinal tears (GRT). Methods Retrospective case review of eyes with GRT and RRD undergoing surgery between April 2009 and March 2011 at retina clinic of our hospital. All cases were operated by a single surgeon. Main outcome measures studied were retinal re-attachment rate and final visual acuity. Results 16 eyes of 16 patients were included.

There were 15 males (93.8). Mean age was 33.7 years. Predisposing factors were myopia in 12 eyes, prior surgery in 7 eyes, injury in 1 eye and none in 1 eye. Anatomical attachment and visual improvement was achieved in 14 eyes (87.5). Long term tamponade was required in 2 eyes.

Conclusions RRD with GRT often affects young myopic males. Surgical outcomes can be good although long term tamponade may be required.

**Keyword :** Rhegmatous retinal detachment (RRD), Giant retinal tear (GRT), Retinal detachment (RD), Posterior vitreous detachment (PVD)

### Introduction:

A giant retinal tear (GRT) is defined as a full thickness retinal tear involving more than three clock hours of the retina in association with the posterior vitreous detachment (PVD). Retinal detachment (RD) associated with GRT is often challenging to manage as the retinal flap has a tendency to fold upon itself and the large area of exposed retinal pigment epithelium increases the risk of proliferative vitreoretinopathy (PVR). In earlier times, management techniques included rapid head movements to unfold the retinal flap and operating with the patient in prone position. Retinal flaps were secured with tacks, screws and adhesives. However the use of perfluorocarbon liquids (PFCL) as an adjunctive tool has made the unfolding and stabilization of the retinal flap earlier<sup>1,2</sup>

Currents surgical techniques for management of RD with GRT include pars plana vitrectomy (PPV) with use of PFCL intraoperatively and silicon oil tamponade.

We aimed to study the predisposing factors clinical features and surgical outcome in RD following GRT.

### Materials and methods

This was a retrospective study. Case records of patient undergoing surgery for RD associated with GRT between April 2009 and March 2011 at the retina clinic of our hospital were included.

Data studied included demographic features, predisposing factors, status of fellow eye, surgical procedure performed, intra and post operative complication, duration of follow up, anatomical and visual outcome.

Time of removal of silicone oil and final status after removal of silicone oil were included in the study

All cases underwent surgery by a single surgeon with twenty gauge 3 port pars plana vitrectomy (PPV) was performed after placing a no 42 type encircling band and giving cryo to the anterior edge of the GRT. After complete vitrectomy, the flap was unfolded using PFCL, endo laser was given for 360 degree and the PFCL was subsequently replaced with air and silicon oil.

Postoperative positioning was maintained for one week and oil removal was performed, if required after, 3 months.

### Results

16 eyes of 16 patients were included in the study. Mean age of patients was

33.7 years (range 15-59 years). Mean duration of symptoms prior to presentation was 14 days (range 2 days to 4 months). There were 15 males (93.8) and 1 female (6.2). Macula was involved in 13 eyes (81.3 %) with resultant severe drop in visual acuity while 3 eyes (18.7 %) presented with macula still attached.

The GRT extended for between 90- 180 degrees in 5 eyes (31.3%), 180-270 degrees in 8 eyes (50%) and > 270 degree in 3 eyes (18.7%). In 8 eyes, the GRT predominantly affected the inferior retina.

Predisposing factors for GRT were present in 11 eyes (73.3%). These included myopia in 7 eyes (43.8%), cataract surgery in 3 eyes (18.7%) and pars plana vitrectomy for traumatic endophthalmitis in one eye (6.3%). The fellow eye had an RD or peripheral retinal degeneration in 11 eyes (73.3%) but was normal in 5 eyes (26.6%).

PVR was present at presentation in 3 eyes (18.7%). Intraoperative complications included lens touch in 2 eyes (12.5%). Intraocular pressure was elevated in the early postoperative period in 5 eyes (26.6%).

After the first surgery, retina was attached in 13 eyes (81.3%) (Figure1). Three eyes developed PVR needing further surgery. Following second surgery the retina was reattached in 2 of the 3 eyes. The patient with recurrent RD declined further treatment.

Eleven eyes underwent silicone oil removal after a mean period of 4.3 months (range 3-10 months)(Figure 2). One eye developed recurrence of RD following oil removal and declined further intervention.

In all, the retina was attached at last follow up in 14 eyes (87.5%). Visual acuity improved from preoperative levels in 12 eyes, remained the same 2 eyes and deteriorated in 2 eyes.

## Discussion

Management of RD with GRT is often challenging due to high incidence of PVR and redetachment<sup>3</sup>. The British Giant Retinal Tear epidemiology eye study (BGEES)<sup>4</sup> prospectively evaluated RD with GRT over 13 months period from January 2007. They found that GRT<sup>5</sup> were mainly idiopathic (54.8 %) and affected males (71.7%). This male preponderance is notable in all series dealing with GRT<sup>4, 5, 6</sup> including our own but has not been satisfactorily explained.

Myopia and trauma have been mainly described as significant risk factors for GRT<sup>5, 6</sup> and in our study most eyes were myopic.

Use of PFCL has revolutionised the management of GRT. They allow hydraulic manipulation of the retina and allow the flap to be repositioned and the subretinal fluid to be displaced back into the vitreous cavity. The anatomical success rates have dramatically improved with use of PFCL with most recent series<sup>4, 5, 6</sup> reporting success rate of 87%.

Goezinne et al (2008)<sup>7</sup> have found absence of encircling sclera buckle as a significant risk factor for retinal detachment after surgery for GRT. Scleral buckles aid in the reduction of traction on the vitreous base and we currently

use them in all cases with GRT. Some authors however believe that buckles may distort the ocular shape with resultant slippage of the retina posteriorly in eyes with GRT<sup>8</sup>.

Fellow eyes of patients with GRT need careful evaluation as the need for prophylactic treatment is often present. However, treatment in the absence of any predisposing lesion is not indicated.

To conclude, pars plana vitrectomy with use of PFCL gives good anatomical results in eyes in with RD associated with GRT.

S. No	Age /Sex	Eye Affected	Predisposing factors	Fellow eye status	Pre-op visual acuity	Postop visual acuity	Complication	Final outcome
1	17/M	R	Myopia + Cat surg	Normal	HM	6/60	Transient elevated IOP	Attached
2	28/M	R	Myopia	RD	6/12	6/12	None	Attached
3	22/M	R	Myopia + Cat surg	RD	HM	5/60	None	Attached
4	59/M	L	Myopia	Normal	1/60	6/60	Transient elevated IOP	Attached
5	31/F	R	Myopia	Normal	HM	PL	Recurrence after oil removal, needed re-surgery	Detached
6	15/M	R	Trauma + PPV	Normal	HM	6/36	None	Attached
7	37/M	L	Cat surg	Normal	6/36	6/12	None	Attached
8	33/M	L	None	Normal	HM	6/60	Recurrence after oil removal, PVR, needed re-surgery	Attached
9	48/M	L	Cat surg	Normal	HM	6/36	None	Attached
10	21/M	L	Myopia	PRD	6/12	6/12	None	Attached
11	28/M	R	Myopia	Normal	HM	6/24	None	Attached

12	30/M	R	Myopia	PRD	6/6	6/12	Transient elevated IOP	Attached
13	33/M	L	Myopia	RD	PL	6/60	None	Attached
14	41/M	R	Myopia	Normal	PL	PL	Transient elevated IOP, PVR needed re-surgery	Detached
15	40/M	R	Myopia + Cat surg	Normal	HM	6/12	None	Attached
16	57/M	R	Myopia + Cat surg	Normal	1/60	6/36	Transient elevated IOP, PVR needed re-surgery	Attached

M= male; F= female; Cat Surg = cataract surgery; PPV = pars plana vitrectomy; HM= hand movements; PL= perception of light only; IOP= intraocular pressure; PVR = proliferative vitreoretinopathy

Table 1: Demographic characteristics, predisposing factors, visual acuity results, complications and final outcomes in study population

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Figure legends:

Figure 1a: Eye with superior giant retinal tear and retinal detachment

Figure 1b: Same eye with retina well attached under silicone oil

Figure 2a: Eye with giant retinal tear with macula still on

Figure 2b: Retina well attached after silicone oil removal

Fig 1a



Fig 1b

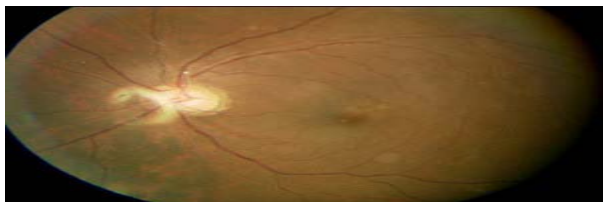


Fig 2a

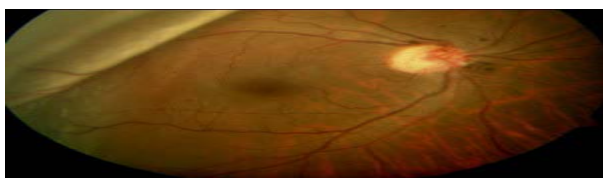


Fig 2b

