

ANATOMICAL OUTCOME IN PATIENTS WITH PSEUDOPHAKIC RETINAL DETACHMENT AFTER PARS PLANA VITRECTOMY WITH SILOCONE OIL IMPLANT

Submitted: 08 September, 2021

Accepted: 15 September, 2021

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ABSTRACT

PURPOSE: To determine the primary anatomical outcome in patients presenting with pseudophakic retinal detachment after six weeks of pars plana vitrectomy.

METHODS: In a descriptive case series 50 patients with age ranging from 20-60 years having pseudophakic retinal detachment were included in the study, and patients with trauma and other complications in anterior and posterior segment of eye were excluded from the study. Pars plana vitrectomy using silicon oil was done by single surgeon and this was recorded.

RESULTS: Surgical success was defined as complete retinal flattening seen by indirect ophthalmoscope after primary or secondary procedure which persisted for at least 6 weeks. The primary retinal reattachment rate was close to 84%. The causes of failure were new breaks, reopened original breaks and PVR.

CONCLUSION: This technique gives an effective intraocular tamponade. It alleviates the non-physiological distortion of the globe caused by scleral buckling and essentially eliminates postoperative refractive errors and motility problems.

KEYWORDS: Anatomical outcome, Pseudophakic retinal detachment, Pars plana vitrectomy.

INTRODUCTION

Whenever sub retinal fluid accumulates in the space between the neurosensory retina and the underlying retinal pigment epithelium (RPE), a retinal detachment occurs. The term rhegmatogenous is derived from the Greek word rhegma, which means a discontinuity or a break. A rhegmatogenous retinal detachment (RRD) occurs when a tear in the retina leads to fluid accumulation with a separation of the neurosensory retina from the underlying RPE. This is the most common type of retinal detachment.¹

Most cases of rhegmatogenous retinal detachment are associated with posterior vitreous separation which is natural part of aging. The process of

posterior vitreous separation is often accelerated by cataract surgery, trauma, and YAG laser capsulotomy following cataract surgery for a hazy capsule behind the lens implant, diabetes, vitreous hemorrhage, uveitis, and high myopia.²

The proportion of aphakic or pseudophakic patients with retinal detachment has increased to 30% during the past decade due to the increasing number of cataract surgery being performed. The incidence of retinal detachment is about 0.98~3.6% after the intra-capsular cataract extraction (ICCE), 0.33~1.7% after extracapsular cataract extraction (ECCE) and intraocular lens (IOL) implantation, and 1.17% after

phacoemulsification and intraocular lens implantation.³

Goals of retinal detachment surgery, in general, are to reattach the retina, to close the retinal breaks and release the vitreoretinal traction.⁴ Currently there are three different surgical approaches to repairing a detachment: scleral buckle procedure (external tamponade), pars plana vitrectomy and pneumatic retinopexy (internal tamponade).⁵

Pars plana vitrectomy is increasing in popularity as a first-line treatment for primary RD, especially in pseudophakic cases.⁶ In one particular study the anatomical outcome i.e. Primary reattachment of retina after pars plana vitrectomy was found to be 84%.⁷

The purpose of our study is to determine the anatomical outcome after pars plana vitrectomy in patients with pseudophakic retinal detachment. In clinical practice this procedure produces excellent results but very limited data is available, we want to study it scientifically and document its success, so that, if proven to be successful scientifically, it may be used more frequently for better management and prevention of blindness in these patients.

MATERIALS AND METHODS

By non-probability purposive sampling 50 cases were included with 95% confidence level, 10.5% margin of error and taking expected percentage of reattachment of retina i.e. 84% after pars plana vitrectomy in patients presenting with pseudophakic retinal detachment. Inclusion criteria were Patients' age ranging from 20-60 years, and Patients presenting with pseudophakic retinal detachment detected on Indirect ophthalmoscopy planned to undergo pars plana vitrectomy. Both male and female patients were included in study without any bias.

Exclusion criteria were traumatic cases, Patients with proliferative diabetic retinopathy (PDR) seen on indirect ophthalmoscopy, patients with giant retinal tears seen on indirect ophthalmoscopy,

cases with macular holes seen on indirect ophthalmoscopy, patients with history of previous retinal detachment, patients with corneal opacity seen on Slit lamp examination, cases with accompanying vitreous hemorrhage seen on B-scan, or all eyes with proliferative vitreoretinopathy grade higher than C-3 seen on indirect ophthalmoscopy.

All patients presenting in institute of Ophthalmology, fulfilling the inclusion criteria were included in the study. Informed consent about surgery was taken. Pars plana vitrectomy using silicon oil was done by single surgeon. This was recorded on a proforma. Follow up visits were done to see the retinal reattachment and anatomical outcome was recorded at six weeks postoperatively.

Data was analyzed by SPSS version 11. The qualitative variables under study were anatomical outcome (retina reattachment) and gender, which was presented as Percentage. The quantitative variable Age was presented as mean and standard deviation.

RESULTS

The study was carried out on 50 cases. Only those cases were included in the study that fulfilled the inclusion and exclusion criteria.

Three (6%) patients were in age range 20-30 years, eight (16%) patients were 30-40 years of age, thirteen (26%) patients in the age range of 40-50 years, twenty-six (52%) were in age range of 50-60 years. The mean age of patients was 47 years with standard deviation of 17.11 i.e Mean+SD 47+17.11 (Table 1).

There were twenty-nine (58%) male patients and twenty one (42%) female patients in the study showing slight male pre-dominance with male to female ratio 1.38:1 (Table 2).

Surgical success was defined as complete retinal flattening after primary or secondary procedure which persisted for at least 6 weeks. The primary

retinal reattachment rate was close to 84%. The causes of failure were new breaks, reopened original breaks and PVR. No serious intra-operative complications were seen apart from slight sub retinal hemorrhage during endo-drainage. This was easily managed with suction needle. No case of postoperative infection was seen. Postoperative rise of IOP was noted in patients but it was adequately controlled with no long-term complications.

Table - 1: Age Distribution of Patients (n=50)

Age in years	Frequency	Percentage
20-30	03	06%
30-40	08	16%
40-50	13	26%
50-60	26	52%
Total	50	100.0%
Mean + SD =47+17.11		

Key: SD = Standard Deviation

Table - 2: Sex Distribution of Patients (n=50)

Sex	Frequency	Percentage
Male	29	58%
Female	21	42%
Male to female ratio	1.38:1	

DISCUSSION

Goals of retinal detachment surgery in general are to close the retinal breaks and release vitreoretinal traction. The best method to fix a retinal detachment is one which is relatively safe and controlled, relatively quick, involves minimal manipulation, has minimal intra-and postoperative complications, with reliable results and which can be applied to all eyes. Rosenberg in 1938 first demonstrated that intraocular air can be used to flatten the retina without using scleral buckle but the Custodies technique 11 of scleral buckling became more popular hand is still widely used. Robert Machemer in 1970 revolutionized

intraocular surgery with the introduction of Pars Plana Vitrectomy. Various modifications in the technique were subsequently made. In 1983 Kloti reported the use of vitrectomy in conjunction with internal drainage of sub retinal fluid and use of intravitreal tamponade.

The principles operative in scleral buckling are to reduce vitreo retinal traction to displace sub retinal fluid from the retinal break alter the fluid currents in vitreous cavity and sub retinal space and to approximate the retinal breaks and the vitreous gel. The procedure has worked well in expert hands with primary surgery success rates approaching over 90%. The anatomic success rate in pseudophakic eyes has varied between 82%. Scleral buckling procedures may pose a problem especially in cases of aphakic or pseudophakic retinal detachment because of poor visibility (capsule opacification, vitreous opacities), small pupils, reflections from the intraocular lens surface etc; hence inappropriate assessment of retinal pathology.

This case series study involving 50 eyes of 50 patients was conducted at Institute of Ophthalmology Mayo hospital Lahore. Records of all cases included in the study showed relatively uncomplicated pseudophakic rhegmatogenous retinal detachment. The purpose of this study was to discuss an alternative method of retinal detachment surgery, which if properly employed could produce acceptable results.

All patients underwent pars plana vitrectomy procedure with a primary success rate of 84%. A similar study was carried out by Hagler in which reattachment rate after primary vitrectomy was 86%. In our study there were 29 (58%) patients were male and 21 (42%) were female, with male to female ratio 1.38:1. In a study carried out by Hagler, out of 93 patients, 58(62%) were male and 35 (38%) were female, with male to female ratio 1.65.

One of the difficult steps of retinal surgeries is finding a peripheral tear especially in

pseudophakia because of lens reflection and capsular thickening. Vitrectomy can improve visualization by removing the thickened posterior capsule or fibrotic capsular rings.

An important advantage of vitrectomy procedure is the excellent visualizations achieved once inside the eye. Different kind of vitrectomy lenses have been developed which can provide a wider better internal view; hence better chances of finding breaks.

Internal tamponades of various types have been used in vitrectomy procedure. The internal tamponade used in our study was silicon oil. The most important postoperative complication was a rise of intraocular pressure (IOP) after the use of silicon oil. The rise of IOP was 20-30 mm Hg in the first twenty-four hours, and was adequately controlled by carbonic anhydrase inhibitors (Diamox) with no sight threatening consequences.

Of a total of 50 patients, 30 (60%) were operated upon under general anesthesia (G.A.), while 20 (40%) patients were operated upon under local anesthesia (L.A.). Generally, there has been a trend to operate on retinal detachments under G.A., but not all patients undergoing surgery, especially in the elderly age group are fit to have it.

Surgical success in this study was defined as complete retinal flattening achieved during surgery which persisted at least six weeks postoperatively. In this study the success rate was 84% after primary surgery.

CONCLUSION

In conclusion, from a medical standpoint, primary vitrectomy for rhegmatogenous retinal detachment in pseudophakic eyes is eminently logical. The technique permits a direct attack on the cause of retinal detachment by release of vitreoretinal traction internally and by permitting an effective intraocular tamponade. This technique alleviates the non-physiological distortion of the globe caused by scleral buckling and essentially

eliminates postoperative refractive errors and motility problems. In most cases this procedure is shorter than a scleral buckling procedure and is much easier to perform under local anesthesia from the standpoint of patient acceptance.

Postoperatively, vitrectomized eyes without scleral buckling have very little conjunctival or lid edema and significantly less discomfort. One of the added advantages to the patient is the removal of debris in the vitreous, hence better vision postoperatively. The procedure is much safer as the removal of subretinal fluid is better controlled and avoids complication.

RECOMMENDATIONS

My preference would be to treat patients of pseudophakic retinal detachment with 3 Ports Pars plana vitrectomy and air-fluid oil exchange. This approach has approximately 84% success rate.

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