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Research Article

Comparison of Conjunctival Autograft Versus Bare Sclera Technique as Treatment Modalities for Primary Pterygium

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Abstract

Background: Pterygium is a fibrovascular conjunctival growth extending onto the corneal surface within the palpebral fissure. Recurrence is a common post-op complication of pterygium excision surgery, with various rates depending on the techniques used for its excision.

Objective: Comparison of conjunctival autograft versus bare sclera technique as treatment modalities for primary pterygium.

Material and Methods: This research was carried out at a tertiary-care hospital in Bahawalpur. In a prospective randomized controlled trial, a sample size of 102 eyes with primary pterygium was allocated into two equally sized groups (51 patients in each): Group A underwent pterygium excision by bare sclera method, Group B underwent pterygium excision followed by conjunctival autograft. Both groups were analyzed and compared for recurrence and complications with a mean follow-up time of 3 months.

Result: Pterygium recurrence was detected in 16 (31.37%) patients using the bare sclera technique (group A) and in 4 (7.84%) patients using the conjunctival autograft technique (group B), which reveals a statistically significant difference ($p = 0.003$).

Conclusion: Both surgical techniques are effective for pterygium excision; however, a statistically significant difference ($p = 0.003$) in pterygium recurrence between both techniques. Pterygium excision with conjunctival autograft should opt for better results in terms of recurrence as well as other complications. The bare sclera technique can be opted for preserving conjunctiva in case of glaucoma or scaring but at the expense of pterygium recurrences.

Keywords: Pterygium; Conjunctival Autograft Technique; Bare Sclera; Recurrence

Introduction

Pterygium is an abnormal growth of fibrovascular tissue on the cornea's surface [1]. Astigmatism is the primary cause of decreased visual acuity, as it extends over the peripheral cornea progressively and causes mechanical traction on the cornea, or it may block the visual axis due to stromal fibroblasts overgrowth accompanied by inflammatory cells [2]. Other complaints of advanced pterygium are glare sensitivity, poor contact lens fitting, and monocular diplopia. Morphologically, pterygium has three parts: a head, body, and cap. Based on an extension over the cornea, there are three grades, Grade I (less than 2mm on the cornea), Grade II (2 to 4mm), and Grade III (more than 4 mm/in the visual axis) [3]. Ultraviolet radiation is considered the major precipitating factor, despite no evidentiary proof other than warm dusty climate and dry eyes. The reported prevalence of pterygium is 2-7% worldwide, and its recurrence [4], which is the most common post-op complication after excision, varies from 24-89% [5]. Early ptyregia are managed conservatively by ocular lubricants and eye wears to block

ultraviolet radiation. Different surgical techniques including, bare sclera, conjunctival autografting, primary conjunctival closure, amniotic membrane graft as well as adjuvant modalities such as mitomycin C (MMC), β radiation, thiotepa, to inhibit the recurrence, are used for the treatment of advanced pterygia when they obscure the visual axis [6]. Conjunctival autografting has been reported to have positive results. as limbal epithelium in the conjunctival autografting maintains the barrier function compared to the bare sclera technique of excision, which is less time-consuming [7,8].

Objective

Comparison of conjunctival autograft versus bare sclera technique as treatment modalities for primary pterygium.

Materials and Methods

The research was carried out at the tertiary-care hospital in Bahawalpur, in the ophthalmology department. In a randomized controlled trial, a total of 102 eyes with primary pterygium. Each group contained 51 patients and was calculated as Level of confidence (α) = 5%, Power of study (1-β) = 80%, taking pterygium recurrence in 22.85% cases using bare sclera in 5.71% cases using conjunctival autograft technique. All patients were recruited by applying Non-probability, purposive sampling technique. Patients aged 20-60 years, both genders presenting with pterygium involving at least 1mm of the cornea causing astigmatism, are included. However, patients with a history of ocular trauma, previous ocular surgery, anti-glaucoma medications, and recurrent pterygium were omitted. Informed consent was taken from all subjects after providing complete details about the nature of the study. One hundred two patients fulfilling the inclusion criteria were selected and admitted to the Ophthalmology department. All selected cases were randomized into two groups preoperatively and were operated by the same consultant ophthalmologist. In Group A (bare sclera technique) patients, Using Westcott's scissors, the body of the pterygium was dissected from the conjunctiva immediately medial to the head of the pterygium after it had been incised with conjunctiva just medial to its head. The exact process is repeated to underline the conjunctiva of the fornix and caruncle, avoiding any conjunctival button-holing. Fibrous tissue on the cornea was scraped off with a No. 15 blade. In group B (conjunctival autograft technique) patients, the pterygium was resected first as the bare sclera technique. The size of the conjunctival graft was determined using callipers and excised. The conjunctival autograft was maintained in a limbus-limbus orientation.

The graft was secured using interrupted 10-0 nylon sutures. Post-operatively, patients in both groups received the same regimen of topical moxifloxacin with dexamethasone eye drops every two hourly for the first postoperative week and then tapered over the next 5-6 weeks, tablet diclofenac (50 mg) twice daily for three days and 1% atropine eye ointment twice daily for three days. Both groups were analyzed and compared fortnightly regarding recurrence and complications for three months. Demographic and clinical data were statistically analyzed using the statistical package SPSS, version 20.0, for Windows (SPSS Inc., Chicago, Illinois, USA). Numerical data were presented as mean ± SD, while categorical data were presented as frequency and percentage. A comparison between the groups concerning the outcome was analyzed by chi-square. P-value ≤0.05 was considered significant.

Results

Characteristics	Bare sclera technique	Conjunctival autograph technique
Age Mean ± SD Range	 41.90 ± 9.65 20-60	 43.82 ± 8.90 20-60
Sex Male Female	 32 (62.75) 19 (37.25)	 32 (62.75) 19 (37.25)
Laterality Right Left Bilateral	 25 (49.02) 18 (35.29) 08 (15.69)	 23 (45.10) 26 (50.98) 02 (3.92)
Residence Urban Rural	 26 (50.98) 25 (49.02)	 30 (58.82) 21 (41.18)

Table 1: Demographic and clinical data of patients in the bare sclera and conjunctival autograft groups.

The study was conducted on 102 eyes of 102 patients that were randomly categorized into either Bare sclera group(A) (n = 51) or Conjunctival autograft group(B) (n = 51) and followed post-operatively for three months. In bare sclera group(A), there were

32 (62.75%) males and 19 (37.25%) females with age ranged from 20-60(years) with ± SD value 41.9 ± 9.65 while in the conjunctival autograft group(B), there were 32 (62.75%) males and 19 (37.25%) females with age ranged from 20-60(years) with ± SD value 43.82 ± 8.90.

Cases		Bare sclera technique		Conjunctival autograft technique	
		% age	Cases	% age	
Recurrence	Yes	16	31.37	04	7.84
	No	35	68.63	47	92.16

Table 2: Comparison of outcome in terms of recurrence.

P-value is 0.003, which is statistically significant.

The conjunctival autograft technique (group B) had a significantly lower number of recurrences, i.e., 04 (7.84%) patients as compared to 16 (31.37%) patients using the bare sclera technique (group A) with a p-value of 0.003, as shown in Table 2.

Discussion

This study was conducted to analyze and compare two surgical techniques, to optimize pterygium excision surgery in terms of its recurrence, complications, and better cosmesis. As once popular among surgeons initially, the bare sclera technique is now replaced by various new adjunctive methods to reduce complications and recurrence post-operatively [9]. An autologous conjunctival graft reduces the risk of scleral necrosis. The lower recurrence rate in the conjunctival autograft technique is mainly due to the barrier formed by normal conjunctiva, and it restricts the abnormal growth of proliferative tissue toward the limbus. In this study, we observed male predominance over females, as they are more prone to harsh and dusty environments and more exposed to ultraviolet radiations due to outdoor activities. Khan N also reports male dominance as his data have 63% males and 37% females cases [10]. Middle age group is predominant in our data (42.45 ± 9.13 years) ranging from 41-60 years of age, i.e., 63 (61.76%) also reported by Salagar KM., *et al*. [11] and Rao SK., *et al*. [12]. In 1985, Kenyon., *et al*. first described the conjunctival autograft technique with a recurrence rate of 5.3% [13]. In our study, we observed the recurrence rate of 7.84% (n = 4) using a conjunctival autograft technique and 31.37% (n = 16) using the bare sclera technique, compared to Narsani AK, who reported 7.69% of recurrence in 2008 [3]. The findings in our study are in agreement with the articles mentioned above. This study had some limitations, as it did not address the visual outcome after the removal of pterygium. Pterygium can cause a reversible decrease in visual acuity, and vision restoration is an essential indication of its excision. Changes in keratometry and astigmatism should also be considered when planning pterygium surgery besides its recurrence and cosmesis. Other post-op complications of pterygium excision should also be considered, such as infection, granuloma, perforation, hemorrhage, and conjunctival scarring besides its recurrence. Other surgical techniques should also be considered, especially in patients with conjunctival scarring, chronic use of topical medications such as glaucoma, and the role of the use of adjunctive therapies.

Conclusion

Both surgical techniques are effective for pterygium excision, but there is a statistically significant difference (p = 0.003) of pterygium recurrence between both techniques. Pterygium excision with conjunctival autograft should opt for better results in recurrence and other complications even in patients of primary Pterygium surgery. The bare sclera technique can be opted for preserving conjunctiva in case of glaucoma or scaring but at the expense of pterygium recurrences.

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