



To Study the Outcome of 25 Gauge Pars Plana Vitrectomy Using Valved Trocar Cannulas in Rhegmatogenous Retinal Detachment Cases

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Abstract

Background: To evaluate the efficacy of 25 Gauge Pars plana vitrectomy in treating patient with rhegmatogenous retinal detachment. **Material & Methods:** In a prospective study carried out on 40 patient presented with rhegmatogenous retinal detachment within 1 month of duration. **Results:** Thirty four eyes were successfully reattached with a single operation. Six cases presented with redetachment. Final mean visual acuity in macula off patient was 0.94 logMAR and macula on patient was 0.31 logMAR. The mean followup period was six month. **Conclusions:** In the current study, our analyses indicated that the functional success rate after the primary reattachment operation was 85%. Only 6 case had redetachment(4 patient was pseudophakic and 2 patient was phakic) for that they under went further management and final reattachment rate was 100%. Final visual acuity in macula of patients were 0.94 and in macula on patients were 0.3. Most common complication was redetachment and in our study post operative endophthalmitis not occurred in any case.

Keywords:- Pars Plana Vitrectomy, Valved Trocar Cannulas, Retinal Detachment.

INTRODUCTION

Until recently, the standard treatments of rhegmatogenous retinal detachments (RRD) not amenable to pneumatic retinopexy were scleral buckling and 20-gauge pars plana vitrectomy (20G-PPV).^[1] However the conjunctival surface is disrupted during both procedures, and many patients complain of postoperative ocular irritation and pain from the scarred conjunctiva.

Microincision Pars plana vitrectomy surgery (MIVS) is gaining popularity for the treatment of primary rhegmatogenous retinal detachment (RRD). In comparison to scleral buckling, PPV

offers the possibility of removing vitreoretinal traction, performing a complete drainage of subretinal fluid and precisely identifying and treating the retinal breaks. Further advantages of new transconjunctival sutureless small-gauge (25G) systems include reduced inflammation and patient discomfort and shorter recovery time.^[2,3,4,5]

De Juan developed a 25-G instrument set for pediatric use in 1990, since the 'conventional' 20-G vitreous cutters had proven to be big, lacking in precision, and unsuitable for pediatric use.^[6] De Juan and Hickingbotham stated that due to the reduced aspiration rate 25-

G vitrectomy was to be used only in selected, delicate cases requiring particularly precise and careful intervention. It was 12 years later, when eventually a complete 25-Gauge transconjunctival vitrectomy system, was introduced by Fuji et al. which consisted of microtrocar cannulas and afforded the ease and safety of instrument introduction and withdrawal, as well as an array of integrated 25-G instruments.^[3] The increase in popularity of the 25G-vitrectomy was enhanced by the clinical studies showing significant reductions in conjunctival injection and postoperative pain and discomfort. Thus, the main advantage of 25G-Pars plana vitrectomy is that a sutured sclerotomy is not needed intraoperatively, which would then reduce the postoperative ocular irritation and discomfort from the scarred conjunctiva.

Recently valved cannula for Microincision pars plana vitrectomy surgery (MIVS) system has been launched to improve fluidics intraoperatively and the rate of endophthalmitis is also said to be lower with the use of such cannulas. We intend to study the outcome of 25 gauge pars plana vitrectomy with valved cannula in rhegmatogenous retinal detachment (RRD) as there is paucity of literature and evidence.

MATERIAL AND METHODS

Study area and Population: The present clinical study was conducted on the patients presenting with rhegmatogenous retinal detachment (RRD) to the outpatient department of Alakh Nayan Mandir Eye Institute, Udaipur between the time periods of June 2016 and Dec 2017 (time bound study)

Study Design: A Prospective, observational study.

Study Duration: Data was collected from June 2016 to Dec 2017.

Sample Size: Total number of cases in the study undertaken from June 2016 To Dec 2017. Since it is a time bound study, all the cases received during my study period was considered, satisfying inclusion and exclusion criteria. A total of 40 rhegmatogenous retinal detachment (RRD) patients was identified.

All surgeries was performed under peribulbar anaesthesia using the oblique sclerotomy technique, and was be performed using the Constellation®(Alcon Laboratories Inc., FortWorth, TX) Vitrectomy System. if cataract was present lens was extracted before the vitrectomy. After core vitrectomy the peripheral vitreous was shaved as much as possible with scleral indentation. Perfluoro octane liquid was used intra operatively to stabilize and to facillitate subretinal fluid drainage. After the shaving of the peripheral gel, fluid-gas exchange was performed, laser was done at tear site and 3600 barrage was performed. Silicone oil (1000cs) (Aurolab) or perfluoropropane (C3F8) 12-14% injected as intraocular tamponade. Antibiotics and corticosteroids was injected subconjunctivally postoperatively in all cases.

The preoperative variables include age, sex, best corrected visual acuity, lens status, macular status.intra operative options were using silicone oil or C3F8 as postoperative temponade. Post operative variables were the initial and final anatomical success, final BCVA after followup period and complications.



For statistical analysis visual acuity was expressed as a logarithm of minimum angle of resolution (logMAR) equivalents. The data were analyzed using SPSS software.

RESULTS

The study group consists of 40 cases of RRD. The study was based on age and sex distribution of RRD, etiological distribution, surgical management and final visual outcome were analyzed.

The following conclusions were made during the study:

- In our study most patients were between the age of 41 – 80 yrs. Only 4 patients are below 20 yrs of age.
- Out of 40 patients entering the study, 32 patients (80%) were male and 8 patients (20%) were female.

- Amongst the 40 patients entering the study, both eyes were involved almost equally 21 left eyes (52.5%) and 19 right eyes (47.5)
- Out of 40 patients, the most common etiology of RRD was Pseudophakic RRD (60%).
- Most of the patient, 22 patients (55%) in our study presented between 22 - 30 days after the onset of symptom.
- In our study most of patient had macula off RRD 37 patients (92.5%).
- In our study most common complication seen was retinal redetachment which occurred in 6 patients. Other complication includes cataract formation (4 patients) Secondary glaucoma (2 patients)
- In our study 34 patients had primary reattachment of retina where as 6 patient requiring second surgery for reattachment.
- In our study final visual outcome in macula off patient were 0.94 and macula on patients were 0.31.

Table 1: Post operative complication

Complication	Frequency	%
None	28	70
Cataract	4	10.0
Raised IOP	2	5.0
Redetachment	6	15.0
Endophthalmitis	0	0
Total	40	100

Statistical significance between postoperative visual acuity and state of macula.

Table 2:

Visual acuity (log mar)	Macula off		Macula on		P value
	n	%	n	%	
Pre op 0 – 0.47	-	-	-	-	0.062
0.48 – 1	1	2.5%	1	2.5%	
1 .01- 1.30	2	5%	0	0 %	
>1.30	34	85%	2	5 %	
Day 1 0 – 0.47	-	-	-	-	0.032
0.48 – 1	4	10 %	2	5 %	



1 .01- 1.30	7	17.5 %	-	-	
>1.30	26	65 %	1	2.5 %	
Day 7 0 – 0.47	-	-	1	2.5 %	0.005
0.48 – 1	16	40	1	2.5 %	
1 .01- 1.30	5	12.5	-	-	
>1.30	16	40	1	2.5 %	
Day 30 0 – 0.47	3	7.5 %	2	5 %	0.029
0.48 – 1	19	47.5 %	1	2.5%	
1 .01- 1.30	2	5%	-	-	
>1.30	13	32.5%	-	-	
Day 90 0 – 0.47	5	12.5 %	2	5%	0.13
0.48 – 1	21	52.5 %	1	2.5 %	
1 .01- 1.30	1	2.5 %	-	-	
>1.30	10	25.0 %	-	-	
Day 180 0 – 0.47	5	12.5 %	2	5 %	0.13
0.48 – 1	22	55.0 %	1	2.5 %	
1 .01- 1.30	1	2.5 %	-	-	
>1.30	9	22.5 %	-	-	

DISCUSSION

The present study was conducted at Alakh Nayan Mandir Eye Institute, Udaipur and it comprises of 40 cases RRD.

AGE

The surgeries were performed by one vitreo retinal surgeons. 75 % cases were between 40 – 80 yrs of age.

In our study Mean age was 52.72 yrs. which was similar to *Duvdevan, et al* in which average was a 60.0 yrs

SEX

In our study male patient was 80% and female patient was 20 %.

Laterality

In our study about 52% left eye involved and 48 % right eye involved so there is no significant difference.

Etiology

In our study most patient had pseudophakic RRD(60%). Which was similar to *Miller Dm et al* In which average was 85.7 %.

Other cause for RRD High Myopia (40%)

Time of presentation

In our study most of patient was reported between 21- 30 days (55%) after the onset of symptoms. This could have been due to poor referral systems, lack of eye care health workers at primary care centers and lack of funds to travel to referral facility.

Status of Macula

Clinical evaluation showed a high number of eyes had the macular detached (92.5%).

Lens status

In our study most patients were pseudophakia 24 (60%) . and phakic patients were 16 (40%). As the most common cause of RRD is Pseudophakia. Which was similar to *Miller Dm et al* In which average percentage of pseudophakic patients were 85.7 %.



Temponading Agent

Silicon oil was the most used tamponade agent at 87.5 % followed by C3F8 (12.5). This was likely due to postural restrictions associated with gases which patients may find difficult to comply with.

Pre op visual acuity in Log MAR

The mean logMAR of the BCVA preoperatively in macula off patients 37 (92.5%) were 2.16 and in macula on patients 3 (7.5%) were 2.13.

Anatomical result

Out of 40 patient of RRD The primary anatomical success rate after a single operation were 85% (34 patients). The patients having retinal redetachment were 15% (6 patients) which underwent second surgery and final reattachment rate was 100%.

Our result was similar to study conducted by Kobashi et al. which reported achieving primary anatomical success in 261(96.3%) of the 271 eyes in the PPV group, with final anatomical success achieved in all eyes.⁹⁸

Intra operative complication

In our study 3 patients had intra operative complication. One patient had lens damage, one patient had vitrous in ant chamber, and one patient had iatrogenic retinal tears.

Post Operative visual acuity

Postoperative visual acuity data recording for post-operative reviews at Day 1, Day 7, Day 30, Day 90, Day 180.

The visual outcome in these cases was categorized by logmar vision chart.

In our study mean visual acuity on day 1 in macula off patient was 1.49 and macula on patient was 0.99.

In our study mean visual acuity on day 7 in macula off patient was 1.31 and macula on patient was 0.74.

In our study mean visual acuity on day 30 in macula off patient was 1.13 and macula on patient was 0.54.

In our study mean visual acuity on day 90 in macula off patient was 0.96 and macula on patient was 0.31.

In our study Final mean visual acuity in macula off patient was 0.94 and macula on patient was 0.31.

Post operative Intra ocular pressure :

Postoperative intra ocular pressure recorded on post-operative reviews at Day 1, Day 7, Day 30, Day 90, Day 180.

In our study mean intra ocular pressure on day 1 is 16.35

In our study mean intra ocular pressure on day 7 is 16.4

In our study mean intra ocular pressure on day 30 is 16.6

In our study mean intra ocular pressure on day 90 is 15.8

In our study mean intra ocular pressure on day 180 is 16.15.

Complication :

In our study out of 40 patient 12 patient had post operative complication. Most common complication was Redetachment (6 out of 40 patients). Second most common complication was Cataract.(4 out of 40 patients). Two patient had post operative high intra ocular pressure.

CONCLUSIONS

Out of 40 patient 32 patient was male and 8 patient was female mean age of presentation was 52.72 yrs. Our results showed that 25G-TSV was effective in reattaching the retina. In the current study, our analyses indicated that the functional success rate after the primary reattachment operation was 85%. Only 6 case



had redetachment(4 patient was pseudophakic and 2 patient was phakic) for that they under went further management and final reattachment rate was 100%. Final visual acuity in macula of patients were 0.94 and in macula

on patients were 0.3. Most common complication was redetachment and in our study post operative endophthalmitis not occurred in any case.

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