

A Comparative Study of Complications and Recurrence of Pterygium after Primary Pterygium Excision with Auto-Conjunctival Graft versus Amniotic Membrane Graft

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Abstract

Introduction: Pterygium is a common ocular surface degenerative condition, pathologically demonstrating elastoid degeneration of the conjunctiva, presenting as wing-shaped fibrovascular tissue, arising from the bulbar conjunctiva and invading on to the cornea.

Materials and methods: This was a prospective observational study. Patients with primary pterygium attending the outpatient department at Regional eye hospital, Kurnool were randomly selected and divided into two groups of 50 each.

Results: In the present study complications are Graft oedema, Graft edge retraction, Postoperative infection, Scleral thinning and necrosis and Corneal scarring was observed in 3, 2, 0, 0, 0 and 7 patients in the conjunctival autograft group and 1, 6, 1, 2, 1 and 9 patient in the amniotic membrane group respectively. Recurrence of pterygium was seen in 2 patients (4%) in the conjunctival autograft group and in 6 patients (12%) in the amniotic membrane group. There is no statistically significant difference in recurrence between the two groups (P-value- 0.140).

Conclusion: Amniotic membrane graft and conjunctival autograft methods are equally effective treatment options for pterygium surgery, with comparable recurrence rates and cosmetic results. Thus amniotic membrane grafting can be used as a viable alternative to conjunctival autografting.

Keywords: Pterygium, Amniotic membrane graft, conjunctival autograft

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I. Introduction

Pterygium has been described as an ophthalmic enigma. Despite being recognised for many years and being very common in some parts of the world, very little is known about the pathogenesis of the condition. This ignorance is reflected in the poor results of intervention and the wide range of treatments advocated. It affects all people across the world but principally prevalent in warm and dry climates. The prevalence in India ranges from 9.5 to 13% and is more common in rural parts of the country. People who are exposed to outdoor work, dust, wind, smoke, heat and bright light are prone to get pterygium. Ultraviolet irradiation, which varies with latitude, was thought by Cameron to be an important factor in the aetiology of pterygium.

Despite the multifactorial pathogenesis, surgery is the mainstay of treatment. Surgery is recommended for various reasons - a documented history of progression, astigmatism causing poor vision, proximity to the visual axis, poor cosmesis, recurrent inflammation and concern about malignant change.

The primary concern in pterygium surgery is recurrence. Simple excision was reported to have a high recurrence rate up to 89%. Various adjuvant therapeutic modalities like beta irradiation, thiotepa, mitomycin-c have been used to improve the results. Unfortunately, none of these techniques were successful and recurrence still remains most enigmatic complication of pterygium excision. Conjunctival autografting is not suitable for patients with large double-headed pterygium requiring large sized grafts, ocular cicatricial disorders or in patients requiring future glaucoma filtering surgeries. In such conditions requiring extensive tissue repair, amniotic membrane graft plays an important role as an alternative to conjunctival autograft.

II. Materials and Methods

This was a prospective observational study undertaken at Regional Eye Hospital, Kurnool from August 2018 to October 2019. Patients with primary pterygium attending the outpatient department at Regional eye hospital, Kurnool were randomly selected and divided into two groups of 50 each. One group underwent pterygium excision and replacement with conjunctival autograft and the other group underwent pterygium excision and replacement with amniotic membrane graft. The selected patients are between 20 and 60 years of age. The importance of surgical excision and the surgical procedure was explained to the patient following which informed consent was obtained. Postoperatively, patients were assessed on day 1, 1 week, 1 month and 6 months. At each visit, the following factors were examined and noted:

- Any complaints,
- Any complications

Recurrence: Recurrence was considered if fibrovascular growth of similar nature to that present pre-operatively took place, or if significant conjunctival vascularisation causing cosmetic blemish occurred.

III. Results

1. Age-wise distribution among CAG and AMG

Table 1. represented that the incidence of pterygium is highest in the fourth (31%) and fifth decades (41%) of life. Because these age group persons are more active in outdoor work, more exposure to sunlight, dust, and other environmental factors may have resulted in a higher incidence of pterygium. Mean age in this study is 40.42 ± 9.53 years.

Age	CAG	%	AMG	%	Total	%	Mean age
21-30	8	16%	7	14%	15	15%	40.42±9.53 years
31-40	16	32%	15	30%	31	31%	
41-50	18	36%	23	46%	41	41%	
51-60	8	16%	5	10%	13	13%	

2. Gender wise distribution among patients with CAG and AMG

Table 2. The table shows that 44% of the affected patients were males, and 56% of the affected patients were females in the entire study group. This study shows that pterygium is more common in female patients than in male patients.

Gender	CAG	%	AMG	%	Total	%
Males	21	42%	23	46%	44	44%
Females	29	58%	27	54%	56	56%
Total	50	100%	50	100%	100	100%

3. Occurrence of pterygium with respect to occupation

Table 3. showed that the pterygium is more commonly seen in outdoor workers than in indoor workers. Incidence of pterygium is higher in outdoor workers due to more exposure to dust, wind and solar radiation.

Occupation	No. of persons	Percentage
Farmer	16	16%
Carpenter	4	4%
Coolie	10	10%
Watchman	8	8%
Cook/maid	12	12%
Housewife	21	21%
Vendor	18	18%
Stonecutter	11	11%

4. Presenting complaints

Table 4. shows that about 36% of the patients with pterygium presented with chief complaints of diminution of vision associated with foreign body sensation while 30% of the patients presented with foreign body sensation associated with redness and watering. Diminution of vision without any associated foreign body sensation was seen in 12% of the patients, while 14% of patients had foreign body sensation alone without diminution of vision. Cosmetic disfigurement was the only complaint in 8% of the patients included in the present study.

Complaint	Number	Percentage
Foreign body sensation only	14	14%
Foreign body sensation with redness and watering	30	30%
Cosmetic only	8	8%
Diminision of vision only	12	12%
Diminision of vision with foreign body sensation	36	36%

5. Complications with respect to CAG and AMG

Figure 1. indicates that Graft oedema was observed in 3 patients in the conjunctival autograft group and 1 patient in the amniotic membrane group, in the immediate post-operative period. Graft edge retraction was observed in 2 patients (4%) in the CAG group and 6 patients (12%) in the AMG group. Postoperative infection occurred only in 1 patient who belonged to the amniotic membrane group. Scleral thinning and necrosis were observed in 2 patients (4%) and one patient (2%) respectively in the amniotic membrane group whereas there was no scleral thinning or necrosis in the autoconjunctival group. Out of the 50 patients in the conjunctival autograft group, 7 patients (14%) had postoperative corneal opacities and 9 (18%) out of 50 patients in the amniotic membrane group had corneal opacities.

6. Late post-operative complications

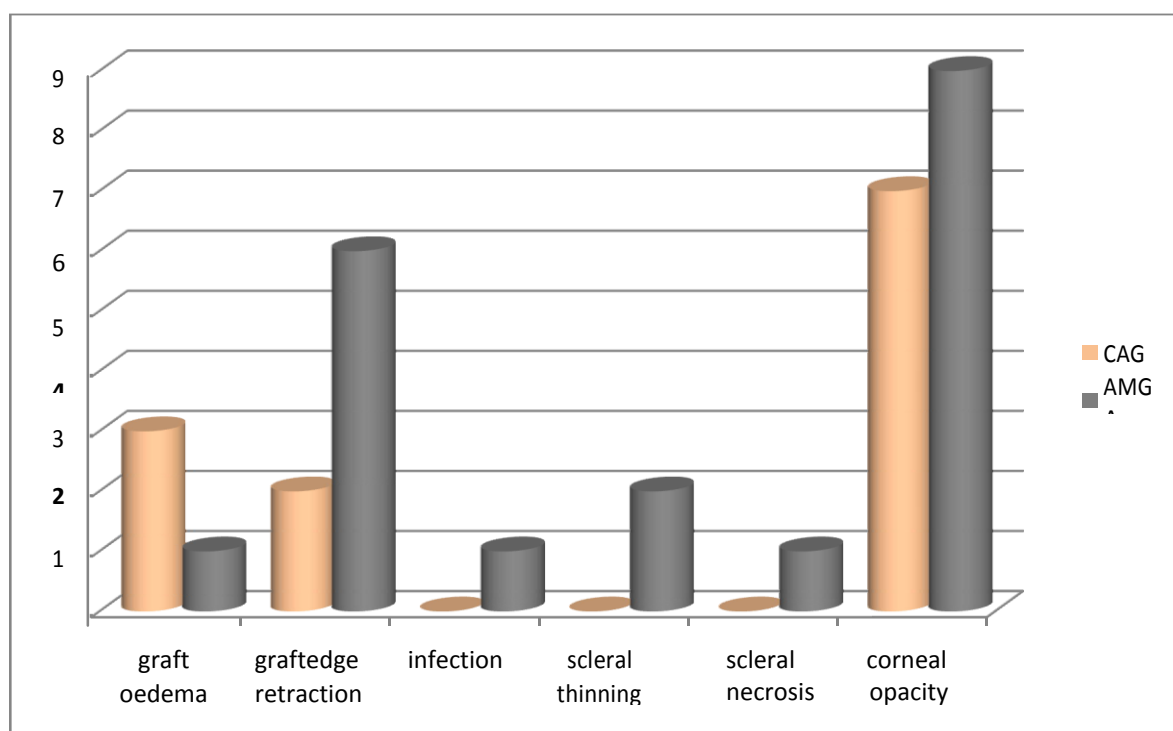


Table. 5. Recurrence of pterygium was seen in 2 patients (4%) in the conjunctival autograft group and in 6 patients (12%) in the amniotic membrane group. There is no statistically significant difference in recurrence between the two groups (P-value- 0.140)

Group	No recurrence	Recurrence	Total	Percentage	P value	Significance
CAG	48	2	50	4%	0.140 (>0.05)	Not statistically significant
AMG	44	6	50	12%		

IV. Discussion

The purpose of this study is to compare the efficacy and safety of amniotic membrane graft as a viable alternative to conjunctival autograft in pterygium surgery.

In this study, the incidence of pterygium is highest in the fourth (31%) and fifth decades (41%) of life. Mean age in this study was 40.42±9.53 years. This may be a reflection of the active years when most people are involved in outdoor activities that exposes them to actinic degenerative changes on the conjunctiva. Lowest incidence is observed in the third and sixth decades of life. Similar results of incidence of pterygium were

observed in a study conducted by Adnan Alam et al. at Lady reading hospital, Peshawar. Out of 204 patients included in the study, 78.87% were within the 31-50 years group which was comparable to this study result.

Out of the total, 100 patients taken for the study 44 (44%) were males and the remaining 56 (56%) were females. The occurrence of pterygium in this study is more in females than males, which does not correlate with other studies by Adnan Alam et al., M.V.D.L. Satyanarayana et al., where male predominance was observed. Kristine T. Lo et al reported an equal incidence in males and females.

Occupation plays a major role in the etiopathogenesis of pterygium. In the present study, pterygium was more common in persons engaged in outdoor occupations eg. Farmers (16%), carpenter (4%), coolie (10), watchmen (8), vendors (18%), stone cutters (11%) etc., and they account for upto 67 out of the total 100 cases (67%). The percentage of patients involved in indoor activity constituted 33% of which cook or maid were 12% and housewives were 21%.

This is in accordance with the findings of MacReynolds, who stated that pterygium is more common among farmers than those people employed in sedentary occupations.

In the present study about 36% of the patients with pterygium presented with chief complaints of diminution of vision associated with foreign body sensation while 30% of the patients presented with foreign body sensation associated with redness and watering.

Diminution of vision without any associated foreign body sensation was seen in 12% of the patients, while 14% of patients had foreign body sensation alone without diminution of vision.

Cosmetic disfigurement was the only complaint in 8% of the patients included in the present study.

In a study by ALD Agahan et al in Philippines, cosmetic disfigurement was the main complaint in 91% of the patients included in the study, foreign body sensation was the main complaint in 3% and blurring of vision was observed in only 3% of the patients. The results of this study do not correlate with the present study results.

In the present study, graft oedema was observed in 3 patients in the conjunctival autograft group and 1 patient in the amniotic membrane group.

On the first postoperative day, graft oedema, which was transient was more in CAG (6%) as compared to AMG (2%). This could be explained because of the release of more metabolic proteins from the conjunctiva as compared to AMG.

In the present study, Graft edge retraction was observed in 2 patients (4%) in the CAG group and 6 patients (12%) in the AMG group.

In a study conducted by KVM Rao, graft retraction was observed to be more in the AMG group (6%) as compared to the CAG group (2%). These results are similar to the present study results.

In the present study, Postoperative infection occurred only in 1 patient (2%) who belonged to the amniotic membrane group. In a study done by Mohammad Reza Besharati Infection was not seen in the CAT approach while it was seen in 11.5% of the AMT approach. In the present study scleral thinning and necrosis were observed in 2 patients (4%) and one patient (2%) respectively in the amniotic membrane group. Whereas there was no scleral thinning or necrosis in the autoconjunctival group. A similar study was done by A. Venkateshwar Rao et al., at Katuri medical college, Guntur, 2 cases had sclera thinning following pterygium excision which resolved after tapering the steroid dosage. These results are similar to the present study.

In the present study out of 50 patients in the conjunctival autograft group 7 patients (14%) had postoperative corneal opacities and 9 (18%) out of 50 patients in the amniotic membrane, group had corneal opacities.

In a study done by Lakshmi Devi M et al. in Nepal, corneal scarring was observed in 9.8%. The incidence is less than that in the present study.

In the present study, Recurrence of pterygium was seen among 2 patients (4%) in the conjunctival autograft group and among 6 patients (12%) in the amniotic membrane group after 6 months of follow up. There is no statistically significant difference in recurrence between the two groups (P-value- 0.140).

In a study conducted by Muhammad Aamir Arain et al., in the department of Ophthalmology, Armed Forces Institute of Ophthalmology, Rawalpindi, there were a total of 63 patients among which group-I had 32 patients and group-II had 31 patients. Group-I underwent excision of pterygium by using bare sclera technique while group-II underwent pterygium excision combined with AMT. In group-I and II, the frequency of recurrence of pterygium were found to be 37.5% and 12.9% respectively which was a statistically significant difference ($p = 0.025$). The recurrence in AMG is similar to the present study (12%).

V. Conclusion:

In the present study, we conclude that the Amniotic membrane graft and conjunctival autograft methods are equally effective treatment options for pterygium surgery, with comparable recurrence rates and cosmetic results. Thus amniotic membrane grafting can be used as a viable alternative to conjunctival autografting.

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