OPHTHALMOLOGY

SHORT REPORT

A review of scleral buckle procedures performed at a tertiary care center in Karachi, Pakistan

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Abstract

This retrospective study was done to evaluate the visual and anatomic outcomes of scleral buckling for the repair of rhegmatogenous retinal detachment (RRD). All scleral buckle procedures performed at the Aga Khan University Hospital, Karachi, from May 1999 to April 2012 were included. A total of 75 eyes of 72 patients were studied. The mean age of patients at surgery was 33.0±17.2 years. The mean logarithm of the minimum angle of resolution (logMAR) visual acuity (VA) was 0.9±0.8 pre-operatively and 0.5±0.6 at 1 year (p=0.018). At baseline, 27(36%) eyes had a best corrected visual acuity (BCVA) of 20/50 or better, while at 1 year after surgery 47(63.5%) eyes had BCVA of 20/50 or better. Retina had successfully attached after first attempt in 70(93.3%) cases. Scleral buckling for the repair of RRD resulted in a high anatomical success rate as well as significant improvement in visual acuity.

Keywords: Anatomic success, Scleral buckle, Rhegmatogenous retinal detachment, Visual outcome.

Introduction

Scleral buckling has been a well-established procedure for the repair of Rhegmatogenous retinal detachment (RRD).[1] Its short-term success rate ranges from 75-91% with a single procedure and 88-97% with multiple ones.[2] The long-term outcomes are not so satisfactory.[3] Only a limited number of studies have been carried out in this part of the world to describe the outcomes of scleral buckling for the repair of RRD. The current study was planned to audit the anatomic and visual outcomes of scleral buckle procedures performed by a single vitreoretinal surgeon at a tertiary care hospital in an urban setting.

Methods and Results

This retrospective study was conducted at Aga Khan University Hospital, Karachi, and comprised all scleral buckle procedures performed by a single surgeon from May 1999 to April 2012. Ethical exemption was obtained from the institutional review committee. Patients who presented with RRD and underwent scleral buckle procedure alone or with insertion of vitreous adjuncts post buckle were included. Medical

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Table-1: Characteristics of cases (eyes) that underwent sclerlal buckling.

Variable	n (%)
Gender	
Male eyes	51 (68)
Female eyes	24 (32)
Age at the time of procedure	
Mean ± SD (range)	32.97±17.17
Eye involved	
Right	40 (53.3)
Left	29 (38.7)
Both	3 (8.0)
Duration of symptoms (in days)	
Mean ± SD	21.1±34.1
Symptoms	
Decreased vision	47 (81.0)
Floaters/flashes	25 (43.1)
Field defects	6 (10.3)
Medical history	
Diabetes Mellitus	4 (5.3)
Hypertension	7 (9.3)
None	64 (85.3)
Ocular history*	
Idiopathic	30 (40.0)
High myopia	17 (31.1)
Cataract surgery	13 (28.9)
Peripheral retinal degeneration	10 (22.2)
History of RD in other eye	9 (20.0)
Trauma	7 (15.6)
History of arrested ROP	3 (6.7)
Glaucoma	1 (2.2)
Lens status	
Phakic	62 (82.7)
Pseudophakic	13 (17.3)

SD: Standard deviation
RD: Retinal detachment.

Table-2: Best corrected visual acuity (BCVA) before and after scleral buckling.

Timing of clinic visit	Mean ± Standard Deviation
At presentation	0.9 ± 0.8
4 weeks	0.7 ± 0.6
1 year	0.5 ± 0.6

records of these patients were retrieved using the hospital information system and International Classification of Diseases (ICD).[4] Data was obtained on patient demographics (age, gender), past medical and ocular history, lens status, pre- and post-operative intraocular pressure (IOP), pre- and post-operative (at day one, one week, one month and one year) visual acuity (VA), number of retinal breaks and quadrants involved. Other data recorded included the status of the macula (on/off), need for post-buckle vitrectomy, injection of temporary vitreous adjuncts (air/gas), and complications. A structured proforma was used to record these findings. Our main outcome measures were anatomical success rate, defined as reattachment of retina, and visual outcome at one-year follow-up.

SPSS 19 was used to analyse the data. Snellen's VA was converted to logarithm of the minimum angle of resolution (logMAR) values. Means with standard deviations (SDs) were computed to describe continuous data. Frequencies and percentages were computed to describe categorical data. Chi-square or Fisher's exact test was used to make comparisons, as appropriate. Paired t-test was used to compare means. P<0.5 was considered statistically significant.

A total of 75 eyes of 72 patients were included in the analysis, of which 51(68%) were men's eyes (Table-1). The mean age at surgery was 33.0±17.1 years. Significant ocular history included high myopia in 17(31.1%) eyes, peripheral retinal degeneration in 10(22.2%) eyes and trauma in 7(15.6%) eyes. Three (4%) eyes had a history of arrested retinopathy of prematurity (ROP). Decreased vision 47(81%) and floaters/flashes 25(43.1%) were the most common presenting symptoms. The mean duration of symptoms was 21.1±34.1 days.

At presentation, 27(36%) eyes had best corrected visual acuity (BCVA) of 20/50 or better. This proportion increased to 47(63.5%) one year after surgery. The logMAR mean BCVA was 0.9±0.8 pre-operatively and 0.5±0.6) at 1-year follow-up (p=0.018) (Table-2).

Macula was detached preoperatively in 52(69.3%) eyes, and this did not show any significant association with the success of retinal attachment after primary repair (p>0.05).

Retina was successfully attached after first attempt in 70(93.3%) cases. Thirteen (17.3%) eyes were pseudophakic, of which 4(31%) eyes did not have successful retinal attachment after first attempt, while 1(1.6%) out of 61 phakic eyes did not have successful reattachment after first attempt. The number of retinal breaks (tears/number of quadrants involved) was not significant in predicting successful anatomical outcome (reattachment of retina) (p>0.05). No complications were noted in 66(88%) eyes. There were 2(2.66%) cases each of infected or exposed buckle and 3(4%) cases of proliferative vitreretinopathy. Post-scleral buckle, 7(9.33%) patients underwent pars plana vitrectomy.

Discussion

In our study, successful reattachment of the retina after scleral buckling was achieved in 93.3% of eyes with retinal detachment. Visual outcomes at one year were also promising. The anatomical success rate in our study is comparable with those reported in previous studies (83% to 92.5% with single surgery).[5,6] The use of cryopexy for creating chorioretinal adhesions in all scleral buckle surgeries performed at our institution is consistent with previous reports in literature where cryopexy is used in nearly all cases during the initial surgery.[3,5]

A study reported that only 34% cases had VAs of better than 20/40 at 10-year follow-up.[3] A VA of 20/50 or better in the short term was reported to have been achieved in 39% to 56% of eyes.[2] The findings of our study at 1-year follow-up, with a VA of 20/50 or better being achieved in 63.5% of cases are better than the studies quoted.

Pseudophakic retinal detachment (RD) has been associated with worse outcomes. In our study 4 out of 5 eyes (80%) with unsuccessful retinal attachment after first attempt were pseudophakic. There are reports in literature which do not show any significant association between pseudophakia and anatomical success.[5] Macular detachment has been found to adversely affect the outcome after repair of RD.[6] However, our study showed no important differences between the anatomical outcomes when the data were analysed according to macula status (attached vs detached). Studies[6,7] have shown that a significant factor predictive of anatomic failure was the number of retinal breaks. We were unable to determine the significance of the number of retinal breaks in

predicting anatomical success in our study. Chronicity of RD has also been reported as a poor prognostic factor in terms of reattachment of retina after repair.[8] In our study, similar to literature,[5] we found no association between the chronicity of RD (analysed in terms of duration of symptoms) and anatomical success. Post-operative increase in IOP was seen in 17 cases; the mean difference in pre- and post-operative IOP was not significant. In most cases, no treatment was required; anti-glaucoma medication was given to a few patients and one patient required trabeculectomy. A limitation of our study is its retrospective nature; patients who were lost to follow-up before 1 year or had missing records were not included in the study.

A study with a larger sample size and longer follow-up is needed to provide more reliable data on the outcome of this procedure.

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