



ORIGINAL ARTICLE

Efficacy of pars plana vitrectomy (PPV) for visually significant vitreous opacities.

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ABSTRACT... Objective: To study the efficacy of pars plana vitrectomy (PPV) for visually significant vitreous opacities in improving visual function and quality of life. **Study Design:** Interventional study. **Setting:** Department of Vitreoretinal Clinic of Ophthalmology, Nishtar University Hospital Multan. **Period:** May 2017 to August 2019. **Material & Methods:** A total of 50 patients of both genders, aged 35 to 65 years having lenticular status (Phakic or pseudophakic patients) and planned for PPV were enrolled for this study. All patients were examined on slit lamp bio microscope. Dilated fundus examination was performed with indirect ophthalmoscope using scleral indentation. Intraocular pressure was measured pre and postoperatively with Goldmann's applanation tonometer under topical anaesthesia. Diagnosis was made on through clinical examination. All patients underwent 23 gauge PPV with or without silicon oil with endo laser. Best spectacle corrected visual acuity was recorded with help of Snellen chart. **Results:** There were 50 eyes of 50 patients in two groups, 40 phakic eyes (80%) and 10 pseudophakic eyes (20%) that underwent 3 PPV for visually significant opacities. There were 38 (76.0%) male and 12 (24.0%) female patients. Thirty four (68.0%) out of 50 patients showed improved best spectacle corrected visual acuity (BSCVA) and visual function while 18% had BCVA 6/24 – 6/18. Forty three (86.0%) patients reported quality of life and psychological feel improvement. **Conclusion:** Pars plana vitrectomy is a safe, effective and viable option for annoying vitreous floaters. There are risks of retinal breaks, rhegmatogenous retinal detachment and cataract. Surgeon must be ready for prompt handling of patient.

Key words: Floaters, Pars Plana Vitrectomy, Vitreous Opacities.

INTRODUCTION

Visual acuity measurements are not always accurate to reflect the true visual comfort of patients.¹ Optically clear refractive media is essential for quality of a good vision. Clinically significant vitreous opacities are always a challenge for a vitreo-retinal surgeon. With the advent of modern vitrectomy surgery and modalities, it has become possible to remove vitreous floaters.² Vitreous is a transparent gel that fills the posterior segment of eye. It transmits 90% of visible light. Vitreous base straddles around the ora-serrata (1.5-2 mm anteriorly and 3-4 mm posteriorly).³

Collagen II is a major structural protein in vitreous. It is insoluble, rod like and has random orientation. It is electrostatically neutral and allows vitreous

to expand (plasticity). Hyaluronic acid is an unbranched, coils upon itself like a sponge and have negatively charged molecules of glucuronic acid. Potassium and ascorbic acid concentration is high in vitreous.⁴

Floaters represent one of the most common presentations to hospital eye services. A survey of optometrists in 2002 showed that an average of 14 patients per month per optometrist presented with symptoms of floaters in the UK. Wagle AM et al conducted a study to ascertain the health quality of life associated with symptomatic degenerative vitreous floaters. They concluded that symptomatic degenerative vitreous floaters have a negative impact on health related quality of life.⁵ In Pakistan such study has never been done before. Aim of the study was to establish

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treatment success and incidence of pars plana vitrectomy (PPV) related complications.

MATERIAL & METHODS

This prospective interventional study was conducted at Nishtar Medical University Hospital Multan from May 2017 to August 2019. A total of 50 patients of both genders, aged 35 to 65 years having lenticular status (Phakic or pseudophakic patients) and planned for PPV were enrolled for this study. Patients having previous trauma, glaucoma, apakic or those who lost follow up were excluded. Approval from institutional ethical committee was taken for this study (1384/2021/EW/NMU&HM). Informed consent was also acquired from all study participants.

All patients were examined on slit lamp bio microscope. Dilated fundus examination was performed with indirect ophthalmoscope using scleral indentation. Intraocular pressure was measured pre and postoperatively with Goldmann’s applanation tonometer under topical anaesthesia. Diagnosis was made on through clinical examination. All patients underwent 23 gauge PPV with or without silicon oil with endo laser. Best spectacle corrected visual acuity was recorded with help of Snellen chart.

Every patient was given a questionnaire regarding improvement of visual functions, improvement in quality of life and for psychological assessment. Each questionnaire was subdivided into improved, static and worse visual function. Uplifted psychology was labeled in terms of a subjective feeling of satisfaction with visual improvement. Quality of life was described as a subjective feeling of improvement in routine life and feeling of well-being.

All the patients were followed up on 1st and 3rd post-operative day and at 1 week. Best spectacle corrected visual acuity was documented before and after the PPV and assessment of improvement in the patient quality of vision as well. All the IOPs and PPVs were performed by single surgeon to alleviate bias.

The data was analyzed using Microsoft Excel and

SPSS version 26.0. All the qualitative values like gender, quality of vision, uplifted psychology were presented as mean and standard deviations. All quantitative values like visual acuity and IOP were shown as frequencies and percentages.

RESULTS

There were 50 eyes of 50 patients in two groups, 40 phakic eyes (80%) and 10 pseudophakic eyes (20%) that underwent 3 PPV for visually significant opacities. There were 38 (76.0%) male and 12 (24.0%) female patients.

Thirty four (68.0%) out of 50 patients showed improved best spectacle corrected visual acuity (BSCVA) and visual function, out of which, 7 (14.0%) were pseudo phakic patients and 27 (54.0%) were phakics. There were 11 (22.0%) patients with static vision, among these, 2 (4.0%) were pseudophakes and 9 (18.0%) were phakic patients. There were 5 (10.0%) patients who had worse vision, among these, 1 (2.0%) were pseudophakic and 4 (8.0%) were phakic patients.

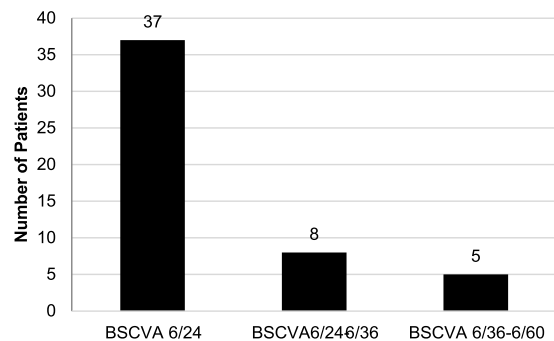


Figure-1. Pre-Operative best spectacle corrected visual acuity.

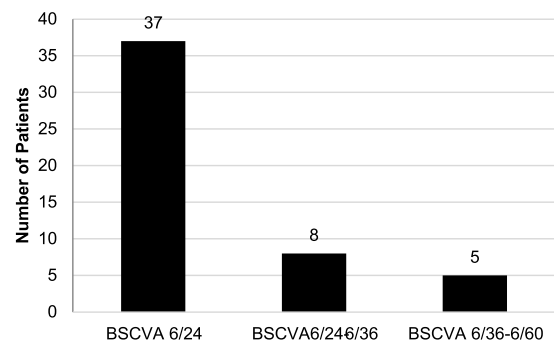


Figure-1. Pre-Operative best spectacle corrected visual acuity.

The quality of life and psychological better feel with BCVA 6/6 – 6/5 was very improved. While 18% had BCVA 6/24 – 6/18, quality of life and psychological feel were improved in this group as well except 2 (4.0%) patients, one each pseudophake and phakic one who recommended as static status (4% of total patients). Five patients (10.0%) reported quality of life and psychological feel worsened with BCVA 6/36-6/24 including 1 pseudophakic patient out of total 10 pseudophakes and 4 out of total 40 phakic patients.

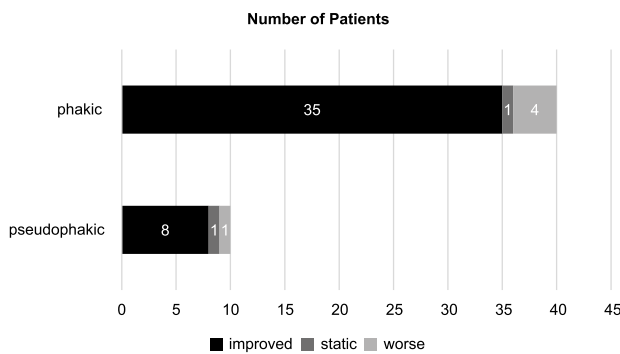


Figure-3. Distribution of patients in terms of quality of life and uplifted psychology (n=50)

DISCUSSION

In the past, studies have stated floaters to be perceived as major medical condition and described by patients to hamper their vision and quality of life significantly.⁵⁻⁷ Researchers have ascertained the health quality of life associated with symptomatic degenerative vitreous floaters and concluded that symptomatic degenerative vitreous floaters have negative impact on health related quality of life. Younger patients are likely to take risk of blindness to get rid of floaters than older patients.⁵

Lott MN et al reported short outcomes and complications of patients undergoing 23 gauge Trans conjunctival sutureless pars plana vitrectomy.⁸ They studied 52 men and 48 women. Postoperative visual acuity improved in 68% patients. Postoperative complications included retinal detachment, cataract progression, vitreous hemorrhage, persistent macular hole, phthisis, posterior capsular opacification and severe conjunctival chemosis.⁸ There were 58% patients who showed improved visual function,

quality of vision and uplifted psychology. Patients who did not show improved visual outcome had peripheral vascular disease (PVD) 8%, iatrogenic retinal breaks 12%, cataract 8%, hypotony 4%, rhegmatogenous retinal detachment 2% and raised intraocular pressure 8% patients. In our study the results are comparable with above mentioned studies. The results are dependent on the success of surgical procedure, severity of ocular problem. Postoperative follow up and monitoring of the patient is essential in every case. In our study 4 (8.0%) patients developed treatable glaucoma (1 pseudophake and 3 phakic), 4 phakics developed cataract, 2 phakic patients developed hypotony which recovered later on. One developed chronic retinal detachment while 6 developed iatrogenic breaks (2 pseudophakes and 4 phakic) which were managed preoperatively and ended up in improved group.

Lin Z et al⁹ analyzing 47 eyes of 47 patients with symptomatic vitreous floaters who had 27-gauge PPV found that BCVA of 41 eyes (87.2%) remained unchanged or improved while 91.5% of the patients showed satisfaction with the PPV procedure. Authors pointed out caution while performing the procedure as post-operative complications can occur. Park et al¹⁰ revealed 2 cases of endophthalmitis after 23-gauge PPV in vitreous opacities in a nationwide study.

In terms of limitations, we had a comparatively small sample size while follow up period was short as well. Further studies involving large group of patients and evaluating long term complications like cataract, proliferative vitreoretinopathy or retinal detachment will further add to what is already known.

CONCLUSION




Pars plana vitrectomy is a safe, effective and viable option for annoying vitreous floaters. There are risks of retinal breaks, rhegmatogenous retinal detachment and cataract. Surgeon must be ready for prompt handling of patient.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	M. Rashad Qamar Rao	Drafting, Paper reading, Final approval.	
2	Raza Ali Shah	Literature Review, Data analysis.	
3	Nausherwan Adil	Data interpretation, Discussion.	
4	Akifa Abbas	Data collection, References.	