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A COMPARATIVE STUDY OF GLUELESS AND SUTURELESS TECHNIQUE OF CONJUNCTIVAL AUTOGRAFT VERSUS SUTURED CONJUNCTIVAL AUTOGRAFT FOR THE MANAGEMENT OF PRIMARY PTERYGIUM

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Abstract

Background: Sutureless glueless pterygium surgery is a newer alternative to the conjunctival autograft with sutures technique. **Objective**: The objective of the study was to compare and evaluate efficacy of two surgical techniques for the management of primary pterygium in terms of complications and post-operative signs and symptoms.**Methods**: The study included 50 patients with primary pterygium. Simple excision under local anaesthesia was performed followed by closure of the bare sclera by suture less and glue free conjunctival autograft in 25 patients (Group 1), versus the conventional method of a sutured conjunctival autograft in 25 patients (Group 2).**Results**: The study found that graft displacement and edema were more common in Group 1, whereas suture granulomas and epithelial cysts were observed more frequently in Group 2, likely due to the use of sutures. Additionally, recurrence of pterygium was observed in 2 patients (8%) in Group 1 at 4 and 6 weeks, compared to 1 patient (4%) in Group 2. **Conclusion**: Both techniques were effective in managing pterygium, but complications such as graft displacement, graft edema, and recurrence were more prevalent in Group 1 compared to Group 2. Sutureless technique may be considered as a viable alternative to sutured technique in terms of surgical outcomes.

Keywords- Pterygium, Graft edema, Graft displacement, Epithelial cyst, Suture Granuloma

INTRODUCTION

Pterygium is a common eye condition, especially in dry, dusty regions, and can cause cosmetic issues and vision loss if it encroaches on the cornea. It is a degenerative condition of subconjunctival tissue that often invades the cornea. Key factors in its development include limbal stem cell deficiency and prolonged exposure to ultraviolet radiation. Environmental factors, such as hot and dry conditions, also contribute. Symptoms typically include eye watering, headaches, and reduced vision. Various surgical methods have been explored, with autologous conjunctival grafting being the most effective, offering low recurrence rates. Suturing is commonly used but has drawbacks, including increased surgical time and postoperative complications. Alternatively, tissue glue offers advantages like shorter procedure time and fewer complications, though it is costly and may transmit infections. A newer approach using autologous blood coagulum avoids sutures and glue, reducing costs and complications, with promising results. This study assessed the outcomes of glueless and sutureless conjunctival autografts compared to traditional sutured grafts for primary pterygium.

MATERIAL & METHODS:

Our study was a prospective, observational hospital based study of 50 patients suffering from primary pterygium attending the out patient department of ophthalmology. Patients who met the inclusion criteria were onlyincluded in this study.

Case Selection:
The study included patients who met the following criteria:
Inclusion Criteria:

- Primary nasal pterygium, occurring in individuals of any age and gender.

Exclusion Criteria:

- Temporal pterygium.
- Recurrent pterygium.
- Pseudopterygium.
- Individuals with a history of glaucoma, as preservation of the superior conjunctiva is essential for future glaucoma surgery.
- Patients with any vitreoretinal disorders that might require surgical intervention.
- Those with a history of previous intraocular surgery or ocular trauma.

In our study we divided the patients into two groups:
Group 1: included 25 patients who underwent sutureless, glueless conjunctival autografting. Group 2: included 25 patients whounderwent conjunctival autografting with sutures.

METHODOLOGY:

A written informed consent was taken from all patients who were included in the study group.
Preliminary data like name, age, sex, occupation, was recorded. Detailed ocular examination of all the patients was done to confirm the diagnosis and relevant investigations were also done.
All the patients underwent general and systemic examination. Ocular examination was done of both the eyes respectively. Anterior segment examination was done with the help of torch light and slit lamp examination. All patients underwent visual acuity recording full efforts were made to properly record best corrected visual acuity of both the eyes.
The conjunctiva was examined for the presence of pterygium. Detailed assessment of pterygium was done to know the type of pterygium (progressive/ atrophic). The grade of pterygium was noted whether it was Grade1, Grade2, Grade3.
Any abnormalities of cornea, uvea and lens was recorded, pupillary reaction and Intraocular pressure was recorded and retinal examination was done with the help of ophthalmoscope. Lab investigations were done and surgical procedures were performed as per the group assigned to the patient.

RESULTS

A one-year prospective, observational, and comparative study was conducted at the Outpatient Department of Ophthalmology, RuxmanibenDeepchand Gardi Medical College (RDGMC) in Ujjain, Madhya Pradesh, involving 50 patients diagnosed with primary pterygium. The patients were randomly assigned into two equal groups of 25 each. Group 1 consisted of patients who received the sutureless and glueless method for attaching the conjunctival autograft following pterygium excision, while Group 2 comprised patients who had the autograft secured with sutures.

1.GENDER
In our study 23(46%) patient were males as compared to 27(54%) females who were found to be suffering from pterygium. There was no significant difference in gender distribution of females. (Chi-square=0.32, p= 0.571) (see table no. 1)

Table No. 1Distribution of cases according to gender (n= 50 patients)

S.no.	Gender	Frequency	Percent
1	Male	23	46.0
2	Female	27	54.0
	Total	50	100.0

2.DURATION OF EXPOSURE TO SUNLIGHT
In our study in Group1, 14(56%) patients had history of exposure to sunlight as compared to 21(84%) patients in group 2 who had exposure to sunlight. This result suggests that exposure to sunlight is a significant factor for development of pterygium as seen in 35 patients as compared to 15 patients who did not have exposure to sunlight. (Chi-Square-4.667, P-value 0.031) (see table no. 2)

Table no. 2: Distribution of cases according to duration of exposure to sunlight (n= 50 patients)

		Group			
		Group 1		Group 2	
		N	%	N	%
Exposure of sunlight	Yes	14	56.0%	21	84.0%
	No	11	44.0%	4	16.0%
Total		25	100%	25	100%

3.GRADE OF PTERYGIUM

In our study Grade 1 pterygium was seen in 5(20%) patients in Group 1 as compared to 3(8%) patients in Group 2. Grade 2 pterygium was seen in 18(72%) patients in both the group whereas Grade 3 pterygium was seen in 2(8%) patients in Group 1 as compared to 4(16%) patients in Group 2. Grade 2 pterygium was more common as compared to other grades of pterygium in both the group (Chi-square= 1.167, p= 0.558)(see table no. 3)

Table no. 3: Distribution of cases according to grade of pterygium in different groups (n= 50 patients)

S.no.	Grade of pterygium	Group		Total
		Group 1	Group 2	
1	Grade 1	5	3	8
		20.0%	12.0%	16.0%
2	Grade 2	18	18	36
		72.0%	72.0%	72.0%
3	Grade 3	2	4	6
		8.0%	16.0%	12.0%
	Total	25	25	50
		100.0%	100.0%	100.0%

4. COMPLICATION ON FOLLOW UP AT 2 WEEKS

In our study Graft displacement was seen in 2(8%) patients as compared to nil patient in Group 2(p-0.149). We also found Graft oedema was seen in 6 patients (24%) in Group 1 as compared to 3(12%) seen in Group 2 (p-0.269). Epithelial cyst and suture granuloma were seen in 1(4%) patient in Group 2 as compared to 0 patient in Group 1 (p-0.312).

Pain was the most common complaint in 10(40%) patients in Group 2 as compared to only 3(12%) patients in Group 1. The difference was significant (p-0.024) (see table no. 4)

Table no. 4: Complications in the study group on follow up at 2 weeks(n= 50 patients)

S.no.	2 Weeks complications		Group			
			Group 1		Group 2	
			N	%	N	%
1	graft displacement	Yes	2	8.00%	0	0.00%

		No	23	92.00%	25	100.00 %
2	graft oedema	Yes	6	24.00%	3	12.00%
		No	19	76.00%	22	88.00%
3	Pain	Yes	3	12.00%	10	40.00%
		No	22	88.00%	15	60.00%
4	epithelial cyst	Yes	0	0.0%	1	4.0%
		No	25	100.0%	24	96.0%
5	Suture granuloma	Yes	0	0.0%	1	4.0%
		No	25	100.0%	24	96.0%

5. COMPLICATION ON FOLLOW UP AT 6 WEEKS

In our study Graft displacement was seen in 2(8%) patients as compared to 1(4%) patient in Group 2(p-0.552). We also found Graft oedema was seen in 2(8%) patients in Group 1 as compared to 1(4%) seen in Group 2 (p-0.552). Epithelial cyst and suture granuloma were seen in 1(4%) patient in Group 2 as compared to 0 patient in Group 1 (p-0.312). Pain was seen in 1(4%) patient in Group 2 as compared to 0 patient in Group 1(p-0.312). (see table no.5)

Table no. 5: Complications in the study group on follow up at 6 weeks (n=50 patients)

S.no.	6 Week complications		Group			
			Group 1		Group 2	
			N	%	N	%
1	graft displacement	Yes	2	8.0%	1	4.0%
		No	23	92.0%	24	96.0%
2	graft oedema	Yes	2	8.0%	1	4.0%
		No	23	92.0%	24	96.0%
3	Pain	Yes	0	0.0%	1	4.0%
		No	25	100.0%	24	96.0%
4	epithelial cyst	Yes	0	0.0%	1	4.0%
		No	25	100.0%	24	96.0%
5	suture granuloma	Yes	0	0.0%	1	4.0%
		No	25	100.0%	24	96.0%

6. RECURRENCE

In our study group 2(8%) patients were found to be having recurrence of pterygium at 4 weeks interval in Group 1 as compared to only 1(4%) patient in Group 2. (Chi-square= 0.355, p= 0.552) (see table no. 6)

Table no. 6: Distribution of cases according to recurrence at 6 weeks (n= 50 patients)

S.no.	Recurrence 6 Weeks	Group			
		Group 1		Group 2	
		N	%	N	%
1	Yes	2	8.00%	1	4.00%
2	No	23	92.00%	24	96.00%
	Total	25	100%	25	100%

DISCUSSION

Pterygium is an ocular surface disease which is also known as surfer's eye characterized by a wing-shaped growth of conjunctival and limbal tissue over the adjacent cornea.

Our study was a prospective, observational, comparative, hospital-based study of 50 patients suffering from primary pterygium attending the Outpatient Department of Ophthalmology, RuxmanibenDeepchand Gardi Medical College (RDGMC), Ujjain (Madhya Pradesh).

This study was a comparative study of glueless and sutureless technique of conjunctival autograft versus sutured conjunctival autograft for the management of primary pterygium.

Gender and Pterygium:

Pterygium can affect individuals working in environments with dry and dusty conditions, and typically, there is no marked difference in its prevalence based on gender. In our study, 23 (46%) male patients and 27 (54%) female patients were diagnosed with pterygium. The gender distribution did not show any significant disparity. Our findings align with the study by **Viso et al. (2011)**, which reported a prevalence of 4.8% (95% CI: 2.6–8.4) in men and 6.5% (95% CI: 4.5–9.3) in women.**[1]**

History of sunlight exposure:

Coroneo MT (1993) concluded that there is strong evidence linking exposure to ultraviolet radiation (290-400 nm) with the development of pterygium.**[2]** Similarly, **Qadi et al. (2021)** found that individuals with outdoor occupations had a higher incidence of pterygium, which was directly related to the amount of sunlight exposure they received. Additionally, pterygium was more common in individuals living at higher altitudes and in rural areas compared to those at lower altitudes or residing in urban areas.**[3]**

According to **Joan Khoo et al. (1998)**, a significant link exists between outdoor workers and the development of pterygium, which may be attributed to increased exposure to dust and higher levels of sunlight.**[4]**

In our study, 14 patients (56%) in Group 1 had a history of sunlight exposure, compared to 21 patients (84%) in Group 2. This finding suggests that sunlight exposure is a significant factor in the development of pterygium, with 35 patients showing a history of exposure, while only 15 patients had no such exposure. These results are consistent with the findings of the studies mentioned above.

Recurrence:

Recurrence of pterygium is a significant complication associated with any surgical approach used to treat the condition. **Allan et al. (1993)** conducted a study involving 93 pterygium cases treated with conjunctival autografting and found a recurrence rate of 6.5%.**[5]**Similarly, **Kenyon et al. (2010)** concluded that conjunctival autografting demonstrated the lowest recurrence rate and appeared to be the most effective treatment option.**[6]** In our study, 2 patients (8%) in Group 1 experienced recurrence of pterygium at 4 and 6 weeks, compared to only 1 patient (4%) in Group 2. The findings from our study are consistent with those of the studies mentioned above.

Complications:

Mahajan S et al. (2021) found in their study that the symptoms were most severe in both groups during the first week

post-surgery but resolved more quickly in Group A (within 2 weeks) compared to Group B (which took about 1 month). In Group A, two patients experienced graft displacement, both occurring within 10 weeks of the procedure. Additionally, one patient in Group A had a recurrence of pterygium at 6 months, while two patients in Group B experienced recurrence—one at 3 months and the other at 6 months.**[7]**

Ashok Sharma et al (2015) In their study they found that postoperative symptoms were seen in a smaller number of patients (20%) and were of shorter duration (2 weeks) in group 1 as compared to group 2 with 20 (80%) patients having symptoms lasting for 4 weeks; (p<0.001%) Recurrence rate and conjunctival granuloma formation rate for group 1 (0%) and for group 2 (4%) were statistically insignificant.**[9]**

Das PJ, Kumar D et al(2019) conducted a study involving 25 patients, who were divided into two groups. Group 1 consisted of patients who underwent surgery using the suture technique, while Group 2 included those treated with the sutureless method. The study found that postoperative symptoms were observed in 18 eyes (72%) in Group 1, compared to just 4 eyes (16%) in Group 2, with a statistically significant difference (p-value < 0.05). From the first postoperative day, patients in Group 2 reported greater comfort than those in Group 1. Graft edema occurred in 5 eyes (20%) in Group 1 and in 3 eyes (12%) in Group 2, both of which resolved within 1-2 weeks. Graft loss was observed in 2 eyes (8%) in Group 1, while recurrence was noted in only 1 eye (4%) in Group 1, with no significant statistical difference.**[9]**

In a study by **Malik et al (2012),** a total of 40 patients were examined. Among them, graft dehiscence occurred in 2 eyes (5%), graft retraction was observed in 3 eyes (7.5%), and recurrence was noted in 1 eye (2.5%). Six weeks after surgery, uncorrected visual acuity improved by 0.18 to 0.5 log MAR in 7 eyes. No additional complications were reported.**[10]**

In our study, at 2 weeks, graft displacement was observed in 2 patients (8%) in Group 1, compared to none in Group 2 (p = 0.149). Graft edema was noted in 6 patients (24%) in Group 1, while only 3 patients (12%) in Group 2 experienced it (p = 0.269). Epithelial cysts and suture granulomas were found in 1 patient (4%) in Group 2, but none in Group 1 (p = 0.312). Pain was the most common complaint, reported by 10 patients (40%) in Group 2, compared to only 3 patients (12%) in Group 1, with a statistically significant difference (p = 0.024).

At 6 weeks, graft displacement was seen in 2 patients (8%) in Group 1, compared to 1 patient (4%) in Group 2 (p = 0.552). Graft edema was noted in 2 patients (8%) in Group 1, versus 1 patient (4%) in Group 2 (p = 0.552). Epithelial cysts and suture granulomas were found in 1 patient (4%) in Group 2, but none in Group 1 (p = 0.312). Pain was reported in 1 patient (4%) in Group 2, with no cases in Group 1 (p = 0.312).

The results of our study align with those of previously mentioned studies, indicating that graft displacement and graft edema and recurrence are more common complications in Group 1, while suture granulomas are more frequent in Group 2, likely due to the use of sutures in that group.

CONCLUSION

A one-year prospective, observational study was conducted at the Ophthalmology Outpatient Department of RuxmanibenDeepchand Gardi Medical College (RDGMC) in Ujjain, Madhya Pradesh, involving 50 patients with primary pterygium. These patients were randomly divided into two groups of 25 each. Group 1 underwent the sutureless and glueless technique for attaching the conjunctival autograft after pterygium excision, while Group 2 received sutures to secure the autograft. The study found that graft displacement and edema were more common in Group 1, whereas suture granulomas and epithelial cysts were observed more frequently in Group 2, likely due to the use of sutures. Additionally, recurrence of pterygium was observed in 2 patients (8%) in Group 1 at 4 and 6 weeks, compared to 1 patient (4%) in Group 2. Overall, both techniques were effective in managing pterygium, but complications such as graft displacement, graft edema, and recurrence were more prevalent in Group 1 compared to Group 2.

REFERENCES

1. Viso, E., Gude, F. & Rodríguez-Ares, M. Prevalence of pinguecula and pterygium in a general population in Spain. Eye 25, 350–357 (2011).
2. Coroneo MT. Pterygium as an early indicator of ultraviolet insolation: a hypothesis. Br J Ophthalmol 1993; 77: 734–739.
3. Qadi R, Alamri, Elnashar M, et al. (January 11, 2021) Prevalence of Pterygium and Associated Risk Factors in the High-Altitude Area of Ta'if City, Saudi Arabia. Cureus 13(1): e12638. DOI 10.7759/cureus.12638
4. Joan khon et al (1998): Outdoor work and the risk of pterygia in a casecontrol study Indian ophthalmology 09-1998; Vol-22 Issue 3 pp 293-298.
5. Allan BDS et al: pterygium excision with conjunctival autografting: an effective and safe techniques Br.Jo.Opht 77: 698 I 1993.
6. Kenyon KR et al: Ocular surgery news U.S. edition October 25, 2010.
7. Mahajan S, Gupta SK. A comparative study of suture-less and glue-free versus sutured conjunctival autograft for the management of primary pterygium. Arch Med Health Sci 2021;9:260-3.
8. Sharma, A., Raj, H., Gupta, A., & Raina, A. V. (2015). Sutureless and Gluefree Versus Sutures for Limbal Conjunctival Autografting in Primary Pterygium Surgery: A Prospective Comparative Study. Journal of clinical and diagnostic research : JCDR, 9(11), NC06–NC

9. Das PJ, Kumar D, Goswami H, Dutta SK. Pterygium surgery with conjunctival autograft with sutures versus suture-less and glue-less: A prospective comparative study. Int J Ocul Oncol Oculoplasty 2019;5(4):194
10. Malik, K. P. S., Goel, R., Gupta, A., Gupta, S. K., Kamal, S., Malik, V. K., & Singh, S. (2012). Efficacy of sutureless and glue free limbal conjunctival autograft for primary pterygium surgery. Nepalese Journal of Ophthalmology, 4(2), 230–235.