

## RECURRENCE OF PTERYGIUM AFTER EXCISION WITH CONJUNCTIVAL LIMBAL AUTOGRAFT USING SUTURES VERSUS AUTOLOGOUS BLOOD (NON GLUE, SUTURELESS)

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### ABSTRACT

**Objective:** To compare outcome of pterygium excision with conjunctival autograft using sutures versus conjunctival limbal autograft using autologous blood.

**Study Design:** Randomized controlled trial.

**Place and Duration of Study:** Combined Military Hospital (CMH) Rawalakot, from Jul 2017 to Jul 2018.

**Material and Methods:** After getting approval from hospital ethical committee 140 patients with primary pterygium were included in the study. The demographic details were noted and patients were randomized by lottery method in two groups (group A & B). Both groups were operated under topical anesthesia (Alcain). Group A underwent lamellar pterygium excision followed by limbal conjunctival autograft secured with nylon 10/0 sutures. Group B underwent limbal conjunctival autograft using autologous blood (non-glue, suture less), 2-3 drops of patients own blood below graft acted as adhesive when left there for 15 to 20 minutes. Patients were followed up at 2 weeks, 2 month and 6 months postoperatively to see recurrence. All the readings were carried out and noted by single person in order to minimize study bias.

**Results:** A total of 140 patients (70 in each group) were included in the study with a mean age of  $32.88 \pm 5.82$  years in group A and  $32.97 \pm 4.69$  years in group-B. Regarding gender distribution, 51.43% in group-A and 48.57% in group-B were males. Comparison of outcome of pterygium excision with conjunctival autograft using sutures vs conjunctival limbal autograft using autologous blood showed that 15.71% in group-A and 5.71% in group-B had recurrence of pterygium.

**Conclusion:** We concluded that the recurrence was significantly lower after pterygium excision when comparing conjunctival limbal autograft using autologous blood (non-glue, suture less) with conjunctival autograft using sutures.

**Keywords:** Autologous blood, Conjunctival autograft, Pterygium, Recurrence.

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### INTRODUCTION

Pterygium is a wing-shaped, fibrovascular growth that originates on the conjunctiva and can spread to the corneal limbus and beyond. It occurs more frequently after exposure to hot, dry, windy and dusty environment with high UV light exposure<sup>1</sup>. Occurrence of pterygium also varies with the geographical location. Prevalence of pterygium varies from 1.2 - 2 3.4% in different areas of the world depending upon the proximity

of a location to the equator<sup>2,3</sup>.

The mainstay of treatment is surgical which include excision with or without adjunctive therapy. Indications for surgery include visually significant astigmatism, threat of involvement of visual axis, marked irritation and cosmesis<sup>4</sup>. Adjunctive therapies aimed to prevent recurrence include application of antimetabolites such as mitomycin C, radio-therapy, conjunctival or limbal conjunctival auto graft and amniotic membrane graft<sup>4-6</sup>.

As pterygium is now regarded as limbal stem cell disorder, excision with conjunctival limbal autograft is becoming increasingly

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popular. To fix the graft, sutures or fibrin glue are mainly used in the past but now there is emergence of novel technique in which patient's own blood is used for graft fixation<sup>6-8</sup>. The fact that numerous different techniques exist for the surgical treatment of pterygium underscores the point that no single approach is universally successful<sup>9-11</sup>.

A study conducted in Nepal to assess efficacy of sutureless and glue free conjunctival limbal autograft showed 2.5% recurrence after this method<sup>12</sup>. According to a study conducted at ophthalmology department, Khyber teaching hospital Peshawar, comparison of different methods of pterygium excision revealed 8.8% recurrence after free conjunctival auto graft with sutures<sup>13</sup>.

Conjunctival limbal autografting using autologous blood will avoid both suture and glue related complications including hypersensitivity reactions as it is natural and have no associated risks. Rationale of conducting this study was to compare these two specified techniques of conjunctival grafting after primary removal of pterygium in terms of recurrence in our population.

## **MATERIAL AND METHODS**

This randomized control trial was carried out from July 2017 to July 2018 at Combined Military Hospital, Rawalakot. Ethical approval was taken from hospital Ethical committee and written consent was taken from all the participants. Sample size which was calculated considering 80% power of test (1-beta). Sample was collected by non-probability consecutive sampling. The patients with age ranging from 20 to 40 years and suffering from grade 1 or grade 2 pterygium were included. All those patients with grade 3 or recurrent pterygium, corneal opacity, corneal vascularization or dellen were excluded from the study. Demographic information such as name, age, gender was noted at the time of recruitment. Pre-operative assessment including visual acuity and slit lamp examination were carried out and patients were randomly assigned to group A or group B by using lottery method.

To avoid bias one experienced surgeon who had done at least five hundred independent procedures were performed all the procedures. Both groups were operated under topical anesthesia (Alcain). Group A underwent lamellar pterygium excision followed by limbal conjunctival autograft secured with nylon 10/0 sutures. Group B underwent limbal conjunctival autograft using autologous blood (non-glue, suture less), few drops of patient's own blood below graft acted as adhesive, when left there for 15 to 20 minutes. Patients were followed up at 2 weeks, 2 months and 6 months postoperatively to see recurrence. All the readings were carried out and noted by a single person in order to minimize study bias.

SPSS-21 was used for statistical analysis. Quantitative variables like age and BCVA were presented as mean and standard deviations while qualitative variables like gender, grade of pterygium and recurrence were presented as frequency and percentage. Chi square test was used to compare the qualitative outcomes i.e. recurrence as per operational definition. Post stratification chi square test was applied. The *p*-value of  $\leq 0.05$  was considered significant.

## **RESULTS**

A total of 140 patients (70 in each group) were enrolled. Age of the patients ranged from 21 years to 49 years in group A with a mean of  $32.88 \pm 5.82$  years while it was 20 years to 50 years in group B with a mean of  $32.97 \pm 4.69$  years. Regarding gender distribution 51.43% patients in group A and 48.57% patients in group B were females as depicted in table-I. Preoperative grades of pterygium in group A and group B (table-II). Comparison of outcome of pterygium excision with conjunctival autograft using sutures vs conjunctival limbal autograft using autologous blood shows that 11 (15.71) in group-A and 4 (5.71%) in group-B had recurrence of pterygium while 84.29% (n=59) in group-A and 66 (94.29%) in group-B had no recurrence,  $p < 0.01$  (table-III).

## **DISCUSSION**

The most common complication of pterygium surgery is recurrence which is very

frustrating for both patient and surgeon. The gold standard treatment for primary pterygium is considered to be Conjunctival autografting, as this procedure is considered to have least recurrence rate<sup>14</sup>. The latest approach in treatment of pterygium is fixation of the graft with autologous blood, a technique also known as suture and glue free autologous graft. Patients own blood is used as a bioadhesive or fixative. Autologous blood is natural, has no extra cost, no

autologous blood shows that 11 (15.71%) in group-A and 4 (5.71%) in group-B had recurrence of pterygium while 59 (84.29%) in group-A and 66 (94.29%) in group-B had no recurrence. The findings of this study were in agreement with a study conducted in Nepal to assess efficacy of sutureless and glue free conjunctival limbal autograft, which revealed 2.5% recurrence after this method<sup>12</sup>. According to a study conducted at ophthalmology department, Khyber teaching hospital Peshawar, comparison of different methods of pterygium excision revealed 8.8% recurrence after free conjunctival auto graft with sutures<sup>13</sup>. The findings of this study were in accordance with the above two studies.

**Table-I: Gender distribution of the sample.**

		(n=140)	
		Group-A n (%)	Group-B n (%)
Gender	Male	36 (51.43)	34 (48.57)
	Female	34 (48.57)	36 (51.43)
Total		70 (100)	70 (100)

**Table-II: Distribution of grades of pterygium.**

		(n=140)	
		Group-A n (%)	Group-B n (%)
Grades of pterygium	Grade - 1	22 (31.43)	17 (24.29)
	Grade - 2	48 (68.57)	53 (75.71)
	Total	70 (100)	70 (100)

**Table-III: Recurrence rates at 6 months in group A and group B.**

Recurrence	(n=140)		p-value
	Group-A n (%)	Group-B n (%)	
Yes	11 (15.71)	4 (5.71)	<0.01
No	59 (84.29)	66 (94.29)	

associated risk and can overcome post-operative irritation, redness, and foreign body sensation. Surgical time is very less when compared to suturing technique<sup>15</sup>.

The current study was planned with the view to compare these two specified techniques of conjunctival grafting after primary removal of pterygium in terms of recurrence in our population so that most effective technique with lowest recurrence rates can be opted. Previously no study has been done for outcomes of conjunctival autografting with autologous blood in our population so this study provided evidence for this new technique. In our study, outcome of pterygium excision with conjunctival autograft using sutures versus conjunctival autograft using

Sirisha *et al* evaluated the advantages of autologous blood for attaching conjunctival autograft after pterygium excision and recorded that out of 50 patients, there were no intra operative complications. 4% patients had lost their grafts while 2% had graft retraction. Pterygium recurrence was seen in only one patient. They concluded that this technique is safe, effective and free of adverse reactions associated with glue and sutures<sup>16</sup>. These findings were in agreement with our results.

The main disadvantage of this method was the risk of graft getting lost in the immediate post-operative period. Graft loss is usually seen in 24 to 48 hours. These complications were associated with larger grafts. This could be due to inadequate excision of the pterygium tissue or leaving too much tenons tissue on the graft. Meticulous dissection of the subepithelial graft tissue is respected<sup>17,8,19</sup>.

Our study was performed in a tertiary care centre with huge turnover of cases. Exact learning and easy reproducibility with far greater results is the advantage of this procedure. However, the main limitation of our study was that we considered a small sample and a relatively shorter follow up of period of 6 months. Larger prospective studies are required to evaluate the long term efficacy of this technique and yield more comprehensive results.

## CONCLUSION

We concluded that recurrence after pterygium excision was significantly lower when autologous blood (non- glue, suture less) was used with conjunctival autograft instead of sutures.

### Author Contribution

Dr. Abdul Rauf: Conception and Designing of manuscript,

Dr. Anum Badar: Conception and Principal surgeon

Dr. Muhammad Saim khan: Design and Drafting the manuscript

Dr. Abid Hussain Naqvi: Final review/ Critical revision

Dr. Amjad Akram: Final approval of manuscript

Dr. Irshad Hussain: Design, Data collection

## CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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