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Pterygium Surgery With Conjunctival Autograft With Sutures Versus Suture-Less And Glue-Less: A Prospective Comparative Study

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Abstract

Introduction: A pterygium is a triangular 'wing-like' growth consisting of conjunctival epithelium and hypertrophied subconjunctival connective tissue that occurs nasally and/or temporally in the palpebral fissure and encroaching over to the limbus and then to the cornea. . This study was conceptualized to compare the two most commonly used techniques for conjunctival autograft fixation in pterygium surgery, either sutureless, glue-free fixation, or sutured graft.

Objective: To compare the post-operative outcome of primary pterygium excision followed by autologous limbal conjunctival grafting with application of sutures vs suture-less and glue-less.

Materials and Methods: This study is a prospective interventional case study. 50 eyes with primary pterygium are selected. Patients were divided into two equal groups with 25 number of eyes in each group.

a) Group- I = fixing of auto graft without sutures i.e. Suture-less and without glue i.e. glue-less

b) Group- II = suturing of auto graft with (10-0) nylon sutures

Results: Mean surgical time for group 1 (23.20±1.55 minutes) was significantly less as compared to group 2 (36.67±1.89 minutes); (p=0.001). Postoperative symptoms were seen in less number of patients (20%) and were of shorter duration (1 weeks) in group 1 as compared to group 2 with (80%) patients having symptoms lasting for 3 weeks; (p<0.001). Recurrence rate and conjunctival granuloma formation rate for group 1 (0%) and for group 2 (4%) were statistically insignificant.

Conclusion Sutureless and glue-free conjunctival autograft technique is simple, easy, safe, effective and less time consuming than sutured limbal autograft technique with less postoperative discomfort and adverse events encountered with the use of suture material. Postoperative results of both techniques are comparable. Hence sutureless and glue-free conjunctival autografting is a good technique for the treatment of primary pterygium.

Keywords: NIL

Introduction

Pterygium, a wing-shaped fibrovascular growth of the bulbar conjunctiva, is a common chronic ophthalmic condition [1, 2]. Although pterygium is generally regarded as a benign and cosmetic concern, without proper treatment, it may result in significant visual morbidity or even potentially blindness in extreme stages [3, 4]. Pterygium is commonly seen in India, which is a part of the pterygium belt(5). It is a potentially blinding disease in the advanced stage when it encroaches visual axis, which can have significant impact on vision and require surgery for visual rehabilitation(6).Although the etiology of pterygium is unclear, the most common risk factor is ultraviolet (UV) light exposure, which induces oxidative stress and the expression of cytokines and growth factors in pterygial epithelial cells, initiating the cellular proliferation, blood vessel formation, tissue invasion, and inflammation [7]. Meanwhile, other confirmed risk factors include dry, warm, dusty

climates; high winds; age; and sex [8]. Several modes of inheritance have also been reported such as autosomal-dominant, autosomal-recessive, sex-linked, and non-Mendelian modes of inheritance [9].

Surgical techniques which have been commonly used for the excision of pterygium are bare sclera, conjunctival autograft, and amniotic membrane transplantation, but none of it is universally accepted because of variable recurrence rates. Thus, the adjunctive medical therapies have been included into the management of pterygium and they are conjunctival flaps, lamellar keratoplasty, mucous membrane grafts, chemotherapy by Thiotepa, radiation therapy by radon bulbs, radium plaques, beta irradiation ablation with erbium YAG laser, smoothening the corneal surface with excimer laser, and antimetabolite such as 5-fluorouracil and Mitomycin c but all these adjunctive medical therapies have their own potential side effects.[10]

Materials And Methods:

This prospective, longitudinal study was conducted over a period of 1 years from April 2021 to March 2022 in at Govt. medical college doda, India.

This case study included 50 eyes with primary nasal pterygium requiring surgical excision. Patients were randomised into two groups with 25 eyes in each group.

a) Sutureless and glue-free technique - Group 1

b) Interrupted 10-0 nylon sutures – Group 2

All surgeries were performed by a single surgeon after taking written informed consent in the patient's language. The patients were followed up on day 1, 1 week, 1 month, 3 months and 6 months. Any fibrovascular regrowth across the limbus was defined as a recurrence.

All surgeries were performed under local peribulbar anesthesia No patient required additional local anesthesia.

Inclusion criteria: Patients of all ages and of either sex presenting with primary nasal pterygium

Exclusion criteria: Recurrent pterygium, glaucoma, retinal pathology requiring surgical intervention, history of previous ocular surgery or trauma.

Preoperative Ophthalmic Evaluation

Preoperatively, detailed ocular history, uncorrected and best-corrected visual acuity were recorded. A detailed slit lamp examination was performed, intraocular pressure was recorded and retinal examination was done with 90 D slit-lamp biomicroscopy.

Operative Procedure

Operative Procedure The patient was shifted to the operation theater placed in supine position in operation table. Thorough cleaning of eye to be operated was done with betadine 7.5% solution i.e. povidone iodine solution. Peribulbar block 5 ml local anesthesia was administered which 2% lidocaine and adrenalin. Now lid wire speculum placed in the eyelid for proper viewing of the operation site. The pterygium body was hold with tooth forceps and separated gently including the adjacent tenon's capsule with the help of crescent knives (D-Blade), and after separation of mass, it was dissected with corneoscleral scissors without damage to medial rectus muscle and surrounding area. Now the bare sclera of the eye was cleaned with normal saline and measured with a Vernier Caliper. The graft tissue was taken from superior sclera according to the measurement of caliper 0.5 mm additional.

In group 1, the graft was placed on bare sclera and positioned to maintain the limbus-limbus orientation. The graft was kept apposed to the scleral bed by applying mild pressure with nontoothed forceps for 10 min. In group 2, the graft was anchored with interrupted 10-0 nylon sutures by taking episcleral bites at the corners to maintain the limbus to limbus apposition of the graft.Sutures were removed 2 weeks later in Group 2.
The total surgical time was recorded from the first conjunctival cut to the removal of the lid speculum.

Post-Operative Procedures

Post-operative Procedure Bandage opened after 12 h of surgery. Antibiotic and prednisolone eye drop was prescribed 6 times per day for 1 month in tapering dose. Oral tablets such as Diclofenac and serratiopeptidase were given B.D for 3 days from the day of surgery. Post-operative follow-up visits of patients were scheduled 1st day, 1st week, 1st month, 3rd month, and 6th month. During follow-up operated eye was examined under slit lamp, and complication such as pterygium recurrence, visual

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acuity, and corneal perforation was recorded. All the data were recorded in tabulated form.

Results

50 eyes with primary pterygium were selected. Patients were divided into two equal groups with 25 eyes in each group.

a) Group I = fixing of auto graft without sutures i.e. suture-less and without glue i.e. glue-less.

b) Group II = suturing of auto graft with (10-0) nylon sutures

The demographic status of the patients is documented, refer to Table - I.

Table 1:

		Group 1	**Group 2**
age	Range of age	25-75	25-75
	mean sd of age	42.65**(+-15.34)**	**43.77(+-16.81)**
sex	**male**	**12**	**13**
	female	**13**	**12**
laterality	**right**	**11**	**12**
	left	**14**	**13**

Postoperative symptoms were seen in 5 (20%) patients in group 1 and 20 (80%) patients in group 2 (p-value <0.002). The severity of symptoms was maximum on 1st Postoperative day for both the groups;the duration for which symptoms lasted was 1 weeks for group 1 and 3 weeks for group 2 (p-value < 0.001). Graft oedema was seen in 2 (8%) eyes in group 1 and 3 (12%) eyes in group 2 which resolved after 1 week. One patient (4%) had conjunctival granuloma in group 1 and one patient (4%) had recurrence in group 2 (statistically insignificant). Graft anchoring related complications like retraction, graft displacement, wrinkling, loss, and shrinkage were not observed in the current study.

Table 2:

	Group 1	Group 2	p-value
Average surgical time (in min)	23.20+-1.55	36.67+-1.89	=0.001
Complication rate			
Post operative syptoms	5(20%)	20(80%)	<0.002
Durations of symptoms(in weeks)	1	3	<0.001
Graft oedema	2(8%)	3(12%)	NS
granuloma	1(4%)	0	NS
Recurrence rate	0	1(4%)	NS

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Discussion

In the present study, consisting of 50 patients, who were divided into two groups, mean operating time in group 1 was 23.20 ± 1.55 min and 36.67 ± 1.89 min in Group 2. Sharma *et al*. reported mean operative time of 23.20 ± 1.55 min and 37.76 ± 1.89 min in sutureless, glue-free graft and sutured conjunctival autograft groups, respectively(11) Similarly, Elwan also reported, the mean operating time of 24 ± 5.64 min in sutureless and glue-free conjunctival limbal autografting which and 28.64 ± 6.45 min in suturing of conjunctival limbal autograft(12). Other studies also have similar outcome of operating time for conjunctival auto grafting with sutures(13,14,15) and suture-less and glue-less conjunctival auto grafting. (16,17,18)

In this study, post-operative symptoms like watering and foreign body sensation were noted in 20% of patients in sutureless and glue-free autograft and in 80% of patients in sutured conjunctival autograft. The symptoms were maximal on the 1st day and 1st week after the surgery and decreased over a period of 1 month in both the groups, earlier in group 1. Similarly, Sharma *et al*. noted postoperative symptoms in 20% of patients in the sutureless autograft group and in 80% of patients in sutured conjunctival autograft group(11). Various authors were also reported that with sutures the postoperative symptoms were more than with suture- less auto grafting (19,20,13,14,15,17,18,21,22) Postoperative complications were also more in sutured conjunctival autograft group in our study. Recurrence was not seen in any patient in the sutureless conjunctival autograft group and in one patients in the sutured conjunctival group. Graft edema was seen in two patients in Group 1 and three patients in Group 2. Sharma A *et al*. noted one case each of conjuntival granuloma formation and recurrence, in sutured conjunctival autograft group in their study and graft edema was seen in two patients in sutureless conjunctival autograft group and in three patients in sutured conjunctival autograft group. They reported no complications like graft displacement, wrinkling, retraction in their study(11). Malik *et al*. reported graft retraction in three eyes and recurrence in one eye with sutureless conjunctival autograft(19). Elwan reported conjunctival edema in 8 (16%) patients and 6 (6%) patients, recurrence in 3 (6%) patients and 8 (8%) patients, and granuloma formation in none and 3 (3%) patients for sutureless and glue-free and sutured limbal conjunctival autograft respectively(12). Bhargava *et al*. noted graft displacement in 16 (5.33%) patients and recurrence in three patients at the end of 3 months in their study(23).

Another study had recurrence only in 1 operated eye i.e. 2.5% and no granuloma formation at 6 months of follow up in case of suture-less and glue-less conjunctival auto grafting.(19)Wit et al. had no recurrence in 15 operated eyes in a mean follow up of 9 months in both the groups with sutures and suture less and glue less.(20)Hall et al. had no recurrences in the auto grafting with glue and 2 recurrences in the group with sutures within a follow up period of 3 months.(24)Recurrence of 13.33% was seen in conjunctival auto grafting with fibrin glue by Foroutan et al within 3 years of observation.(16)

Conclusion:

Sutureless and glue-free limbal conjunctival autografting is a new novel technique for the treatment of primary pterygium. Not only the surgcal time required is less but also the complications encountered are fewer than suturing technique.

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