

# Recurrence Rate of Pterygium in Suture Less Limbal Autograft Versus Bare Sclera Technique

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## ABSTRACT

**Purpose:** To compare the recurrence rate of pterygium in patients undergoing suture-less limbal autograft versus patients undergoing bare sclera surgery.

**Study Design:** Quasi experimental study.

**Place and Duration of Study:** Institute of Ophthalmology, Liaquat University of Medical and Health Sciences, Jamshoro, Sindh from March 2021 to March 2022.

**Methods:** Patients of either sex, aged  $\geq 20$  years, with a diagnosis of primary pterygium were included in the study. Participants were allocated into two groups. Group A underwent pterygium excision using the bare sclera technique, whereas Group B received a suture less limbal autograft. Postoperative follow-up was conducted for three months to assess recurrence. Data was collected using a self-designed proforma and analyzed with SPSS version 20. The Chi-square test was applied to compare recurrence rates between the two groups, with a p-value  $< 0.05$  considered statistically significant.

**Results:** The average age of patients in group A was  $49.58 \pm 12.54$  years, while in group B was  $45.44 \pm 9.67$  years. Group A consisted of 17 males (47.2%) and 19 females (52.8%), whereas Group B included 19 males (52.8%) and 17 females (47.2%). At three-month follow-up, pterygium recurrence was observed in 32 cases (88.9%) in group A and in 3 cases (8.3%) of group B ( $p < 0.05$ ).

**Conclusion:** The suture-less limbal autograft is statistically and clinically more effective in preventing recurrence than the bare sclera technique.

**Keywords:** Pterygium, Autograft, Sclera, Limbus, Amniotic membrane.

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## INTRODUCTION

Pterygium colloquially termed as Surfer's eye, is an ocular surface condition which manifests as abnormal wing shaped growth of fibrovascular tissue and epithelium, arising from conjunctiva onto the cornea.<sup>1,2</sup>

Worldwide prevalence is around 12%.<sup>3,4</sup> It is often linked to environmental factors such as ultraviolet (UV) exposure and age.<sup>5</sup> It is usually asymptomatic but patient may experience redness, pain, itching and decrease vision due to astigmatism along with aesthetic issue.<sup>6</sup> Various surgical techniques, including surgical excision with mitomycin C, amniotic membrane transplantation (AMT), bare sclera surgery, and conjunctival Limbal autografting (CAG) with or without sutures, have been employed to manage and reduce recurrence.<sup>7,8</sup>

Medical treatment with anti-inflammatory eyedrops along with artificial eye tears can be prescribed initially in mild cases. however, for

advanced diseases, surgery is the only option. Several methods have been used to prevent recurrence after surgical excision. Recurrence rate is 89% in the bare sclera technique as compared to conjunctival limbal autograft and amniotic membrane transplant which have recurrence rate of 0-14.3% and 14.5-27.3% respectively.<sup>9,10</sup>

Currently, CAG is the most accepted surgical option for pterygium as it contains limbal stem cells which block the movement of conjunctival cells towards the cornea.<sup>10,11</sup> CAG is commonly attached with sutures, but it has some shortcomings such as longer operation time, postoperative irritation, prolonged inflammation, necrosis and formation of granuloma. While attaching CAG with autologous in situ blood coagulum has been used recently with advantage of ready availability, no cost and no suture-related problems.<sup>11,12</sup> Use of 0.02% mitomycin C during conjunctival autograft has further reduced recurrence rates.<sup>13,14</sup>

This study aimed to compare the recurrence rates of pterygium in patients treated with suture less limbal autograft versus bare sclera surgery, focusing on identifying the most effective surgical method with minimal recurrence and complications.

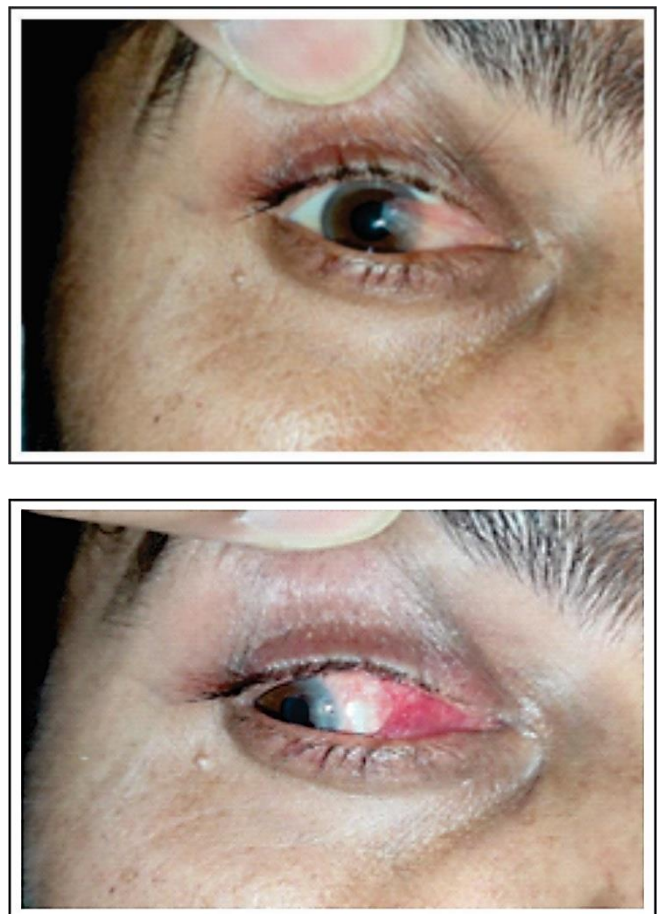
## METHODS

The study was approved by the Institutional review board/Ethical review board (**LUMHS/REC-41**). This study was carried out at the Institute of Ophthalmology, Liaquat University of Medical and Health Sciences, Jamshoro, Sindh from March 2021 to March 2022. A total of 72 patients,  $\geq 20$  years of age and diagnosed with primary pterygium, were enrolled. Patients with recurrent pterygium, temporal pterygium, pseudo-ptyergium, ocular surface disorders, and patients with positive serology for Hepatitis B, Hepatitis C and HIV were excluded from the study. The sample size was determined using the Raosoft formula based on a 95% confidence level and a 5% margin of error. Participants were selected through random sampling, and informed consent was obtained prior to enrollment. Demographic information and medical histories were documented, followed by clinical examination. Patients were divided into two groups: Group A underwent bare sclera excision, while Group B underwent suture less limbal autograft surgery.

Standardized surgical techniques were employed

for both groups. The affected eye after topical anesthesia was cleaned and draped followed by the instillation of 5% betadine in the conjunctival sac and later washed. The body of pterygium was infiltrated with injection lignocaine 2% and allowed to spread over the remaining area of pterygium. The pterygium was removed from the apex with corneal forceps followed by excision with conjunctival scissors and the corneal surface was smoothed with No. 15 surgical blade.

In group A, after excision of the pterygium, a triangular area of exposed scleral bed was left. At the end of surgery, 0.5% moxifloxacin eye drops were instilled, and the eye was patched (Figure 1). In group B, following pterygium excision, bleeding from episcleral vessels was gently encouraged to form a coagulum. A thin limbal autograft was harvested from the superior limbus, carefully positioned with the epithelial side facing upward and the limbal edge oriented toward the limbus, and trimmed to fit the



**Figure 1:** Above, pre-operative and below post-operative findings in Group A.



**Figure 2:** Conjunctival Limbal Autograft (Above pre-operative and below post-operative).

scleral defect. At the conclusion of surgery, 0.5% moxifloxacin eye drops were instilled, and the eye was patched for 48 hours.

All procedures were conducted by the same surgeon to ensure consistency. Postoperative patients were treated with a combination of topical steroid and antibiotics for one month. Follow-ups were scheduled on the first day, at one week, one month, and three months to monitor recurrence, assessed according to predefined operational criteria for both groups except that the first follow-up for group B was after 48 hours (Figure 2).

The collected data were analyzed using SPSS version 20. Qualitative variables, such as gender and recurrence, were summarized using frequencies and percentages, while quantitative variables, like age, were presented as mean and standard deviation. The Chi-square test was used to assess associations between variables (p-value of less than 0.05 considered statistically significant).

## RESULTS

The mean age of patients in the group A was  $49.58 \pm 12.54$  years, while in group B, it was  $45.44 \pm 9.67$  years. In terms of gender distribution, group A consisted of 41.67% males and 58.33% females, while group B had 52.8% males and 47.2% females.

Grade III was the most common in both groups, accounting for 63.9% in group A and 33.3% in the group B (Table 1). In group B, 97.2% patients had stable grafts at 48 hours and 1 week.

There were no recurrences observed in either group at 1 week or 1 month (Table 2). However, in 3 months, 88.9% of patients in the group A experienced recurrence as compared to only 8.3% in the group B (p0.05).

**Table 1:** Comparison of pterygium grades between the groups.

Pterygium Grade	Group A (N=36)	Group B (N=36)
Grade II 29 (40.3%)	9 (25.0%)	20 (55.6%)
Grade III 35 (48.6%)	23 (63.9%)	12 (33.3%)
Grade IV 8 (11.1%)	4 (11.1%)	4 (11.1%)

**Table 2:** Recurrence rates between the two groups.

Recurrence		Group A	Group B	P-value
At 1 Week	Yes	0 (0.0%)	0 (0.0%)	0.00
	No	36 (100%)	36 (100%)	
At 1 Month	Yes	0 (0.0%)	0 (0.0%)	0.00
	No	36 (100%)	36 (100%)	
At 3 Months	Yes	32 (88.9%)	3 (8.3%)	0.03
	No	4 (11.1%)	33 (91.7%)	

## DISCUSSION

The mean age of patients in Group B ( $45.44 \pm 9.67$  years) was slightly lower than that in Group A ( $49.58 \pm 12.54$  years). A local study reported similar age distribution for pterygium, suggesting its early onset may be related to environmental factors.<sup>14</sup>

In the present study, the bare sclera technique demonstrated a higher recurrence rate. Govindasamy et al, reported a recurrence of 23.7% with a mean duration of 5.5 months, although their study did not compare this with other treatment modalities.<sup>15</sup> Palewski et al, reported recurrence rates ranging from 38% to 88% with the bare sclera technique.<sup>16</sup>

In our study, recurrence rates at three months were significantly lower in Group B compared to Group A (8.3% vs. 88.9%,  $p < 0.05$ ). Afzal et al, similarly

reported recurrence rates of 7.84% with conjunctival autograft (CAG) compared to 31.37% with the bare sclera technique.<sup>14</sup> Krobot-Cutura et al, observed recurrence rates of 10.34% with CAG and 37.5% with bare sclera.<sup>17</sup> Ali et al, reported a recurrence rate of 10% with suture less CAG, although their comparison was made with sutured CAG.<sup>18</sup> Parasar et al, reported no recurrences in patients undergoing CAG with autologous blood, which is consistent with our Group B results and contrasts with the 8.3% recurrence in Group A.<sup>19</sup>

Graft dehiscence remains the main complication following suture less CAG, usually secondary to trauma or eye rubbing. Patients should therefore be advised to avoid rubbing the eye postoperatively, and the use of protective eye shields may be recommended during the early postoperative period.

This study has several strengths. It directly compared two widely practiced surgical techniques, bare sclera excision and suture-less limbal autograft, under similar clinical settings, allowing a clear evaluation of outcomes. The use of standardized surgical protocols and postoperative care reduced variability in results. Follow-up compliance was good, with all patients completing the three-month assessment. Importantly, the study contributes local data from a tertiary care center in Sindh, addressing a relevant clinical question in a population where environmental factors may predispose to early onset and recurrence of pterygium.

This study had certain limitations. First, the follow-up period was limited to three months, which may not fully capture long-term recurrence rates, as pterygium recurrence can occur beyond this interval. Second, the study employed a quasi-experimental design without randomization, which may introduce selection bias. Third, the sample size was relatively small and conducted at a single tertiary care center, limiting the generalizability of the findings to broader populations. Finally, the study did not assess patient-related risk factors such as ultraviolet light exposure, occupation, or compliance with postoperative care, which may also influence recurrence.

## CONCLUSION

Limbal suture-less autograft is an effective and safe surgical method for managing pterygium, minimizing recurrence and improving postoperative outcomes. Adhesion of CAG with autologous blood was better

tolerated and is cost effective.

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**Patient's Consent:** Researchers followed the guidelines set forth in the Declaration of Helsinki.

**Conflict of Interest:** Authors declared no conflict of interest.

**Ethical Approval:** The study was approved by the Institutional review board/Ethical review board (LUMHS/REC-41).

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### Authors Designation and Contribution

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Asadullah Jatui; Associate Professor: Design, Manuscript editing

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