Journal of Cardiovascular Disease Research

ISSN:0975 -3583,0976-2833 VOL13, ISSUE 05, 2022

Original research article

The outcome of primary pterygium excision with sutureless and glueless conjunctival autografting

[1]Dr. Nirmal Kumar B, [2]Dr. Madan Joshi, [3]Dr. Manasa HV, [4]Dr. Shweta Balakundi

[1]Associate Professor, VIMS, Ballari, Karnataka, India

[2]Assistant Professor, VIMS, Ballari, Karnataka, Indi

[3,4]Senior Resident, VIMS, Ballari, Karnataka, India

Corresponding Author:

Dr. Shweta Balakundi

Abstract

Pterygium is a fibrovascular overgrowth of the subconjunctival tissue, triangular in shape, and encroaching on to the cornea in the medial and lateral palpebral fissure. The various known risk factors are immune mechanism, genetic predisposition and chronic environmental irritation, which include UV (ultraviolet) rays, hot and dry weather, wind, dusty atmosphere, and the period of exposure to such conditions. 30 patients were included in this study after taking valid consent. Patients were subjected to detailed ophthalmic evaluation and data was recorded in a specially designed proforma, and transferred to master sheet and the data was subjected to statistical analysis by the biostatistician. graft edema was seen in 2 cases (20%) among males and in 8 cases (80%) among females. SCH was seen in 3 cases (21.42%) among males and 11 cases (78.57%) among females. Graft retraction was found in 3 cases (42.85%) among males and in 4 cases (57.14%) among females. Graft loss and recurrence was seen in 1 case (100%) each in male respectively.

Keywords: Primary pterygium excision, glueless conjunctival autografting, fibrovascular over growth

Introduction

Pterygium is one of the common ocular surface disorders. The word pterygium is derived from Greek word "Pterygium" meaning wing shaped. Pterygium is a fibrovascular overgrowth of the subconjunctival tissue, triangular in shape, and encroaching on to the cornea in the medial and lateral palpebral fissure. The various known risk factors are immune mechanism, genetic predisposition, and chronic environmental irritation, which include UV (ultraviolet) rays, hot and dry weather, wind, dusty atmosphere and the period of exposure to such conditions. In India, the prevalence ranges from 9.5 to 13%. It is more commonly found in rural parts of the country [1, 2].

Various surgical techniques have evolved from the bare sclera technique, autorotation of conjunctival flap, amniotic membrane graft, or conjunctival graft to the recently developed conjunctivolimbal autograft, which is considered the current surgical gold standard.

Adherence of conjunctival autograft to bare sclera can be done by using suture, fibrin, or autologous serum.

The most common method of autograft fixation is suturing, with drawbacks of prolonged operating time, postoperative discomfort, suture abscesses, buttonholes, and granuloma formation which usually requires a second operation for removal [3].

Replacing suture with tissue adhesives may shorten the operating time, improve postoperative comfort, and avoid suture related complications. However, the major concern of the commercial fibrin glue is the cost and the potential risk of transmitted infection. Autologous fibrin glue has been used as alternative method for graft fixation.

The autologous serum has been proposed to be equal or comparable to that of suture and fibrin glue techniques. Hence this study is done to determine the outcome of sutureless, glueless conjunctival autografting after primary pterygium excision [4].

Methodology

Sources of data

It is a prospective interventional study planned on patients with pterygium attending Ophthalmology department, applying following inclusion and exclusion criteria.

Study design: Prospective interventional study.

Place of study: Department of Ophthalmology.

ISSN:0975 -3583,0976-2833 VOL13, ISSUE 05, 2022

Sample size
30 patients were included in this study after taking valid consent. Patients were subjected to detailed ophthalmic evaluation and data was recorded in a specially designed proforma and transferred to master sheet and the data was subjected to statistical analysis by the biostatistician.

Inclusion criteria
All patients who presented to the ophthalmology department with primary pterygium of grade 1 to grade 3 during the study period were included in the study.

Exclusion criteria
1. Recurrent pterygium.
2. Grade 4 pterygium.
3. Corneal pathology.
4. Glaucoma.
5. Infection, Inflammation.
6. Coexisting retinal pathology.
7. Coagulation factor deficiency.
8. Previous ocular surgery or trauma.

Assessment consists of: Preoperative
- Eliciting appropriate history.
- Visual acuity testing.
- Refraction.
- Slit lamp examination.
- Fundus examination.
- Intra ocular pressure measurement.

Operative notes
Peribulbar anesthesia given with 50:50 mixture of 5 ml of 2% lignocaine and 0.5% bupivacaine with 150 units/ml of hyaluronidase injection.
The body of the pterygium was dissected 2-3 mm from the limbus down to the bare sclera and reflected over the cornea. The pterygium head was avulsed using Colibri forceps, followed by careful excision of the corneal remnants. During avulsion of the pterygium head, counter traction was applied with a cotton bud. Only thickened portions of the conjunctiva and the immediate adjacent and subjacent tenon's capsule showing tortuous vasculature were excised. Excessive dissection of Tenon's was avoided. Wherever possible, haemostasis was allowed to occur spontaneously without the use of cautery. The size of the defect in mm [2] was measured with Castroviejo's Callipers. Careful dissection between graft conjunctiva and Tenon's layer was done while fashioning the 1mm oversized conjunctivo limbal graft from the superior-temporal bulbar conjunctiva. For graft bed preparation, a thin blood film over the exposed sclera was achieved. The graft laid over bare sclera in such a way so as to maintain the original orientation of the juxta limbal border towards the cornea. The free graft was held in position for 8-10 minutes by applying gentle pressure over it with the help of suture tiers. The stabilisation of the graft was tested centrally and on each free edge with the help of cotton bud to ensure firm adherence to the sclera. Eye was bandaged for 24 hours.

Postoperative follow up
Postoperatively, Antibiotics with steroid eye drops tapered over 6 weeks and lubricants for 6 weeks. All patients were followed up on day 1,1 week, 6 weeks and 6 months, Outcome was measured by visual Acuity and refraction at 6 weeks, condition of the graft evaluated during each postoperative visit.
The study required the following investigations like testing for visual acuity, refraction, Intra ocular pressure measurement, biomicroscopy, fundus evaluation, and intervention like pterygium excision and conjunctival autografting.
Patients were included in the study after taking informed consent.
Ethical clearance has been obtained from the Institutional Ethics Committee, Vijayanagar Institute of Medical Sciences.

ISSN:0975 -3583,0976-2833 VOL13, ISSUE 05, 2022

Results

Table 1: Showing Preoperative Best Corrected Visual Acuity

Pre-Operative BCVA	No. of Cases	Percent
6\6	21	70
6\9	1	3.33
6\12	0	0
6\18	2	6.66
6\24	3	10
6\36	1	3.33
6\60	0	0
1\60	2	6.66
Total	30	100

In our study among 30 patients, 21 patients (70%) had 6\6 preoperative Best Corrected Visual Acuity, followed by 3 patients (10%) who had 6\24 vision, 2 patients (6.66%) had 6\18 and 1\60 vision respectively, 1 patient (3.33%) had 6\36 and 6\9 vision respectively.

Table 2: Showing Postoperative Best Corrected Visual Acuity

Post-Operative BCVA	No. of Cases	Percent
6\6	21	70
6\9	1	3.33
6\12	0	0
6\18	4	13.33
6\24	2	6.66
6\36	0	0
6\60	0	0
1\60	2	6.66
Total	30	100

Among 30 patients in our study, 21 patients (70%) had 6\6 postoperative best corrected visual acuity, 4 patients (13.33%) had 6\18 visual acuity, 2 patients (6.66%) had 6/24 and 1\60 visual acuity respectively, 1 patient (3.33%) had 6/9 vision.

Table 3: Showing Preoperative versus Postoperative visual acuity

Visual acuity	Preoperative VA	Postoperative VA
6\6	21	21
6\9	1	1
6\12	0	0
6\18	2	4
6\24	3	2
6\36	1	0
6\60	0	0
1\60	2	2

Table 4: Showing Postoperative complications

Postoperative Complications	No. of Cases	Percent
SCH	14	46.7
Graft Edema	10	33.33
Graft Retraction	7	23.33
Graft Loss	1	3.33
Recurrence	1	3.33

Above table showing Postoperative complications, Early complications noted on postoperative day 1 included SCH in 14 patients (46.7%), graft edema in 10 patients (33.3%), graft retraction in 7 patients (23.3%), graft loss in 1 patient (3.33%).
Late complications noted after 6 months was recurrence in 1 patient (3.33%)

Table 5: Showing Comparision of Age group and Complications

Age	No	Complications				
		Graft edema	SCH	Graft retraction	Graft loss	Recurrence
≤ 20	1	0	0	0	0	0
21-30	5	3 (60)	3(60	2 (40)	0	0

ISSN:0975 -3583,0976-2833 VOL13, ISSUE 05, 2022

31-40	9	3 (33.3)	4(44.4)	0	0	0
41-50	5	1 (20)	2(40)	2(40)	0	0
51-60	7	3 (42.9)	4(57.2)	3 (42.9)	0	1 (14.3)
61-70	3	0	1(33.3)	0	1(33.3)	0
Total	30	10	14	7	1	1
Chi Square test	P-Value	0.509	0.643	0.379	0.090	0.639
	Sig	Not Sig	Not sig	Not Sig	Not Sig	Not Sig

In our study conducted among 30 patients, comparison of different age groups with complications were analysed.

<20 years age group had no complications, among 21-30 years age group 5 cases had complications like graft edema (3 cases, 60%), SCH (3 cases, 60%), graft retraction (2 cases, 40%), among 31-40 years age group 3 cases had graft edema (33.33%), 4 cases (44.4%) had SCH, among 41-50 year age group 1 case had graft edema (20%), 2 cases had SCH (40%), 2 cases had graft retraction (40%), among 51-60 years 3 cases had graft, edema (42.9%), 4 cases had SCH (57.2%), 3 cases had graft retraction (42.9%), 1 case had recurrence(14.3%), among 61-70 years, 1 case (33.3%) had SCH, 1case had Graft loss (33.3%).

Table 6: Showing comparison of Gender and Complications

Complications	No	Male	Female	P Value
Graft edema	10	2(20)	8(80)	0.76
SCH	14	3 (21.42)	11 (78.57)	0.829
Graft retraction	7	3 (42.85)	4 (57.14)	0.334
Graft loss	1	1 (100)	0	0.065
Recurrence	1	1 (100)	0	0.065

Above table shows complications and gender wise analysis, graft edema was seen in 2 cases (20%) among males and in 8 cases (80%) among females. SCH was seen in 3 cases (21.42%) among males and 11 cases (78.57%) among females. Graft retraction was found in 3 cases (42.85%) among males and in 4 cases (57.14%) among females. Graft loss and recurrence was seen in 1 case (100%) each in male respectively.

Discussion

In our study among 30 patients, 21 patients (70%) had 6\6 preoperative best corrected visual acuity, followed by 3 patients (10%) who had 6\24 vision, 2 patients (6.66%) had 6\18 and 1\60 vision respectively, 1 patient (3.33%) had 6\36 and 6\9 vision respectively.

In study conducted by Ashok Sharma *et al*. among 80 eyes, 67 patients (83.75%) had 6/6-6/12 vision, 9 patients (11.25%) had 6/18-6/36 vision, <6/60 in 4 patients (5%).

Among 30 patients in our study, 21 patients (70%) had 6\6 postoperative best corrected visual acuity, 4 patients (13.33%) had 6\18 visual acuity, 2 patients (6.66%) had 6/24 and 1\60 visual acuity respectively, 1 patient (3.33%) had 6/9 vision.

Majority (21 cases) had 6/6 visual acuity preoperatively who remained the same,3 patients improved by 1 snellen line, 6 patients visual acuity remained the same as initial visual acuity, among 6 patients 2 had visual acuity of 1/60 due to lens opacification.

In our study, 3 patients visual acuity improved by 1 snellen line at the end of 6 weeks of surgery, 2 patients with 6/24 visual acuity improved by 1 snellen line, 1 patient with 6/36 visual acuity improved to 6/24 by 6 weeks.

In study conducted by Ashok Sharma *et al*. among 80 eyes, 71patients (88.75%) preoperatively had 6/6-6/12 vision, 6 patients (7.5%) had 6/18-6/36 vision, <6/60 in 3 patients (3.75%) [5].

At 6 week post operatively 3 (3.75%) eyes showed gain in BCVA by 1 line, whereas 1(1.25%) by 3 lines on snellens drum.

In study conducted by D de Wit *et al*., among 15 eyes of 12 patients, 1 patient improved by 2 snellen chart lines after surgery [6].

In our study among 30 patients, postoperative complications included early complications on postoperative day 1 like SCH in 14 patients (46.7%), graft edema in 10 patients (33.3%), graft retraction in 7 patients (23.3%), Graft loss in 1 patient (3.33%) and late complications noted after 6 months was recurrence in 1 patient (3.33%).

Early complications like SCH and Graft oedema resolved by 1 week. 7 patients had graft retraction, out of which 5 patients had mild retraction which were managed conservatively by repositioning the graft under the conjunctiva and applying pressure bandage for 24 hours. 2 patients had large displacement who underwent suturing with 10-0 nylon. Graft loss was seen in 1 patient which could be attributed to rubbing of the eye for which edges of conjunctiva were sutured at limbus. At 6 months recurrence was noted in 1 patient who had graft retraction for which suturing was done.

In study conducted by Shreya Thatte *et al*. conducted among 151 eyes, postoperative complications noted

ISSN:0975 -3583,0976-2833 VOL13, ISSUE 05, 2022

were SCH in 24 cases (16%) graft oedema in 24 cases (16%), graft retraction in 9 cases (5.9%), graft dislodgement in 1 case (0.66%), recurrence in 3 cases (1.32%) [7].

In study conducted by Ashok Sharma *et al*. among 80 eyes, graft retraction seen in 3 eyes (3.75%), SCH in 26 eyes (32.5%), graft oedema in 4 eyes (5%), recurrence in 1 eye (1.25%) [5].

In study conducted by Gunjan Rathi *et al*., conducted among 50 eyes, recurrence developed in 1 eye (2%), graft loss in 1 eye (2%) [8].

In our study conducted among 30 patients, comparison of different age groups with complications were analysed, <20 years age group had no complications, among 21- 30 years age group 5 cases had complications like graft edema (3 cases, 60%), SCH (3 cases, 60%), graft retraction (2 cases, 40%), among 31-40 years age group 3 cases had graft edema (33.33%), 4 cases (44.4%) had SCH, 41-50 year 1 case had graft edema (20%), 2 SCH(40%), 2 graft retraction (40%), among 51-60 years 3 cases had graft edema (42.9%), 4 cases had SCH (57.2%), 3 cases had graft retraction (42.9%), 1 case had recurrence (14.3%), among 61-70 years 1 case (33.3%) had SCH, 1 Graft loss (33.3%).

In our study comparison of age group with postoperative complications, the results obtained were statistically not significant.

In study conducted by Shreya Thatte *et al*., among 151 eyes complications according to age demonstrated higher immediate complications in the younger age group 35-50 year age group and no significant correlation of late complications with age [7].

In study conducted by Sharmila Devi Mohandoss *et al*., among 45 patients, they have noted recurrence was higher in patients below 40 years age group [9].

Graft edema was seen in 2 cases (20%) among males, 8 cases among (80%) females. SCH was seen in 3 cases (21.42%) among males, 11 cases (78.57%) among females, Graft retraction was found in 3 cases (42.85%) of males, 4 females (57.14%), graft loss and recurrence was seen in 1 case (100%) each in male respectively.

In our study comparison of gender group with postoperative complications, the results obtained were statistically not significant.

In study conducted by Sharmila Devi Mohandoss *et al*., among 45 patients, they have noted recurrence was significantly higher in males with primary pterygium [10].

Conclusion

In our study on primary pterygium excision with sutureless and glueless conjunctival autografting showed less complications postoperatively with low recurrence and good cosmesis.

Sutureless and glue free limbal conjunctival autografting following pterygium excision is safe, effective and economical option for the management of primary pterygium, requiring surgical intervention.

References

1. Moran DJ, Hollows FC. Pterygium and ultraviolet radiation: a positive correlation. British Journal of Ophthalmology. 1984 May;68(5):343-6.
2. Nakaishi H, Yamamoto M, Ishida M, Someya I, Yamada Y. Pingueculae and pterygia in motorcycle policemen. Industrial health. 1997;35(3):325-9.
3. Norn M, Franck C. Long- term changes in the outer part of the eye in welders: prevalence of spheroid degeneration, pinguecula, pterygium, and corneal cicatrices. Acta ophthalmologica. 1991 Jun;69(3):382-6.
4. Koranyi G, Seregard S, Kopp ED. Cut and paste: a no suture, small incision approach to pterygium surgery. British journal of ophthalmology. 2004 Jul;88(7):911-4.
5. Sharma A, Raj H, Raina AV. Suture less and glue free limbal conjunctival autografting following pterygium excision. JK Science. 2015 Apr;17(2):68.
6. De Wit D, Athanasiadis I, Sharma A, Moore J. Sutureless and glue-free conjunctival autograft in pterygium surgery: a case series. Eye. 2010 Sep;24(9):1474-7.
7. Thatte S, Dube AB, Sharma S. Efficacy of autologous serum in fixing conjunctival autografts of various sizes in different types and grades of pterygium. Journal of ophthalmic & vision research. 2019 Apr;14(2):136.
8. Rathi G, Sadhu J, Joshiyara P, Ahir HD, Ganvit SS, Pandya NN. Pterygium surgery: Suture less glue less conjunctival auto grafting. Int J Res Med. 2015;4(1):125-8.
9. Mohandoss SD, Rao KS, Santhosh MT. Conjunctival Autograft with Autologous Blood Coagulum in Primary and Recurrent Pterygium: An Observational Study. Journal of Evolution of Medical and Dental Sciences-JEMDS. 2017 Oct;6(81):5729-32.
10. Bahuva A, Rao SK. Current concepts in management of pterygium. The Official Scientific Journal of Delhi Ophthalmological Society. 2015 Jun;25(2):78-84.

Accepted on 01/06/2022