

A Clinical Study of Pterygium and Results of Treatment by Excision and Limbal Autograft or Augmented with Post-Op Mitomycin C

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ABSTRACT

Aim: To prospectively analyze the clinical profile of pterygium and to compare results of management by excision with limbal conjunctival autograft or postoperative topical Mitomycin C drops. **Methodology:** Study was conducted over a period of 23 months, at a tertiary eye care hospital including 80 eyes of 80 patients who underwent surgery, out of which 40 underwent limbal conjunctival autograft and the remaining 40 underwent pterygium excision followed by Mitomycin C after fulfilling the inclusion criteria. A detailed history was taken and recorded regarding the disease with reference to age, occupation, residence, exposure to dust and hot wind. The extent of corneal involvement by the pterygium was noted. The patients were followed after one week and then monthly for a year. BCVA were noted on every visit and slit lamp examination was done for recurrence, sclera thinning and corneal vascularisation. **Result:** 80 eyes of 80 patients were enrolled with male preponderance, out of which 40 underwent limbal conjunctival autograft (gr. A) and the remaining 40 underwent pterygium excision followed by Mitomycin C (gr. B). All patients were in the age group of 23 to 70 years. The study showed a higher incidence of pterygium in the age group of 41 - 50 years with male preponderance probably due to chronic dryness, and exposure to ultraviolet light, dust, and hot winds. The right eye was more affected than the left eye, and nasal side was more involved than the temporal side. The recurrence among group A was 2 out of 40 with a recurrence rate of 5% and among group B was 3 out of 40 with a recurrence rate of 7.5%. Scleral thinning was seen in two cases (5%) in patients who underwent pterygium excision followed by Mitomycin C. **Conclusion:** Conjunctival limbal autograft and postoperative MMC (0.02%) are both safe and effective adjuncts to primary pterygium surgery. The main prejudices against autografting are the expertise and time required for the procedure. The recent use of biologic adhesives to fixate the autograft in place may simplify the procedure. Age of the patients was strongly associated with recurrence regardless of which procedure was used. More research needs to be done to delve into this seemingly innocuous pathology of conjunctiva to effectively manage the disease condition.

Keywords: Pterygium; Autograft; Mitomycin C; Vascularisation

1. Introduction

Pterygium is a cause of diminution of vision when it encroaches on the pupillary area. The patient also has cosmetic problems. Epidemiological surveys indicate that the prevalence rates of pterygium vary depending on the exact population [1-6]. Overall prevalence rates range from 0.7 to 31% in various populations of the world [1-6]. As a general rule, prevalence rates for a pterygium increase with age although a decline in prevalence rates has been reported for patients over 60 to 70 years old [1,3]. It

typically develops in patients who have been living in hot climates and may represent a response to chronic dryness and exposure to ultraviolet light, dust and hot winds. It is rarely seen in patients younger than the age of 20 years. With the development of new methods of treatment, frequency and severity of pterygium have declined. The study was conducted to study the clinical profile of pterygium and to compare results of recurrence by excision with limbal conjunctival autografts or postoperative topical Mitomycin C drops.

2. Aim

To prospectively analyze a clinical study of pterygium and results of treatment by excision and limbal autograft surgery or augmented with post operative topical mitomycin C.

3. Materials and Methods

Present study was the prospective, comparative case study involving 80 eyes of 40 patients who attended the tertiary eye care hospital in South India. The duration of the study was 2 years. The study was reviewed by the institutional review board. Each eligible patient provided informed consent prior to the enrolment in the study.

3.1. Inclusion Criteria

All cases of pterygium attending the OPD including recurrent pterygium.

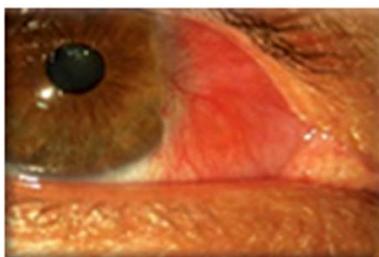
3.2. Exclusion Criteria

Patients coming from far away places who were not able to come for regular follow up were excluded from this study.

3.3. Methods

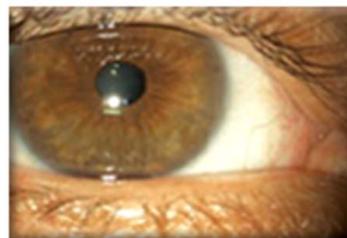
A detailed history was taken and recorded regarding the disease with reference to age, occupation, residence, exposure to dust and hot wind. The extent of corneal involvement by the pterygium was noted.

Patients were assigned to two groups (A and B) randomly. Group A underwent limbal conjunctival autograft. Group B underwent pterygium excision augmented with postoperative topical mitomycin C application (**Figure 1** and **2**). In patients belonging to Group A excision of pterygium was done followed by limbal conjunctival autograft taken from upper temporal quadrant and sutured on the bare sclera using 6.0 vicryl sutures (**Figure 3** and **4**). Patients were given gatifloxacin or moxifloxacin with dexamethasone eye drop 4 times a day for 2 weeks, then



BEFORE

Figure 1. Pterygium before excision.



AFTER

Figure 2. Pterygium after excision.



Figure 3. Pterygium encroaching the pupillary area.



Figure 4. Flashy pterygium.

3 times a day for 2 weeks, and then 2 times a day for 2 weeks. Gatifloxacin or moxifloxacin with dexamethasone ointment was applied at night for 6 weeks. The patient were followed after one week and then monthly for a year. Patients belonging to group B were treated with mitomycin C in a strength of 0.01 mg/ml in carboxy methyl cellulose. On first and second postoperative day patient were told to use either gatifloxacin or moxifloxacin eye drops 6 times a day. From third to twenty first postoperative day patients were given mitomycin C drops 4 times a day and gatifloxacin (3 mg) with dexamethasone (1 mg) eyedrops 4 times a day.

Patients were followed weekly for three weeks and then monthly for a period of one year. Best corrected visual acuity were noted on every visit. Patients were asked for any pain, photophobia, redness, lacrimation.

Slit lamp examination was done and eye was looked for:

- 1) Any recurrence.
- 2) Scleral thinning.

3) Corneal vascularisation.

4. Results

The present study was conducted at the attended the tertiary eye care hospital in South India over a period of 23 months (October 2009 to September 2011).

80 eyes of 40 patients were enrolled in this study. Patients were assigned to two groups (A and B) randomly. Group A underwent limbal conjunctival autograft, 40 patients. Group B underwent pterygium excision augmented with postoperative topical mitomycin C application included 40 patients.

4.1. Age Distribution

Out of the 80 patients maximum number of patients were in the age group from 41 to 50 years in which the youngest patient was 23 years of age and the oldest patient was 70 years of age.

4.2. Sex Distribution

Out of the 80 patients there was a male preponderance in this study with 47 males (58.75%) as compared to 33 females (41.25%). The higher incidence in males could be attributed to their greater exposure to hot, dry and dusty climate.

4.3. Eye Involved

Out of 91 eyes in 80 patients right eye was involved in 54 patients (67.5%), left eye was involved in 37 patients (46.25%).

4.4. Site of Pterygium

The site of pterygium is found to be nasal in 88 eyes (96.70%) of eyes, while temporal in 3 (3.30%) of eyes.

4.5. Size of Pterygium

The cornea was encroached by pterygium between 2 - 3 mm in 88 eyes (96.70%) while the cornea was involved greater than 3 mm by pterygium in 3 eyes (3.30%).

4.6. Recurrence Rates

One of the main aims of the study was to compare the effectiveness of conjunctival limbal autografting and mitomycin C in preventing the recurrence of pterygium. In the present study it was found that recurrence of pterygium occurred in 2 (5%) out of 40 eyes treated with limbal conjunctival autograft and 3 (7.5%) out of 40 eyes in whom pterygium excision was followed by postoperative mitomycin C.

4.7. Recurrence Time

In cases where limbal conjunctival autografting was done there was recurrence occurring in the first and third month whereas in cases where pterygium excision followed by mitomycin C was done recurrence occurred in third, fourth and sixth month of follow up.

4.8. Age of Patients with Recurrence

In both group, patients showing recurrence are less than 50 years (5%).

4.9. Postoperative Complications

In Group B, 2 pts showed the sclera thinning while no complication found in Group A.

5. Discussion

5.1. Age Distribution

In the study conducted by Alemwork Meseret *et al.* [7] prevalence of pterygium was more in middle and old age group. In the study conducted by Jang Sool Kwon [8] also prevalence was more in middle and old age group.

The present study shows that maximum number of patients were in the age group from 41 to 50 years in which the youngest patient was 23 years of age and the oldest was 70 years of age. So the present study agrees with the previous studies.

5.2. Sex Distribution

Duke Elder [9] observed that pterygium is more likely to occur in outdoor workers, and hence it is more common in men than in women. In the study conducted by Rao *et al.* [10] also prevalence was more in males.

The present study shows a male preponderance with 47 males (58.75%) as compared to 33 females (41.25%). So the present study agrees with the previous studies.

5.3. Eye Involved

In the study conducted by McCoombes *et al.* [11] of the 258 cases in 135 right eye was involved as compared to 123 cases in which the left eye was involved.

The present study shows that right eye was involved in 54 patients (67.5%), left eye in 37 patients (46.25%). So the present study agrees with the previous studies.

5.4. Site of Pterygium

Pterygia occurs more commonly on the nasal side probably due to greater exposure of this area to actinic damage, but it may occur temporally or at times bilaterally. In the study conducted by Rachmiel *et al.* [12] all the pterygia

were located nasally while in the study conducted by Rao *et al.* [13] of the 53 eyes (51 patients) in 46 cases the pterygia occurred nasally while in 4 cases there were temporal pterygia.

The present study shows that the pterygium was nasal in 88 eyes and temporal in 3 eyes (**Table 1**) which agrees with the previous studies.

5.5. Size of Pterygium

In the study conducted by Shimazaki *et al.* [13] the size of the pterygia ranged from 1.5 to 6 mm while in another study conducted by Rachmiel [9] *et al.* the range was 2-6.8 mm.

The present study shows that the cornea was encroached by pterygium between 2 - 3 mm in 88 eyes (96.70%) while the cornea was involved greater than 3 mm by pterygium in 3 eyes (3.30%) (**Table 2**) which agrees with the previous studies.

5.6. Recurrence Rates

Kenyon *et al.* [14] popularized the conjunctival autograft technique in 1985, reporting retrospectively on 57 cases of primary and recurrent pterygia, showing a recurrence rate of only 5.3%. Allan *et al.* [15] reported a recurrence of 6.5% in patients who underwent limbal conjunctival autograft surgery. R. Rachmiel *et al.* [9] reported recurrence rate of 2.6% in patients with pterygium excision followed by MMC. Cardillo *et al.* [16] reported recurrence between 4.0% and 6.6% in patients undergoing pterygium excision followed by MMC.

In the present study it was found that recurrence of pterygium occurred in 2 (5%) out of 40 eyes treated with limbal conjunctival autograft and 3 (7.5%) out of 40 eyes (**Table 3**) in whom pterygium excision was followed by postoperative mitomycin C.

Differences in recurrence rates in various studies are thought to be due to various factors including surgical technique used, expertise of the surgeon, patient population characteristics, latitude, race.

Table 1. Shows the site of pterygium involved.

Site	No. of eyes	Percentage
Nasal	88	96.70%
Temporal	3	3.30%
Total	91	100%

Table 2. Shows the size of pterygium.

Size	No of eyes	Percentage
2 - 3 mm	88	96.70
Greater than 3 mm	3	3.30

5.7. Recurrence Time after Surgery

Chen *et al.* [17] reported the mean time of recurrence varied from 3.7 to 4.8 months with only 6% of recurrences occurring after the sixth postoperative month.

In the present study, cases where limbalconjunctival autografting was done there was recurrence occurring in the first and third month whereas in cases where pterygium excision followed by mitomycin was done recurrence occurred in third, fourth and sixth month of follow up (**Table 4**). So the present study agrees with previous studies.

5.8. Age of Patients with Recurrence

In the study conducted by Figueiredo *et al.* [18] patients with age less than 50 years had significantly more recurrences. It has been suggested that lipid degeneration in the cornea is an inhibiting factor to pterygium growth, based on observations that pterygium does not cross an arcus senilis to any great extent. The presence of increasing amounts of lipid degeneration with age might explain in part, the strong association between age and recurrence.

The present study (**Table 5**) shows that there were two recurrences in eyes with pterygium excision followed by conjunctival autograft with age less than 50 years of age whereas in eyes with pterygium excision followed by mitomycin C there was one recurrence in patients less

Table 3. Shows the recurrence rates.

	Pterygium autograft	Pterygium excision with mitomycin C
No of eyes treated	40	40
Recurrence no. %	2 (5%)	3 (7.5%)

Table 4. Shows the recurrence time after surgery.

Time of recurrence	Group A (conjunctival autograft)	Group B (pterygium excision followed by mitomycin C)
1 month	1	0
2 months	0	0
3 months	1	1
4 months	0	1
5 months	0	0
6 months	0	1
7 months	0	0
8 months	0	0
9 months	0	0
10 months	0	0
11 months	0	0
12 months	0	0

Table 5. Shows the age of patients with recurrence.

Age of the patient	Group A (conjunctival autograft)	Group B (pterygium excision followed by mitomycin C)
Less than or equal to 50 years	2 (5%)	2 (5%)
Greater than 50 years	0	1 (2.5%)

Table 6. Shows the postoperative complications.

Type of complications	Group A (conjunctival autograft)	Group B (pterygium excision followed by mitomycin C)
Scleral thinning	0	2 (5%)

than 50 years and two recurrences in patients greater than 50 years of age which agrees with previous studies.

5.9. Postoperative Complications

Lam *et al.* [19] reported 2 cases (5.57%) of scleral thinning in the group in which they applied MMC.

The present study shows (**Table 6**) 2 cases (5%) of scleral thinning in eyes with pterygium excision followed by MMC which agrees with previous studies.

6. Conclusions

Conjunctival limbal autograft and postoperative MMC (0.02%) are both safe and effective adjuncts to primary pterygium surgery. The main prejudices against autografting are the expertise and time required for the procedure. The recent use of biologic adhesives to fixate the autograft in place may simplify the procedure. Age of the patients was strongly associated with recurrence regardless of which procedure was used.

More research needs to be done to delve into this seemingly innocuous pathology of conjunctiva to effectively manage the disease condition.

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