

Original Research Article

Sticking with autologous serum versus stitching with non-absorbable suture conjunctival limbal autograft in primary pterygium surgery

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ABSTRACT

Background: Pterygium is a degenerative ocular surface disorder with wing shaped fibrovascular growth of the subconjunctival tissue onto the cornea.

Objectives: The purpose of this study was to compare the surgical outcome of suture less technique with graft suturing technique for conjunctival autograft fixation following pterygium excision.

Materials And Methods: This was a prospective interventional case study including 50 eyes with pterygium requiring surgical excision. Operated eyes were divided into two equal groups; Group-1 where conjunctival limbal autograft was placed without using sutures after pterygium excision and Group-2 where conjunctival limbal autograft was fixed by 10-0 ethilon monofilament sutures.

Results: Group-1 had shorter duration of surgery ($p < 0.001$), less postoperative complaints ($p < 0.001$) and greater patient satisfaction ($p < 0.001$) than Group-2. Postoperative complications and improvement in visual acuity was same in both groups. Recurrence was not significant in both groups until 6 months of follow up.

Conclusions: Patients who underwent suture less autologous graft fixation had comparatively less operative time, less postoperative symptoms and greater satisfaction than graft fixation with sutures post pterygium excision surgery.

Keywords: Conjunctival limbal autograft, Pterygium, Suture less

INTRODUCTION

The term 'pterygium', derived from Pterygos (ancient Greek word meaning wing),¹ is a non-malignant, slow growing, wing shaped proliferation of the fibrovascular tissue, which arises from the subconjunctival tissue, and may extend over the cornea.² It is characterized by cellular proliferation, neovascularization and inflammation. Pterygium can disturb vision by leading to tear film instability, corneal astigmatism or visual axis obscuration. Treatment indications vary from minor cosmetic concerns to significant visual loss. Management options include various surgical techniques including simple resection (leaving the sclera bare), or resection followed by covering the sclera with primary conjunctival closure, a conjunctival or conjunctival limbal autograft from another site on the bulbar conjunctiva of the same eye, or with human amniotic membrane (HAM). To reduce the recurrence, adjuvants like mitomycin C and 5-fluorouracil have also been used along with the above-mentioned surgical techniques.

Conjunctival autograft with limbal-to-limbal orientation reduces the chances of recurrence as stem cells in the limbus act as a barrier for conjunctival cells.³ Glue or sutures are used to fix the conjunctival autograft. A new technique of using patient's blood available at the graft bed to fix the graft has been introduced.⁴ Sutures and glue are associated with complications such as granuloma formation, chronic inflammation, infection, hypersensitivity reactions or recurrence.⁵

Materials and Methods

50 eyes with pterygium were randomized into two groups; either suture less and glue free autograft (Group-1; n=25 eyes), or sutured non-absorbable (ethilon 10-0) autograft (Group-2; n=25 eyes) technique of autograft adhesion. All patients underwent surgery under local anesthesia and were followed up on day 1, day 7, 1 month and 6 months after surgery. Recurrence was observed until 1 year after surgery.

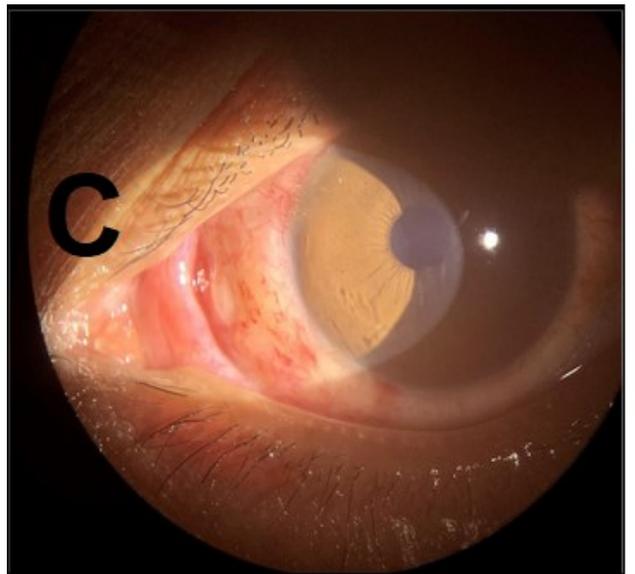
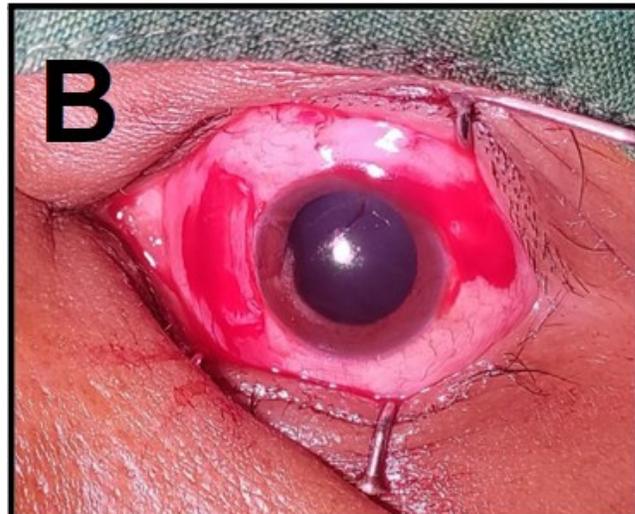
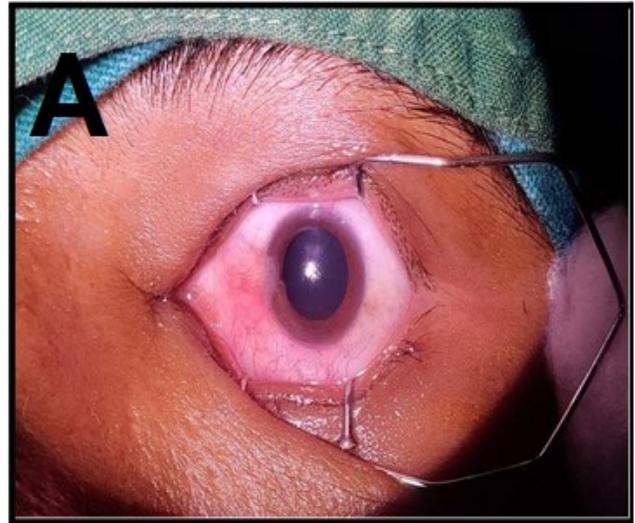
During follow up, visual acuity, complaints of patients and any complications related to surgery were noted. Patients of all ages and either sex presenting to the outpatient department of our institute with primary pterygium were included in study. Patients with recurrent pterygia and other ocular pathology requiring surgical intervention were excluded from the study. All the patients underwent complete eye examination of anterior and posterior segment preoperatively. Postoperative examination was done on day 1, day 7, 1 month, and 6 months. Examination findings of pre and post-operative visits were recorded.

All patients underwent surgery after peribulbar block anesthesia with all aseptic precautions. Pterygium head was avulsed from cornea with toothed forceps and then separated from underlying sclera and excised. Subconjunctival pterygium tissue was excised with Westcott scissors. Corneal and limbal scraping was done with 15 number blade. A thin film of blood clot was allowed to form over the bare sclera to adhere to the graft. The size of the bare sclera was measured with calipers. 0.5 mm oversized graft was taken from the superior limbal conjunctiva devoid of Tenon's capsule. (Figure-1, A to D). In group-1, the graft was slid over the bare sclera with limbal edge towards the limbus. A duration of ten minutes was allowed for the graft to settle over the scleral bed, then the stabilization of the graft was tested to ensure firm adherence to the sclera. The eye was patched overnight.

In group-2, the conjunctival graft was kept in place and 10-0 ethilon suture was applied, first at two limbal edges and then sutured as needed and eye was pad and bandaged till they were followed up the next day. Postoperatively, antibiotic-steroid eye drops were prescribed 4 times a day initially and tapered over 4 weeks with lubricating eye drops and eye ointment for 1 month. Surgical results were evaluated in terms of operating time, postoperative symptoms, graft survival and post-operative complications. Data were coded and entered using the statistical package SPSS (Statistical Package for the Social Sciences) version 25. Data was summarized using mean, standard deviation (SD), median, minimum and maximum in quantitative data and using frequency (count) and relative frequency (percentage) for categorical data. Comparisons between quantitative variables were done using t-test. For comparing categorical data, Chi square test was applied. Exact tests were used instead when the expected frequency was less than 5. P-values less than 0.05 were considered statistically significant.

RESULTS

Table-1 shows comparison of operative time of both techniques. Statistically significant difference was found in the operative duration between the two groups (p value 0.001), with the sutured group (Group-2) having much longer duration.



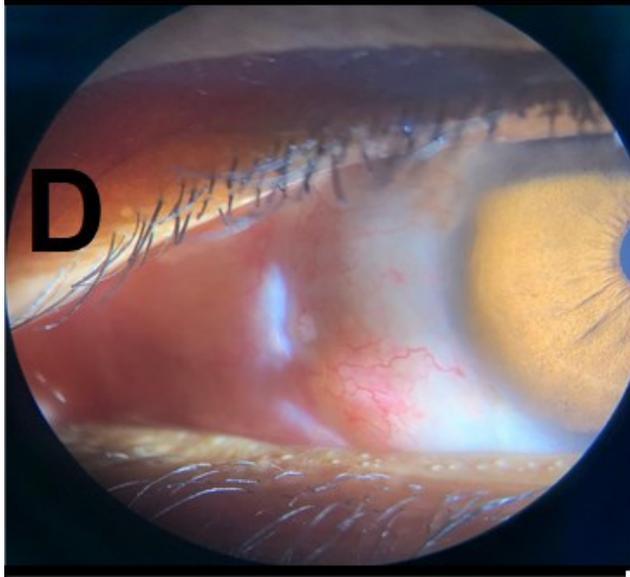


Figure-1: Surgical technique; A) Preoperative nasal pterygium, B) Immediate postoperative conjunctival limbal autograft, C) Post-operative one week, D) Post-operative one month without suture after pterygium excision

Table-1: Difference between the suture less and sutured group in the duration of surgery

Groups	Group-1		Group-2		P value
	Mean	SD	Mean	SD	
Duration of surgery (minutes)	20.50	3.20	31.70	3.58	0.001

Intra-operative sub conjunctival hemorrhage was seen 21 patients of group-1 and 23 patients of group-2. However, the difference between two groups was not significant. All patients experienced pain and lacrimation on postoperative day 1, but at one-week and one-month follow-ups there was marked and significant decrease in pain and lacrimation in Group-1 patients. All patients experienced foreign body sensation on postoperative day 1, but at one-week and one-month follow-ups there was marked and significant decrease in foreign body sensation in Group-1 patients. Table-2 shows the comparison of post-operative symptoms between two groups. There was a statistically insignificant difference in post-operative complications like graft hemorrhage, granuloma, graft retraction, graft edema, graft necrosis and the recurrence rate among two groups (Table-3).

Table-2: Comparison of post-operative symptoms between two groups

Groups	Group-1 (N)	Group-2 (N)	P value
Pain on 1 st post-operative day	25	25	
Pain on 7 th post-operative day	5	18	< 0.05
Pain at one-month follow-up	0	10	< 0.05
Lacrimation on 1 st post-operative day	25	25	
Lacrimation on 7 th post-operative day	2	15	< 0.05
Lacrimation at one-month follow-up	0	6	< 0.05
Foreign body sensation on 1 st post-operative day	25	25	
Foreign body sensation on 7 th post-operative day	2	20	< 0.05
Foreign body sensation at one-month follow-up	0	8	< 0.05

Table-3: Comparisons of post-operative complications between two groups

Complications	Group-1	Group-2	P value
Graft loss	1	3	> 0.05
Granuloma	1	1	> 0.05
Graft retraction	1	0	> 0.05
Graft edema	20	20	> 0.05
Sub graft hematoma	1	1	> 0.05
Avascular patch	1	0	> 0.05
Recurrence	2	1	> 0.05

DISCUSSION

Pterygium excision with conjunctival autograft has exhibited good results as it maintains the ocular surface even and restores the anatomy which existed before the corneal invasion caused by the pterygium. Anchoring of the graft to the bare scleral bed can be done by sutures such as Ethilon or by means of tissue glues (tissue adhesives). Both techniques yield excellent results for reducing the number

of recurrences in this type of surgery. In addition, greater patient comfort in the first few days after surgery is also a benefit. Pterygium excision with autologous conjunctival grafting seems to be the best method for pterygium removal, giving both low recurrence rate, safety and greater patient comfort.⁶ In the current study, the conjunctival autograft was placed in Group-1 using compression without sutures while in Group-2 the graft was sutured. It was found that the suture less technique showed a shorter duration of surgery than sutured technique and less postoperative symptoms such as pain lacrimation and foreign body sensation (Table-4).

Table-4: Comparison of post operative complications rate in suture less glue free surgery in different studies

Complications	Sharma A et al ⁷	Rathi G et al ⁸	Kulthe S et al ⁴	Present study
Graft loss	0	1 (2%)	2 (2.5%)	1 (4%)
Sub-graft hematoma	26 (32.5%)	0	0	2 (8%)
Granuloma	0	0	0	1 (4%)
Graft edema	4 (5%)	2 (4%)	0	20 (80%)
Recurrence	1 (1.25%)	1 (2%)	0	1 (4%)
Avascular patch	0	0	0	1 (4%)
Graft retraction	3 (3.75%)	0	1 (1.2%)	2 (8%)

CONCLUSIONS

Suture less (glue) free conjunctival limbal autograft has fewer postoperative complaints and better patient satisfaction with less surgery time than sutured conjunctival limbal autograft.

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