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Original Research Article

Comparison of outcome between suture and suture-less surgery following pterygium excision and conjunctival autograft

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ABSTRACT

Background: A pterygium, known as surfer's eye, is a raised, wedge-shaped growth of the conjunctiva that extends onto the cornea, the outer layer of the eye**.** Aim was to compare the safety, efficacy and outcome of suture less technique with suture of conjunctival autograft in the management of pterygium.
Methods: This study was carried out in the department of ophthalmology, Sir Salimullah medical college and Mitford hospital, Dhaka. Study period was July 2019 to June 2020. Subjects for this study were divided into two groups, forty patients were enrolled in each group of the study population. Group I (control) comprised the subjects in whom suture was used following pterygium excision and conjunctival autograft and group II (experimental) comprised the subjects in whom no suture was used following pterygium excision and conjunctival autograft.
Results: In group I, 20% were 20-29 years old, 30% were 30-39, 27.5% were 40-49, and 22.5% were over 50, with 77.5% being male and 22.5% female. In group II, 22.5% were 20-29 years old, 27.5% were 30-39, 30% were 40-49, and 20% were over 50, with 72.5% being male and 27.5% female. The most common symptom was "foreign body sensation" in both groups. In group I, 5% experienced partial graft dehiscence, 2.5% a conjunctival cyst, 10% hyperemia, and 17.5% visual improvement. In group II, 2.5% had partial graft dehiscence, 2.5% hyperemia, and 22.5% visual improvement. Neither group had graft retraction or recurrence.
Conclusions: Postoperative presentation like hyperemia was significantly less in experimental group. Incidence of post-operative complications like graft dehiscence and conjunctival cyst were comparatively less frequent in suture less technique. Thus, suture less technique following pterygium excision and conjunctival autograft is a safer and less complicated than sutured technique.

Keywords: Evaluation, Pterygium excision, Conjunctival autograft

INTRODUCTION

Pterygium is a prevalent ocular disorder found in many parts of the world, with a reported prevalence rate ranging from 0.3 to 29%.[1] Epidemiological studies suggest that chronic exposure to sunlight is associated with increased prevalence of pterygium, particularly within a belt of 37 degrees north and south of the equator that includes India.[1] Surgical excision is the most widely accepted treatment modality for pterygium, with limbal conjunctival autograft being considered the best option due to its low recurrence rate and high safety profile.[2] The most common method of autograft fixation is suturing, but this approach is associated with some

disadvantages, including a prolonged operating time, postoperative discomfort, the formation of suture abscesses, button holes, and granulomas that may require additional procedures for removal.[3]

A prospective, randomized study involving fifty patients compared two different surgical techniques for the treatment of pterygium: bare sclera technique and autologous conjunctival graft technique. The results of this study showed that the pterygium surgery with conjunctival autografting had lower recurrence rates compared to the bare sclera technique, with recurrence rates of 8% and 24%, respectively.[3]

A separate study of suture less grafting in the treatment of pterygium showed that patients experienced faster rehabilitation and less discomfort than those who received suture fixation. Sutureless grafting has previously been used successfully in gingival grafts, and offers a similar mucosal membrane tissue environment to the conjunctiva of the eye.[4] This study aims to compare and evaluate the safety and efficacy of suture less and sutured conjunctival autograft techniques for the management of pterygium.

METHODS

This prospective randomized study was conducted at the department of ophthalmology, Sir Salimullah medical college and Mitford hospital, Dhaka, and took place between July 2019 and June 2020. The study population was divided into two groups, each with 40 patients. Group I (control) consisted of patients who underwent pterygium excision and conjunctival autograft with suture, while group II (experimental) consisted of patients who underwent pterygium excision and conjunctival autograft without suture.

Data were collected using a pre-designed data collection sheet, and only patients meeting the inclusion and exclusion criteria were included in the study. Patients underwent routine ophthalmic examinations, including visual acuity testing, slit lamp examination, and keratometry readings. The control group underwent pterygium excision and conjunctival autografting with suture, while the experimental group underwent the same procedures without suture.

The study analyzed the following parameters: subconjunctival hemorrhage, inflammation, graft stability, degree of discomfort, and recurrence at three months postoperatively. Patients were followed up at 1st day, one week, three weeks, and three months after surgery, and the results of these parameters were compared between the two groups.

RESULTS

Table 1 shows the age distribution of the study subjects. Among 40 patients of group I (with suture group), 8 (20%) were in 20-29 years age group, 12 (30%) were in 30-39 years age group, 11 (27.5%) were in 40-49 years age group and 9 (22.5%) were in >50 years age group. On the other hand, among 40 patients of group II (without suture group), 9 (22.5%) were in 20-29 years age group, 11 (27.5%) were in 30-39 years age group, 12 (30%) were in 40-49 years age group and 8 (20%) were in >50 years age group. Mean difference between age of two groups was statistically not significant (p>0.05).

Table 1: Age distribution of the patients, (n=80).

Age (years)	Group I, (n=40) (%)		Group II, (n=40) (%)		P value
	N	%	N	%	
20-29	8	20	9	22.50	1
30-39	12	30	11	27.50	
40-49	11	27.50	12	30	
>50	9	22.50	8	20	
Mean ± SD	39.15±11.14		39.15±11.11		

Data were expressed in frequency; age difference was analyzed using student's' test. Group I (Control): With suture, group II (Experimental): Without suture.

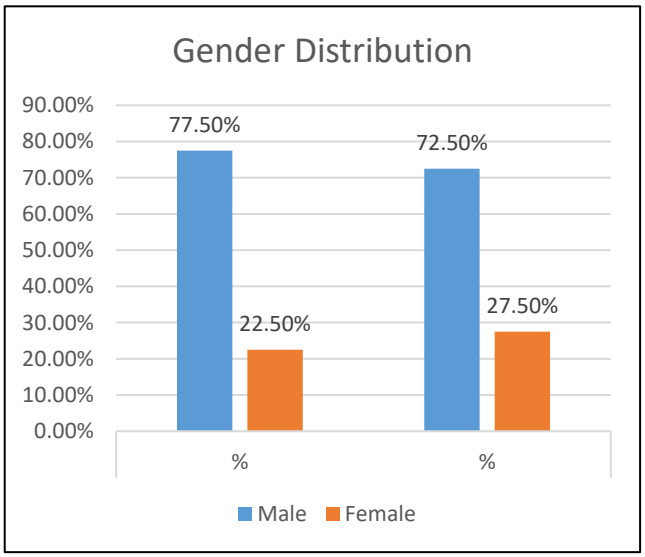

Figure 1: Distribution of study subjects according to gender, (n=80).

Figure 1 demonstrates gender distribution of the study subjects. Among 40 patients, 77.5% were male and 22.5% were female in suture group (Group I). On the other hand, among 40 patients in without suture group (Group II), 72.5% were male and 27.5% were female. The difference was statistically not significant between two groups (p>0.05).

Figure 2 shows distribution of the patients according to involved eye. Among the 40 patients, the right nasal pterygium was in 24 (60%) patients and the left nasal pterygium in 16 (40%) patients in with suture group

(Group I). On the other hand, among the 40 patients without suture (group II), the right nasal pterygium was in 23 (57.5%) patients and the left nasal pterygium in 17 (42.5%) patients. The difference was statistically not significant between two groups (p>0.05).

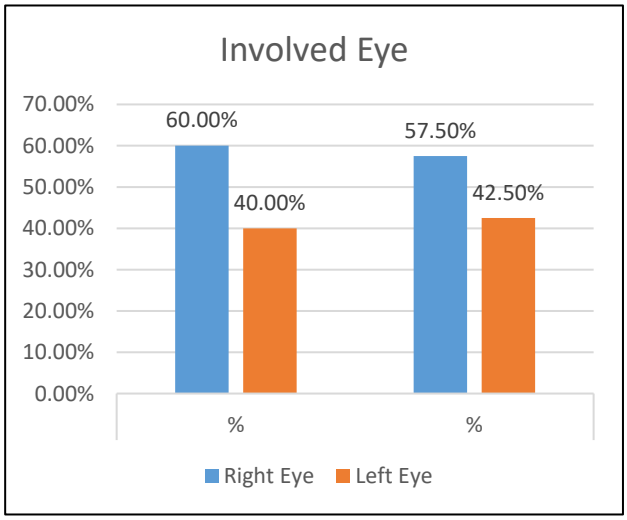

Figure 2: Distribution of study subjects according to involved eye, (n=80).

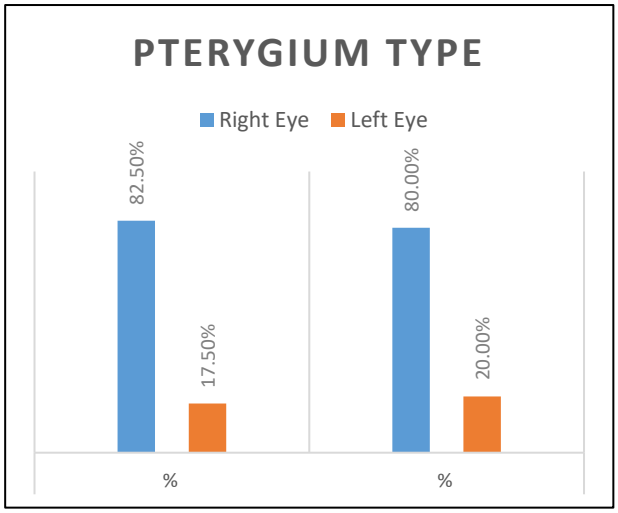

Figure 3: Distribution of study subjects according to type of pterygium, (n=80).

Figure 3 demonstrates the distribution of study subjects according to type of pterygium. Among the 40 patients, type 2 was in 33 (82.5%) and type 3 was in 7 (17.5%) in group I. On the other hand, among the 40 patients of group II, type 2 was in 32 (80%) and type 3 was in 8 (20%) patients. The difference was statistically not significant between two groups (p>0.05).

Table 2 shows the distribution of the study subjects according to occupation. Among 40 patients, 9 (22.5%) were farmers, 11 (27.5%) were service holders, 7 (17.5%) were house wives, 2 (4%) were students and 11 (20%) were others in group I (with suture). On the other hand, in group II (without suture) among 40 patients, 8 (20%) were farmers, 10 (25%) were service holders, 9 (22.5%) were house wives, 1 (2.5%) was student and 12 (30%) were others. Association of operative technique with type of occupation was not significant (p>0.05).

Table 2: Distribution of study subjects according to occupation, (n=80).

Occupation	Group I, (n=40)		Group II, (n=40)		P value
	N	%	N	%	
Farmer	9	22.50	8	20	0.947
Service holder	11	27.50	10	25	
House wife	7	17.50	9	22.50	
Student	2	5	1	2.50	
Others	11	27.50	12	30	

Data were analyzed using chi-square test.

Table 3 shows that foreign body sensation was found in 24 cases (60%), watering in 8 cases (20%), eye ache in 12 cases (30%), hyperemia in 10 cases (25%), graft oedema in 16 cases (40%) and sub graft-hemorrhage in 4 cases (10%) at 2nd POD follow up in group I. On the other hand, in group II foreign body sensation was found in 23 cases (57.5%), watering in 6 cases (15%), eye ache in 11 cases (27.5%), hyperemia in 9 cases (22.5%), graft oedema in 14 cases (35%) and sub graft- hemorrhage in 2 cases (5%) at 2nd POD follow up. After one week most of the patients became symptoms free. Within 1 month almost all the cases became symptoms free and at the end of three months no symptoms observed in between two groups. Among various presentation in 3rd post-operative follow up it was observed that incidence of hyperemia was significantly less (p<0.05) in suture less technique than the technique using suture.

Table 4 shows the postoperative outcomes and complications. Graft dehiscence was observed in 5% patients of suture group whereas it was 2.5% in case of suturel ess group. Conjunctival cyst was evident in 2.5% of control group while there was no incidence of it among experimental group. There was no incidence of recurrence in any group. No significant difference was observed regarding improvement of visual acuity in between two groups (p>0.05).

Table 5 shows that visual acuity at presentation 6/6 was in 28 cases (70%), 6/9 was in 3 (7.5%), 6/12 was in 4 (10%), 6/18 was in 3 (7.5%) and 6/24 was in 2 (5%) cases. After 3 months 6/6 was in 29 (72.5%), 6/9 was in 4 (10%), 6/12 was in 6 (15%) cases, 6/18 was in 1 (2.5%) case in group I. On the other hand, in group II visual acuity at presentation 6/6 was in 28 cases (70%), 6/9 was in 4 (10%), 6/12 was in 4 (10%), 6/18 was in 2 (5%) and 6/24 was in 2 (5%) cases. After 3 months 6/6 was in 30 (75%), 6/9 was in 3 (7.5%), 6/12 was in 6 (15%) cases, 6/18 was in 1 (2.5%) case. The difference was statistically not significant between two groups (p>0.05).

Table 3: Symptoms and signs in different follow up period, (n=80).

Symptoms and signs	Group I (n=40)		Group II (n=40)		X^2 value	P value
	N	%	N	%		
2nd POD						
FB sensation	24	60	23	57.50	0.021	0.884
Watering	8	20	6	15	0.286	0.593
Mild eye ache	12	30	11	27.50	0.043	0.835
Hyperemia	10	25	9	22.50	0.053	0.819
Graft oedema	16	40	14	35	0.133	0.715
Sub graft-hemorrhage	4	10	2	5	1.667	0.197
3rd PO follow up (1 week)						
FB sensation	4	10	2	5	1.667	0.197
Watering	1	2.50	1	2.50	-	-
Mild eye ache	2	5	2	5	-	-
Hyperemia	4	10	1	2.50	5.333	0.021
Graft oedema	2	5	1	2.50	1.286	0.257
Sub graft-hemorrhage	2	5	1	2.50	1.286	0.257
4th PO follow up (1 Month)						
FB sensation	1	2.50	0	0	-	-
Watering	0	0	0	0	-	-
Mild eye ache	0	0	0	0	-	-
Hyperemia	0	0	0	0	-	-
Graft oedema	0	0	0	0	-	-
Sub graft-hemorrhage	0	0	0	0	-	-
5th PO follow up (Three month)						
FB sensation	0	0	0	0	-	-
Watering	0	0	0	0	-	-
Mild eye ache	0	0	0	0	-	-
Hyperemia	0	0	0	0	-	-
Graft oedema	0	0	0	0	-	-
Sub graft-hemorrhage	0	0	0	0	-	-

Data were analyzed using chi-square test.

Table 4: Postoperative outcome and complications, (n=80).

Outcome and complications	Group I, (n=40)		Group II, (n=40)		X2 value	P value
	N	%	N	%		
Graft dehiscence	2	5	1	2.50	1.286	0.257
Graft dislocations	0	0	1	2.50	-	-
Graft retraction	0	0	0	0	-	-
Conjunctival cyst	1	2.50	0	0	-	-
Recurrence	0	0	0	0	-	-
Improvement of visual acuity	7	17.50	9	22.50	0.25	0.617

Data were analyzed using chi-square test.

Table 5: Distribution of visual acuity at baseline and post-operative period (three months).

Visual acuity	Group I, (n=40)		Group II, (n=40)		X^2 value	P value
	N	%	N	%		
Baseline						
6/6	28	70	28	70	-	-
6/9	3	7.50	4	10	0.143	0.705
6/12	4	10	4	10	-	-
6/18	3	7.50	2	5	0.2	0.655
6/24	2	5	2	5	-	-

Continued.

Visual acuity	Group I, (n=40)		Group II, (n=40)		X^2 value	P value
	N	%	N	%		
After 3 months						
6/6	29	72.50	30	75	0.022	0.764
6/9	4	10	3	7.50	0.143	0.705
6/12	6	15	6	15	-	-
6/18	1	2.50	1	2.50	-	-
6/24	0	0	0	0	-	-

Data were analyzed using chi-square test.

DISCUSSION

In this study, the age range of patients in both groups was 20 to 60 years, with a mean age of 39.15±11.14 years in group I (sutured) and 39.15±11.11 years in group II (without suture). On the 2nd post-operative follow up, 60% of patients in group I experienced foreign body sensation, 20% experienced watering, 30% experienced eye ache, 25% experienced hyperemia, 40% experienced graft oedema, and 10% experienced sub-graft hemorrhage. In group II, 57.5% of patients experienced foreign body sensation, 15% experienced watering, 27.5% experienced eye ache, 22.5% experienced hyperemia, 35% experienced graft oedema, and 5% experienced sub-graft hemorrhage. Previous studies have reported that the most common symptoms of pterygium include discomfort, foreign body sensation, redness, irritation, dryness, and lacrimation.[5] The patients in this study felt more comfortable in the suture less group than in the sutured group, which is consistent with the findings of previous studies.[6]

No recurrence was observed in either group in this study. In a comparative study by Shaaban et al, there were 3 cases (6%) of recurrence in the suture less and glue-free group and 8 cases (8%) in the sutured group.[4] No graft retraction was found in either group within the first post-operative week in this study. Previous studies have reported graft retraction rates of 7.5% and 20%.[7,8] However, Wit et al reported no graft retraction and suggested that suture less and glue-free grafting resulted in even tension across the graft interface, reducing the risk of sub-conjunctival scar formation.[10] In this study, partial graft dehiscence was found in 2 (5%) patients in group I (sutured group) and in 1 (2.5%) patient in group II (suture less group). This study found that the incidence of graft dehiscence was more frequent (5%) in the control group than in the experimental group (2.5%)[4]. In this study, conjunctival cyst was evident in 1 eye (2.5%) in the control group (Group I), but there were no conjunctival cysts in the experimental group (Group II).

Previous studies have reported that conjunctival cysts may form as a result of the implantation of conjunctival epithelium underneath the stoma following injury or surgery.[11]

This study found no significant differences between two groups in terms of foreign body sensation, watering, mild eye ache, graft oedema, and subcutaneous hemorrhage. However, hyperemia was significantly less ($p<0.05$) in the suture less group compared to the sutured group. No significant differences were found between the two groups in terms of graft retraction, recurrence, graft dislocation, and improvement in visual acuity.

CONCLUSION

Post-operative presentation like hyperemia was significantly less in experimental group. Incidence of post-operative complications like graft dehiscence and conjunctival cyst were comparatively less frequent in suture less technique. Graft retraction and recurrence were not seen in both groups. Regarding graft dislocation and improvement of visual acuity showed no significant difference between two groups. Thus, suture less technique following pterygium excision and conjunctival autograft is a safer and less complicated than sutured technique.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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