

Pterygium Excision and Limbal Conjunctival Autograft with Versus without the use of Mitomycin-C in Patients below the age of 45 Years

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ABSTRACT

Objectives: To compare pterygium recurrence following excision with limbal conjunctival autograft with application of Mitomycin-C versus non application of Mitomycin-C in patients below age 45 years.

Study Design: Randomized Control Trial.

Place and Duration of Study: This study was conducted at the Department of Ophthalmology, NMC, Multan from 15.06.2009 to 15.12.2009.

Materials and Methods: Total 86 patients with the age range 25-44 years were selected for this study and categorized randomly into two groups, group-I (n=43) and group-II (n=43). Pterygium surgery was performed with limbal conjunctival autograft without the use of Mitomycin-C in group-I and with the use of Mitomycin-C in group-II. Three patients out of 86 cases did not visit for follow-up.

Results: Pterygium was more prevalent in males (n=65, 75.58%) and majority of the patients (n=36, 41.9%) were between 41-44 years of age. There were 7 (17.07%) cases of recurrence observed in group-I and only 1 (2.38%) case of recurrence in group-II, the difference in recurrence rate was statistically significant ($p=0.02$).

Conclusion: For pterygium surgery, limbal conjunctival autograft combined with intraoperative application of Mitomycin C is recommended.

Key words: Pterygium, Mitomycin-C, Limbal conjunctival autograft.

INTRODUCTION

A pterygium is a triangular fibrovascular subepithelial ingrowth of degenerative bulbar conjunctival tissue over the limbus on to the cornea¹. This is generally situated on the nasal side but sometimes occurs both nasally and temporally and rarely on the temporal side². This is more common in the tropical and subtropical countries. Pterygium interferes with vision by occluding optical axis or by producing changes in the corneal curvature³. It is frequent in hot, dry, windy, dusty and smoky environment⁴. Outdoor workers are usually affected more common than those who work in indoors.

Patients younger than the age of 15 years rarely acquire pterygium. Although, the prevalence of the lesion increases with age, the highest incidence occurs between the ages of 20 and 49 years⁵.

Besides hereditary factor⁶, there is considerable scientific evidence to support the theory that sunlight is the principal etiologic factor in pterygium formation⁷. The cornea and conjunctiva absorb most of the long infrared and short ultraviolet rays that reach the earth from the sun. These rays when absorbed cause tissue damage, the infrared by their thermal action and ultraviolet by their abiotic effect. Corneal stem cells are susceptible to noxious stimuli such as ultraviolet radiations, dry, dusty, windy and sandy environmental conditions.

The excision of a pterygium with bare sclera was widely practiced because it was believed to be safe and

simple. However, with time it became apparent that the recurrence rate was unacceptably high, ranging from 55.9% to 89%⁸.

Several methods are used for the treatment of pterygium such as transplantation of pterygium head, conjunctival flaps, conjunctival autografts, lamellar keratoplasty, mucous membrane grafts, chemotherapy by thiotepea or by Mitomycin-C, radiation therapy by radon bulbs, radium plaques or beta radiations⁹.

Mitomycin-C (MMC) and limbal conjunctival autograft (LCAU) are two known useful adjuvants in the prevention of pterygium recurrence¹⁰. Various studies have reported the efficacy of Mitomycin-C in reducing the recurrence rate following pterygium surgery^{11,12}. Furthermore, the application of intraoperative 0.02% Mitomycin-C for five minutes is efficient in reducing the recurrence rate to minimum¹³.

MATERIALS AND METHODS

This study was carried out in Ophthalmology department of Nishtar Medical College and Hospital, Multan. The patients were selected from Eye OPD Nishtar Hospital, Multan. There were total 86 cases of pterygium excision with limbal conjunctival autograft, in which 43 cases were with the use of Mitomycin-C and 43 cases were without the use of Mitomycin-C. Patients age range was between 25-44 years. After briefing the merits and demerits of both the procedures to the patients, a formal informed consent was taken. 43 cases were operated with limbal conjunctival autograft

without the use of Mitomycin-C. 43 cases were operated with limbal conjunctival autograft with the use of Mitomycin-C. In both of these groups topical local anesthesia 2% xylocain was given at the site of the pterygium. In group I after excision of pterygium, limbal conjunctival graft was taken from superotemporal area and sutured from limbus to limbus with 10-0 nylon. In group II after excision of pterygium, Peroperative 0.02% Mitomycin-C was applied to the scleral bed by a silicon sponge for three minutes. After that copious irrigation of this area was done with balanced salt solution for five minutes. Later on, limbal conjunctival autograft was taken from supero-temporal area and was sutured from limbus to limbus with 10-0 nylon as mentioned in group-I. Follow up period was at 1st week, 4th week, 12th week and 24th week (final outcome) to see the presence or absence of pterygium recurrence.

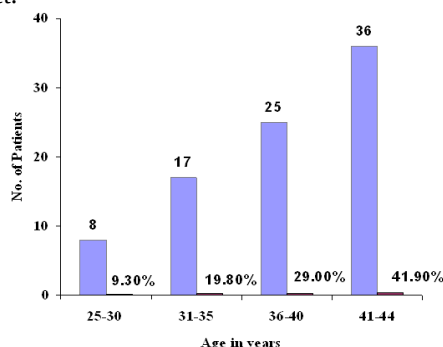
RESULTS

Eighty six patients were operated during this study. According to the age, they were categorized into four groups as shown in graph. Majority of the patients (n=36, 41.9%) were between 41-44 years of age as shown in graph. Mean and standard deviation for age of our study was 39.12 ± 5.53 years.

Seventy six (88.37%) patients had only single nasal pterygium while ten (11.63%) patients had two pterygia at the time of presentation. Eighty three (83) patients came for follow up, out of those, forty one (41) cases were from group I and forty two (42) cases from group II.

During each follow up, patients were evaluated postoperatively for recurrence. There were 7 (17.07%) recurrences observed in group-I and only 1 (2.38%) recurrence in group-II. The difference in recurrence rate was statistically significant ($p=0.02$) as shown in table. Foreign body sensation, lacrimation and photophobia were encountered in many patients of both study groups. As compared to the group-I, there was delayed epithelialization of the wound in group-II.

No intra-operative complication was observed during this study. None of the patients developed symblephron, degenerative calcification, uveitis or cataract.



Graph: Age Distribution of Patients.

Table No.1: Recurrence rate of Pterygium

Recurrence	No. of patients and Percentage (%)		P value
	Group-I	Group-II	
Yes	7 (17.07%)	1 (2.38%)	0.02
No	34 (82.92%)	41 (97.68%)	

DISCUSSION

The pterygium is one of the commonest disorders in a tropical country such as Pakistan. Exposure to ultra violet light is presumed to be the most important risk factor¹⁴. High intensities of UV-B light are hazardous to the eyes. Its exposure can cause welder's flash and may lead to cataract and pterygium¹⁵. In our study, majority of the patients were between 41-44 years age. These present findings appeared to be supported to certain degree by the general observation made by Saleem et al¹⁶ that maximum incidence in their study was in 31-40 years of age group. After surgical removal, a pterygium may recur.

Of the many procedures used over the years to improve the surgical success rate, two are currently enjoying widespread popularity, with high rates of success repeatedly reported in multiple independent studies. One is excision of the pterygium with a conjunctival autograft and the other is excision of a pterygium with intraoperative application of Mitomycin-C (MMC)¹⁷. Mitomycin-C is commonly recommended to reduce recurrence. It is an antineoplastic antibiotic with radiomimetic properties that selectively inhibit DNA, RNA and protein synthesis^{18,19,20}.

Regarding the recurrence of pterygium, results of our study were also confirmed by the study of Frucht et al²¹. Their research analysis revealed a significantly lower recurrence rate ($p=0.038$) in patients treated with conjunctival autograft combined with intraoperative low-dose MMC than those who were treated with conjunctival autograft only. In our study, the difference in recurrence rate between the two groups was also statistically significant ($p=0.02$) as shown in table 2.

Our results of group-I are in close agreement with another report of Ali and Qazi who studied evaluation of recurrence following pterygium excision with limbal stem cell autograft. They found 14.8% frank recurrence⁷.

CONCLUSION

In our study we concluded that Pterygium recurrence is significantly less common when treated with limbal conjunctival autograft combined with intraoperative application of Mitomycin-C as compared to those were treated with only conjunctival autograft.

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