ORIGINAL RESEARCH

A study on clinical profile and management of pterygium at a tertiary care hospital

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Received: 02Sept, 2023 Accepted: 25Sept, 2023

ABSTRACT
Pterygium may be associated with significant corneal distortion and visual impairmentby causing marked astigmatism and by involving visual axis due to encroachment of pterygiumat pupillary area. Mostly pterygium are nasal in location but temporal can also occur. It causes foreign body sensation, watering, irritation, burning, blurred vision. All patients above the age of 18 years with unilateral or bilateral pterygium were admitted. Informed consent was obtained after informing the patients included in the study about the details of the procedure and the associated complications. Only after obtaining the informed consent from the subject, the patient was included in the study. Out of 80 patients, 22 had grade I pterygium,50 had grade II pterygium) and 8 had grade III. Out of total 80 patients, 2 patients had recurrence, one in each group.
Key words: Pterygium, clinical profile, management

INTRODUCTION

Pterygium is a degenerative, triangular,wing shaped, fibrovascular growth of bulbar conjunctival tissue invading the cornea. It destroys superficial layers of cornea and bowman's layer.[1]

The term 'Pterygium' comes from the Greek word pterygos meaning 'wing', described by Hippocrates, Galen, and others, Walton introduced the term pterygium in English in 1875.

It is associated with dry, dusty and hot climate. Recent studies suggest that its is triggered by UV rays due to damage to limbal stem cells and activation of matrix metalloproteinase enzymes.The actual pathology of the condition remain unknown.[2]

Pterygium may be associated with significant corneal distortion and visual impairmentby causing marked astigmatism and by involving visual axis due to encroachment of pterygium at pupillary area. Mostly pterygium are nasal in location but temporal can also occur. It causes foreign body sensation, watering, irritation, burning, blurred vision.[3]

Therapeutic options are surgical. A number of surgical techniques have been described in the management of pterygium, including bare sclera technique, bare sclera resection followed by mitomycin C application at different concentrations and dosage or Beta radiation and pterygium excision plus conjunctival autografting or amniotic membrane placement. Excision with bare sclera technique have high recurrence rate. Limbal conjunctival autograft is currently the most popular surgical procedure.Excision followed by conjunctival autografting is associated with very low recurrence rates as well as complications as compared with other techniques. Conjunctival autografting can be done by suturing the graft or by simply adhering it without sutures over bare sclera by autologous fibrin or glue.[4]

Conjunctival autograft suturing is most common method ofautograft fixation. But it has its own drawbacks like increased operating time, post operative discomfort, inflammation, necrosis, giant papillary conjunctivitis, scarring and granuloma formation.

The development of pterygium can lead to significant astigmatism.

Sutureless and glue-free conjunctival autograft is a newer, easier and cheaper technique for the management of pterygium.[5]

Tissue adhesives may also be used for graft fixation. The two basic categories of tissue adhesives aresynthetic (commonest is n-butyl-2-cyanoacrylate) and biological(fibrin glue). Use of tissue adhesives

like fibrin glue which mimics the final steps of natural clotting mechanism is being used increasingly nowadays. Glue is widely used due to many advantages like easy fixation of the graft, shorter operation time, reduction in complications and post operative discomfort but at the same time has some disadvantages also like high cost, the risk of transmission of infections(homologous plasma derived fibrin glue) and inactivation by iodine preparations.[6]

Recurrences may also be seen after pterygium surgery. They usually occur within the first 6 months after the surgery.

METHODOLOGY

SAMPLE SIZE: Eighty patients.

METHOD OF SAMPLING: Simple random sampling

INCLUSION CRITERIA

1. Patients aged above 18 years of either sex.
2. Unilateral or bilateral pterygium.
3. Primary pterygium.

EXCLUSION CRITERIA

1. Patients less than 18 years of age.
2. Recurrent pterygium.
3. History of ocular surgery, trauma or other ocular pathology.
4. Patients not consenting for the study.

All patients above the age of 18 years with unilateral or bilateral pterygium were admitted. Informed consent was obtained after informing the patients included in the study about the details of the procedure and the associated complications. Only after obtaining the informed consent from the subject, the patient was included in the study.

80 patients were randomly allocated into 2 study groups, 40 patients for each group. The first group consisted of patients with pterygium treated with excision of pterygium and sutureless, glue-free conjunctivallimbal autograft fixation and the second group consisted of patients with pterygium treated with excision and suture fixation of the conjunctival limbal autograft.

After being investigated, they were posted for pterygium excision after the consent being taken.

Physician fitness were taken for each of these patients.Each patient underwent either pterygium surgery with conjunctivalautograft with sutureless and glue-free fixation or suture fixation technique. Patients were followed up postoperatively on first day, one week, three weeks, six weeks, six months and examined for discomfort, sub-conjunctival hemorrhage, graft shrinkage, inflammation,graft dehiscence, recurrence and other complications.

Recurrence was considered as conjunctival growth extending greater than 1mm over the corneal surface after pterygium excision.

The preoperative and postoperative keratometric measurements, evaluated using keratometer, were noted.

RESULTS

Table1:Pterygium GradingDistribution

Pterygium Grading	Number ofpatients	Percentage
G I	22	27.5
G II	50	62.5
G III	8	10

Table shows that out of 80 patients, 22 had grade I pterygium,50 had grade II pterygium) and 8 had grade III.

Table2: Mean Duration of Surgery

Surgery	Mean	Standard Deviation
Sutureless	15.3	1.81
Sutured	26.8	1.95

The mean duration of surgery was 15.3 minutes in sutureless group while 26.8 minutes in sutured group. The difference between the two groups were found to be statistically significant (p value < 0.0001).

Table3: Distribution According Discomfort Grading on Postoperative Day 1

Day1 Discomfort Grade	Sutured		Sutureless	
	N	%	N	%
0	0	0.00%	1	2.50%
1	9	22.50%	26	65.00%
2	24	60.00%	12	30.00%
3	7	17.50%	1	2.50%

In sutured group on post operative day 1, no patient had grade 0, 9 had grade 1, 24 had grade 2, 7 had grade 3 discomfort. In sutureless group, 1 had grade 0, 26 had grade 1, 12 had grade 2 and 1 had grade 3. The

difference between the 2 groups was found to be statistically significant($p<0.0001$).

Table4: Distribution According Inflammation Grading on Postoperative Day 1

Day1 InflammationGrade	Sutured		Sutureless	
	N	%	N	%
0	0	0.00%	5	12.50%
1	21	52.50%	29	72.50%
2	16	40.00%	6	15.00%
3	3	7.50%	0	0.00%

In sutured group, none had grade 0, 21 patients had grade 1, 16 had grade 2, 3 had grade 3 on post operative day 1. In sutureless group, 5 had grade 0, 29 had grade 1, 6had grade 2 inflammation. The difference between the 2 groups was found to be statistically significant (p value = 0.0001).

Table5: Distribution According Subconjunctival Haemorrhage Grading on Postoperative Day 1

Day1 Sch Grade	Sutured		Sutureless	
	N	%	N	%
0	22	55%	25	62.50%
1	15	37.50%	14	35.00%
2	3	7.5%	1	2.5%

On post operative day 1, in suturelessglueless group, 25 patients had grade 0, 14 had grade 1, 1 had grade 2 and none had grade 3 and 4 subconjunctivalhaemorrhage. In suture group, 22 patients had grade 0, 15 had grade 1, 3 had grade 2 and none had grade 3 and 4 subconjunctivalhaemorrhage. The difference between the 2 groups was not found to be statistically significant (p=0.494).

Table6: Distribution According Graft Stability Grading on Postoperative Day

Day1 Graft Stability Grade	Sutured		Sutureless	
	N	%	N	%
0	32	80.00%	33	82.50%
1	8	20.00%	7	17.50%

In sutured group, 32 patients had grade 0, 8 had grade 1and none had grade 2, 3 and 4. In sutureless group 33 patients had grade 0, 7 had grade 1, none had grade 2,3 and 4.

Table7: Distribution According Discomfort Grading on Postoperative Week 1

Wk1 Discomfort Grade	Sutured		Sutureless	
	N	%	N	%
0	3	7.50%	24	60.00%
1	22	55.00%	15	37.50%
2	14	35.00%	1	2.50%
3	1	2.50%	0	0.00%

On follow up at week 1, in sutured group, 3 had grade 0, 22 had grade 1, 14 had grade 2, 1 had grade 3 and none had grade 4 discomfort. In sutureless group, 24 had grade 0, 15 had grade 1, 1 had grade 2 and none had grade 3and 4 discomfort. The difference between the two groups was found to be statistically significant($p<0.0001$).

Table8: Distribution According Inflammation Grading on Postoperative Week 1

Week 1 InflammationGrade	Sutured		Sutureless	
	N	%	N	%
0	14	35.00%	28	70.00%
1	22	55.00%	10	25.00%
2	4	10.00%	2	5.00%

On post operative week 1 follow up, in sutured group, 14 patients had grade 0, 22 had grade 1, 4 had grade 2 and none had grade 3 and 4 inflammation. In sutureless group, 28 patients had grade 0, 10 had grade 1, 2 had grade 2 and none had grade 3 and 4

inflammation. The difference between the two groups was found to be statistically significant(p=0.007)

Table9: Distribution According Grading SubconjunctivalHaemorrhage on Postoperative Week 1

Week 1 Sub ConjunctivalHaemorhage Grade	Sutured		Sutureless	
	N	%	N	%
0	32	80.00%	34	85.00%
1	8	20.00%	6	15.00%

On follow up at week 1, in sutured group, 32 patients had grade 0, 8had grade 1 and none had grade 2,3 and 4 subconjunctivalhaemorrhage. In sutureless group, 34 had grade 0, 6 had grade 1 and none had grade 2, 3 and 4subconjunctivalhaemorrhage. The difference between the two groups was found statistically insignificant(p=0.873).

Table10: Distribution According Graft Stability Grading onPostoperative Week 1

Week 1 Graft StabilityGrade	Sutured		Sutureless	
	N	%	N	%
0	38	95.00%	37	92.50%
1	2	5.00%	3	7.50%

On post operative follow up week 1, in sutured group, 38 patients had grade 0, 2 had grade 1 and none had grade 2, 3 and 4 graft stability. In sutureless group, 37 had grade 0, 3 had grade 1 and none had grade 2, 3 and 4 graft stability. The difference between the two groups was found statistically insignificant(p=0.534).

Table11: Distribution According DiscomfortGrading on Postoperative Week 3

Week 3 Discomfort Grade	Sutured		Sutureless	
	N	%	N	%
0	37	92.50%	40	100.00%
1	3	7.50%	0	0.00%

Onpost operative follow up at week 1, 37 patients had grade 0 and 3 had grade 1 discomfort. In sutureless group, all the 40 patients had grade 0 discomfort. The difference between the two groups was found statistically insignificant(p=0.077).

Table12: Table Showing Recurrence

Recurrence	Sutured		Sutureless	
	N	%	N	%
No	39	97.50%	39	97.50%
Yes	1	2.50%	1	2.50%

Out of total 80 patients, 2 patients had recurrence, one in each group.

DISCUSSION

50 patients (62.5%) had Grade II pterygium while 22 patients (27.5%) had Grade I pterygium and 8 patients (10%) with Grade III pterygium.

Similarly, majority of patients had grade 2 pterygium in a study by Hemlatha[109] in 2016.

Latif-Ul-Hasan[7]*et al*. in 2016, in their study, also had grade 2 pterygium as the most common one(62%), grade 1 as 28% and grade 3 as 10%.

The mean duration of surgery was 15.3 minutes in sutureless group while 26.8 minutes in sutured group. There was significantly shorter duration of surgery in the sutureless group (p value < 0.0001).

A study by Ashok Sharma *et al*. [8] in 2015 demonstrated 23.2 minutes in sutureless group and 37.76 minutes in sutured group.

Also a study by Hosam[9] in 2017 demonstrated 13-16 minutes in sutureless group and 22-28 minutes in sutured group.

Latif-Ul-Hasan[7]*et al*. in 2016, demonstrated 16 minutes in sutureless groupand 25.5 minutes in sutured group.

This study was similar to these and most of the other studies exhibiting statistically significant shorter duration in the sutureless group.

In the present study, a significant difference was found in the degree of post-operative discomfort between the two groups at post-op day 1(p<0.0001) and week 1 (p<0.001) with suture group being associated with more discomfort. The difference was not statistically significant at 3rd week post-operatively(p=0.077). At 6th week and 6th month follow-up none of the patients in either-groups had any discomfort.

In a study by Karandikar S. *et al*. [10] in 2016 named ‘Comparison of three different techniques for fixation

of conjunctival autograft in pterygium surgery',they found that there is more post operative discomfort in sutured group as compared with sutureless group on post op day 1 and week 1, while no difference at subsequent follow up. Therewas statistically significant difference in post operative discomfort on day 1 and week 1(p=0).

Natung*et al*. [11] in 2017 in their study, found that the post operative discomfort in the form of foreign body sensation, pain, wateringwere more in sutured group as compared to sutureless group on post op day 1 and week 1, the difference between the two groups was statistically significant(p<0.05).

Thus, the results in the present studyregarding post operative discomfort were found similar to those found in other previous studies.

In the present study,a significant difference was found in the degree of postoperative inflammation between the two groups at post-op day 1 (p=0.003)and week 1 (p=0.007), with suture group being associated with more postoperative inflammation. At 3rd week, 6th week and 6thmonth follow-up none of the patients in either-groups showed any inflammation.

In a study 'Comparative Study to Evaluate the Outcome of Sutureless Glufree Versus Sutures in Conjunctival Autograft for Primary Pterygium Excision' by Latif-Ul-Hasan*et al*. [7] in 2016, a significant difference was found in the degree of post-operative inflammation between the two groups at post-op day 1 and week 1 (p=0.001 both at day 1 and week 1), with suture group being associated with more postoperative inflammation. Atsubsequent follow ups till 6thmonth none of the patients in either group showed any inflammation.

In a study named 'Post operative outcomes of pterygium surgery using autologous blood and sutures: a comparative study' by Pankaj K. *et al*. [12] in 2016, graft inflammation was higher in patients treated with sutures (44.11%) than autologous blood (36.66%).

Thus, the results in the present studyregarding post operative inflammation were found similar to those found in other previous studies.

In the present study no significant difference was found in the degree of postoperative sub conjunctivalhaemorrhage between the 2 groups at day 1(p=0.494) and week 1(p=0.744) post-op. None of the patients in either group showed any sub conjunctivalhaemorrhage at 3rd week, 6th week and 6th months postoperatively.

In the study by Latif-Ul-Hasan*et al*. [7] in 2016, no significant difference was found in the degree of postoperative sub conjunctivalhaemorrhage between the 2 groups at day 1(p=0.887) and week 1(p=0.797). None of the patients in either group showed any subconjunctivalhaemorrhage at 1st month,3rd month and 6thmonths postoperatively.

In the study by Telang O J *et al*. [13] in 2017, no statistically significant difference was found in subcounjunctival haemorrhage at day 1 and week 1.

The results in the present studyregarding post operative sub conjunctival haemorrhage were found similar to those found in other previous studies.

In the present study, conjunctival grafts secured withglueless and sutureless technique were as stable as those secured with sutures at day 1(p=0.587), week 1(p=0.534), 3rd week(0.314), 6th week and 6thmonths postoperatively. The difference between graft stability between the two groups was not statistically significant.

Wit *et al*. [14] in 2010 proposed that apposition of the eyelids to the bulbar conjunctiva provides a natural biological dressing, compression and a smooth frictionless surface. They also postulated that sutureless gluefree graft resulted in even tension across the whole graft interface and no direct tension on the free edges resulting in reduced stimulus for sub-conjunctival scar formation.

Somnath Choudhary *et al*. [15] in 2014, reported that graft failure and graft retraction were more in sutureless group(12.5%) as compared to sutured group(6.25%) but this difference was statistically insignificant.

In the study by Pankaj K. *et al*. [12] in 2016, graft was displaced in 1 patient (3.33%) and patient gave the history of rubbing of his eyes postoperatively.

In the study Latif-Ul-Hasan*et al*. [7] in 2016, conjunctival grafts fixed with autologous blood were as stable as those secured with sutures at day 1, week 1, 1st, 3rd and 6th months postoperatively (p=0.745,p=0.644at day 1 and week 1 respectively).

The results in the present study in terms of graft stability were similar to those found in previous studies.

In the present study, 2 patients showed pterygium recurrence, one in each group. One patient(2.5%) at 5thmonth in sutured group and the other(2.5%)at 6thmonth in sutureless group.

Massautis*et al*. [16]in 2006, stated that the concept of surgical success in pterygium surgery can be defined as the provision of white cosmetic conjunctiva, with no persistent symptoms and a low recurrence rate (<10%). The recurrence rate in our study agrees with the Massautis*et al*.'*s* criterion.

In the study by Karandikar Sumita *et al*. [10] in 2016 comparing the same techniques under similar parameters found a recurrence rate of 15%, 10%, 5% in Groups I(sutured), II(tissue glue), III(glueless, sutureless) respectively without a significant difference(p>0.05).

In the study byLatif-Ul-Hasan*et al*. [7] in 2016, 4 patients in sutureless gluefree group showed pterygium recurrence, two at 3rd month and the other two at 4th month follow-up.4 patients in suture group showed recurrence, two at 4thmonth, one at 5thmonth and the other at 6thmonth follow-up.

Similar results were reported by Ashok Sharma *et al*. [8] in 2015 and Somnath Choudhury *et al*. [15] in 2014.

In study by Natung T. *et al*. [11] in 2017, at 6 months, 4(26.6%) patients in sutureless group had recurrence

whereas in sutured group 5 patients(33.3%) had recurrence, the difference of which was not statistically different(p=0.446).
Thus, the results in these studies were found similar to our study.

CONCLUSION

In developing countries like, India cost effective treatment remains big issue. Fibrin glue being costly is not affordable by most of the poor peoples. So considering cost effectiveness, less post- operative discomfort and no issue of viral disease transmission, pterygium surgery with glue less and suture less technique may be a preferable surgical method in treatment of pterygium.

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