ORIGINAL ARTICLE

Frequency of Retinal Reattachment and Improvement in Visual Acuity in Case of Rhegmatogenous Retinal Detachment With Inferior Breaks Undergoing Pars Plana Vitrectomy Combined With Scleral Buckling and Silicon Oil Injection

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ABSTRACT

Objective: To determine the frequency of retinal reattachment and improvement in visual acuity in cases of rhegmatogenous retinal detachment with inferior breaks undergoing pars plana vitrectomy combined with sclerral buckling and silicone oil injection.

Patients and methods: This descriptive case series study conducted at Department of Ophthalmology, Jinnah Postgraduate Medical Center Karachi. The duration of study was one year and six months for collection of subjects and six month for follow-up(2 years). The study group comprised of 52 patients with retinal detachment having inferior break. These patients underwent combined pars plana vitrectomy with sclera buckling and silicone oil tapenade. Post procedure follow up was scheduled on 1st post operative day, one week, third month, 6th month. The results were analyzed through computer software SPSS 10.

Results: Total 52 eyes of 52 patients with retinal detachment due to inferior retinal break underwent procedure. Retinal reattachment after first surgery was achieved improvement was achieved in 48 patients (92.3%) and the second surgery in 52 patients (100%). Visual improvement was noticed in 46 patinas (88.5%), while no improvement was noted in 6 patient (11.5%).

Conclusion: Pars plana vitrectomy combined with scleral buckling is a safe procedure that improves and enhances primary success rates in inferior break detachment.

Keywords: Retinal detachment, pars plana vitrectomy, scleral buckling, silicone oil.

INTRODUCTION

Retinal detachment (RD) describes the separation of neurosensory retinal (NSR)from the underlying pigment epithelium (RPE).Among all the types of retinal detachments, the most common type is rhegmatogenous retinal detachment (RRD), which is characterize by the presence of a retinal break which is a full thickness defect or discontinuity in the neurosensory retina[1,2]. Machemer in 1976 revolutionized intraocular surgery with the introduction of pars plana vitrectomy[3]. Scleral buckling is used to approximate retinal layers by indenting the sclera externally to mechanically relieve the vitreoretinal traction and approximate the edges of retinal break to the underlying retinal pigment epithelium[4].

Sclera buckling (SB) and pars plana vitrectomy (PPV) are most commonly used either alone or in combination.[5-7] The majority of rhegmatogenous RD are associated with superior or midline break which can be treated with either conventional scleral buckling or pars plana vitrectomy alone.[8,9] However inferior breaks present a surgical challenge because they often cannot be closed by a single surgical technique, and it is recognized that intraocular tamponade by gas or silicon oil is unable to provide direct support to inferiorretinal breaks without vigorous posturing, so for their proper treatment standard scleral buckling is combined with pars plana vitrectomy and silicone oil tamponade for better closure of the breaks and re-attachment of retina.[10-12] The rational for this study is to collect data in local setup as no previous study has been undertake in Pakistan, so eventually following this study most of the vitro-retinal surgeon will adopt the procedure of combined pars plana vitrectomy and scleral buckling with silicone oil injection in cases of retinal detachment with inferior breaks. We are anticipating that the prognosis for visual outcome and retinal reattachment will be increased in our local setups as a result of this study.

PATIENTS AND METHODS

This descriptive case series study was conducted at Department of Ophthalmology, Jinnah Postgraduate Medical Center Karachi. The patients enrolled

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through outdoor department of Ophthalmology. Total duration of study was one year, 6 month for collection of subjects and 6 month for follow-ups. The atients with retinal detachment secondary to inferior breaks, either gender with age ranging from 25-55 years presenting within 3 month of symptoms were included. The patients who have corneal diseases e.g. dystrophy, degeneration, dermatitis, glaucoma, optic nerve disorders, diabetic retinopathy, infection of the globe or anoxia, any congenital ocular pathology, any previous ocular surgery, any patient who were lost to follow-up and patient in which iatrogenic breaks or new breaks found in superior half retina were excluded. All patients were admitted in the ward and a detailed history was taken on a printed history performa after taking informed consent. Purpose and procedure of study were explained to all patients. Base line ocular examination was performed then after dilatation of pupil with tropicamide 1% and phenylephrine 10% vitreous and retina were examined with the indirect ophthalmoscope using 20-D lens,slit lamp biomicroscopy using 90-D lens and Goldman 3 mirror contact lens. The extent of retinal detachment, location of inferior break and any additional breaks were noted. The retinal detachment was drawn on a fundus chart showing details of RD and breaks.post procedure follow up was done on 1st procedure day, 1st week and 3rd months. Visual acuity, anterior segment examination,intraocular pressure and status of the retina were noted in all patients at 6th months after the procedure. This was when final outcome was determined on the basis of improvement in visual acuity and retinal reattachment being Federal Government Hospital, all patients were studied and funding was done by the government. Data has been analyzed by SPSS version 10.

RESULTS

Within one year and six months duration, fifty two eyes of fifty patients were selected for this study. Out of these 52 patients 4 (5.4%)were male and 18 were females with a minimum age of 25 years and a maximum age of 55 years while mean age of these patients was 43.36±10.44 years (Table 1). The duration of disease was taken in weeks. Minimum time for which the patients presented was within one week of symptoms and the time was 12 weeks. The mean duration of disease was 5.63±2.95 weeks. Right eye was involved in 31 (59.6%) patients and left eye was involved in 21 (40.4%) patients.Anatomical success was defined as retinal reattachment after the surgical procedure. Anatomical reattachment after the first operation was achieved in 48 (92.3%)cases, while in the remaining 4 (7.7) eyes retina was detached in the first or second follow-up. All of these remaining eyes were re-operated and successfully treated after the second surgery, so the success rate rose to 100% after the second procedure (Table 2). Functional success was defined as improvement in visual acuity of at least one line one the Snellen's visual acuity chart postoperatively. The visual improvement was seen in 46(88.5%)patents,while no improvement was noted in 6 patients (11.5%) [Table 3].

Table 1: Frequency of retinal reattachment after first surgery (n=52)

Retinal Reattachment	No.	%
Yes	48	92.3
No	4	7.7

Table 2: Frequency of visual acuity Improvement (n=52)

Visual acuity	No.	%
Yes	46	88.5
No	6	11.5

Table 3: Frequency of eyes distribution (n=52)

Eye side	No.	%
Right	31	59.6
Left	21	40.4

DISCUSSION

In this case series study we have addressed whether scleral buckling is required to ensure successful retinal reattachment following PPV in patients with inferior retinal breaks. Our overall successrate of reattachment of the retina with one procedure in this study was 48/52 (92.3%).this is consistent with that reported in other series evaluating primary RD repair in the UK and with studies of primary PPV in RD repair[13]. One of the inherent problems in the use of PPV is the difficultyof producing a direct tamponade on inferior retinal breaks using currently available intraocular tamponade agents. Perfluorocarbon liquids have been used on a short term basis for postoperative tamponade of inferior breaks but are associated with retinal toxicity[14]. An increased risk of PVR and require further intervention to ensure removal from the eye.

Although several authors have addressed the issue of PPV for RD few have specifically investigated the management of inferior retinal breaks and the use of supplementary scleral buckles[15,16]. Tanner et al[6] identified in a prospective study of nine consecutive patients undergoing PPV for primary RD with associated inferior retinal breaks and no significant proliferative vitreoretinopathy. They achieved 89% (8/9) success with one operation.

Heimann et al[17] in a retrospective series of 53 patients identified six patients with primary RD associated with inferior retinal breaks which they treated with PPV and SF6 tamponade without scleral buckleRetinal reattachment occurred in 50% (3/6) of these eyes but no information is provided on the exact of redetachment in this group. Escoffery et al[18] identified two cases with inferior breaks out of a mixed series of 29 eyes with RD treated with PPV but no scleral buckle. However, no information is given on the exact characteristics of these breaks and on anatomical outcome in these cases. Alexander et al[19] in a retrospective analysis reported on 60 consecutive eyes with retinal detachment associated with inferior break undergoing combined scleral buckling and pars plana vitrectomy with gas tamponade. Primary retinal attachment at 3 month was achieved in 95% of patients. This exceeds success rates of published data of patients who underwent vitrectomy and gas without buckling (81-89%). The introduction of wide angle viewing systems, such as the BIOM, now make it easier to maximize removal of vitreous gel and relieve vitreous traction from retinal breaks during pars plana vitrectomy and scleral buckling is used to produce an inferior indent to close inferior breaks[21,23]. Supplementary scleral buckling is a safe procedure that improves and enhances primary success rates in inferior break detachments over vitrectomy and silicone oil without buckling[10,24-26]. In our study the success rate of reattachment of the retina with one procedure was 48/52 (92.3%), which is very near to the international values and our success rate is also far exceeding from those studies In which scleral buckling was not combined with pars plana vitrectomy. So, in this study we have demonstrated that scleral buckling is necessary to achieve retinal reattachment in repair of retinal detachment due to inferior breaks.

CONCLUSION

Supplementary scleral buckling is a safe procedure that improves and enhances primary success rates in inferior break detachment over vitrectomy and silicone oil without buckling. The study also shows a large gap between patients and Ophthalmologistand vitreoretinal surgeons. Because of illiteracy, patient does not understand and realize the nature and outcome of the retinal detachment. Delay in referral of these patients by general ophthalmologists and also undue delay on part of the patients are factors that contribute in the chronicity and severity of the disorder.

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