ANATOMICAL SUCCESS IN PATIENTS AFTER RETINECTOMY FOR COMPLEX RETINAL DETACHMENT

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ABSTRACT

Objective: To evaluate the efficacy of primary and redo retinectomy in eyes with complex retinal detachment.
Study Design: Quasi-experimental study.
Place and Duration of Study: Armed Forces Institute of Ophthalmology Rawalpindi from Jan 2012 to June 2013.
Patients and Methods: Fifty eight eyes (patients) underwent relaxing retinectomies for complex retinal detachment with proliferative vitreoretinopathy or intrinsic retinal shortening. Operative technique included pars plana vitrectomy, proliferative vitreoretinopathy management, use of intraoperative perfluorocarbon liquid, retinectomy, endolaser and intraocular temponade. The main outcome was anatomic success, defined as complete retinal reattachment at four months follow up. Eighteen eyes out of the same primary group underwent second retinectomy because of anatomical failure.
Results: Mean age of study population was 53.78 ± 15.11 years, 56.9% of patients were male(s). Anatomic success rate after 1st retinectomy was achieved in 68.96% (40 eyes out of 58). In eighteen eyes that underwent 2nd retinectomy, anatomic success rate was 72.22% (13 eyes out of 18). Overall success rate was 91.3% (53 eyes out of 58) in our study.
Conclusions: Relaxing retinectomies for retinal shortening can improve the anatomical success rate in patients with complex RD.

Keywords: Pars plana vitrectomy, Proliferative vitreoretinopathy, Retinectomy, Retinal detachment.

INTRODUCTION

Machemer was the first eye surgeon who described relaxing retinotomy (RR) during pars plana vitrectomy (PPV) for an eye with retina incarcerated in a scleral wound following trauma[1]. Machemer et al[2] stated indications, techniques and results of retinotomies and retinectomies. Zivojnovic[3] showed techniques of management of the retina with silicone oil (SO) following retinotomy or retinectomy. Parke and Aberg[4] described the use of retinotomies and retinectomies for eyes with severe proliferative vitreoretinopathy (PVR) using gas tamponade and laser endophotocoagulation. Retinal detachment with PVR is an advanced disease but good functional outcome can be achieved after retinectomy (i.e. anatomic success) in such cases[5].

The commonest cause of failure of retinal reattachment surgery is PVR[6-7]. Retinectomies are used when there is retinal shortening because of long standing retinal elevation with intrinsic retinal shortening, fibrous proliferation and contraction or retinal incarceration. This retinal shortening prevents attachment of the retina with retinal pigment epithelium during or after surgery (Fig-1).

The aim of this study were to determine the anatomical reattachment (success) rate in eyes undergoing PPV with two or more clock hours of retinectomy for complex retinal detachment (RD) with PVR.

PATIENTS AND METHODS

This quasi-experimental study was carried out at Armed Forces Institute of Ophthalmology, which is a tertiary care hospital, from Jan 2012 to June 2013. Fifty eight eyes (i.e. 58 patients) with complex retinal detachment requiring retinectomy to deal with retinal shortening were included in the study through consecutive sampling. All the patients were thoroughly evaluated pre operatively with slit lamp biomicroscopy, indirect ophthalmoscopy and dynamic ultrasound B scan examination. All the relevant details including patients' demographic data previous

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Received: 13 Dec 2013; Accepted: 10 Feb 2014

treatment and ocular examination findings including retinal drawing were endorsed on a pre designed proforma. Written and informed consent for surgery and participation in the study were obtained from each patient after discussing the details of surgical procedure and prognosis. Pre-anaesthesia evaluation was done and all the patients were operated under local or general anaesthesia. In our study, 56.89% (33) of the patients were males. All cases underwent standard 23 / 25 Guage[3]-port PPV by the first author using either Constellation Vision system (Alcon) or Accurus Vitrectomy system (Alcon). In cases of RD with PVR/ retinal shortening, meticulous PVR management was performed with special emphasis on removal of anterior PVR membranes. Perfluorocarbon liquid (PFCL) Decalin (DORC) was used where required for assistance in complete PVR management. This was followed by reattachment experience (either complete filling of eyes with PFCL or removal of PFCL followed by fluid air exchange).

At this stage, eyes that failed reattachment experience underwent either external tamponade or retinectomy (if retinal shortening was severe). Once complete peroperative retinal flattening (after retinectomy) was achieved, all eyes underwent endolaser followed by direct exchange of PFCL with SO (ALCHIMIA). Ports were closed and patient was advised to maintain appropriate head posture for 1 week. Eyes that could not be flattened preoperatively or eyes with infections, peadiatric vitreoretinal disorders and congenital vascular malformations were excluded from the study.

Postoperative treatment regimen included tablet ciprofloxacin 500 mg BD for 5 days, tablet diclofenac sodium 50 mg BD for 3 days, combined preparation of 0.3% tobramycin and 0.15% dexamethasone eye drops TDS and combined preparation of 0.5% Timolol and 2% Dorzolamide eye drops BD for 2 to 4 weeks.

Follow up was carried out at 2 weeks, 6 weeks and 4 months. The main outcome was anatomic success, defined as complete retinal reattachment at four months follow up. During each follow up dilated fundus examination with indirect ophthalmoscope was carried out to check for anatomical success.

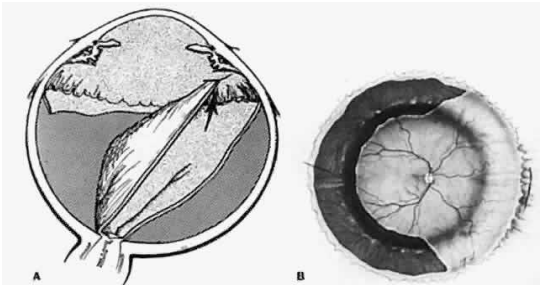

Figure-1: A) Retinal shortening due to incarceration. B) Retinal flattening after retinectomy.

Eyes with anatomical failure after 1st retinectomy (because of retinal elevation / PVR) underwent 2nd procedure for PVR management and extension of 1st retinectomy. In such eyes 3 ports were made, areas of retinal elevations were assessed and epiretinal membranes (ERM) / PVR membranes were removed. After endodiathermy of vessels, retinectomy was extended with vitrectomy cutter. SO top up was done followed by endolaser for retinal reattachment. Same follow up routine was adopted for redo cases.

Statistical analysis of the data was done using SPSS version 13.0. Descriptive statistics i.e mean ± SD for quantitative values and frequencies along with percentages for qualitative variables were used to describe the data.

RESULTS

Mean age of study population was 53.78 ± 15.11 years (range 10 to 72 years) with 56.8% (33) of patients being male. Anatomic success rate after 1st retinectomy was achieved in 68.96% (40 eyes out of 58). In eighteen eyes that underwent 2nd retinectomy, anatomic success rate was 72.22% (13 eyes out of 18). Overall success rate was 91.3% (53 eyes out of 58) in our study (Table-1). SO was used as an internal tamponade in all cases.

DISCUSSION

Retinectomies are done when there is retinal shortening that prevents reattachment of the retina with retinal pigment epithelium during or after surgery. This retinal shortening may have occurred because of intrinsic

shortening of the retina, fibrous proliferation or incarceration of the retina.

The advancement in vitreo-retinal surgical techniques, use of PFCL for recognition and removal of tractional membranes and the availability of wide angle viewing systems have increased the anatomical and functional success rate of surgery for PVR. Relaxing retinectomy is indicated when there is intractable traction that prevents the retina from reattaching to the retinal pigment epithelium. This usually occurs in anterior PVR, major subretinal proliferation, intrinsic retinal shortening after long standing RD, high myopia with loss of retinal elasticity and retinal incarceration[8]. Some cases of proliferative vascular diseases like diabetic retinopathy also require localized retinectomies.

This study highlights the effect of retinectomy incisions in complex RD surgery with PVR or intrinsic retinal shortening. Mean age of study population was 53.78 ± 15.11 years (range 10 to 72 years) with 56.8% of patients being male. Anatomic success rate in our study after 1st retinectomy was 68.96% while the final success rate after 18 eyes underwent 2nd procedure, was 91.3% which is comparable with those in the reported literature. Tanet al[9] showed the anatomic success rate of 77.2% in eyes with anterior PVR "that did not undergo previous buckling surgery". Final attachment rate was 95.9%, "reached after 1 rhegmatogenous RD reoperation in 21 cases and after 2 rhegmatogenous RD reoperations in[4] cases". Banaee et al[10] reported anatomical success rate of 70% with "360 degrees peripheral retinectomy". This low anatomic success rate may be due to the fact that "eyes with complicated RD due to anterior PVR, unstable edge of retinal break, anterior hyaloidal fibrovascular proliferation, retinal incarceration in scleral wound or 3600 giant retinal tear", that required 3600 retinectomy were included in this study. Moreover all eyes underwent surgery for once. Whereas in our study we included eyes that required two or more clock hours of retinectomy for complex RD with PVR. Khaled AG[11] had a final success rate in 76.3% of eyes with complicated RD with severe PVR. All eyes were having severe PVR and underwent surgery for once.

Table-1: Anatomical success after retinectomy.

Type of surgery	No of eyes (Patients)	Anatomic success	
		No of eyes	% of eyes
Eyes undergoing 1st retinectomy	58	40	68.96
Eyes undergoing 2nd retinectomy	18	13	72.22
Total eyes with retinectomies	58	53	91.3

CONCLUSION

PPV with retinectomy is an effective technique for flattening the retina in complex retinal detachments especially when severe PVR or retinal shortening does not allow the retina to flatten.

This approach may be particularly beneficial for patients injured in war against terrorism to achieve ambulatory vision, who have otherwise unsalvageable eyes. The advancement in vitreo-retinal surgical techniques and instruments can help us to achieve anatomical and functional success even in seemingly inoperable RD cases.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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