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CLINICAL STUDY ON RECURRENCE RATE OF PRIMARY PTERYGIUM AFTER BARE SCLERA RESECTION WITH AND WITHOUT MITOMYCIN C

S. Ananth Bhandary¹, Sathyendranath B. Shetty², Prarthana Bhandary³

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ABSTRACT: AIM: To study the rate of recurrence and complication of primary pterygium surgery among bare sclera resection and bare sclera resection of pterygium with intraoperative mitomycin C. To study the efficacy and toxicity of intraoperative use of Mitomycin C in the primary treatment of pterygium. **MATERIALS AND METHODS:** 60 patients with primary pterygium attending the outpatient department of Ophthalmology, M. S. Ramaiah Medical College & Teaching Hospital. **RESULTS:** 60 patients, majority in the age group of 21-60 years, were randomized in bare sclera group (n=30) and MMC group (n=30). At the end of 6 months, 8 patients had recurrence in bare sclera group while only 1 patient had recurrence in MMC group. The common post-operative complications noted were pain, lacrimation and photophobia. Dellen was present in 1(3.3%) patient in bare sclera group. **CONCLUSION:** The odds for pterygium recurrence following bare sclera excision of primary pterygium are high. With higher success rates and fewer complications reported with the use of Mitomycin C has become a favored form of adjunctive pharmacological therapy.

KEYWORDS: Pterygium recurrence, bare sclera, mitomycin-C.

INTRODUCTION: Pterygium is a fibrovascular wing shaped encroachment of conjunctiva on to the cornea⁽¹⁾. The typical pterygium is triangular in shape and is made up of a cap, head and body. It is more frequently located nasally rather than temporally.⁽²⁾ Despite being recognized for many years and being very common, very little is known about its etiology and pathogenesis. The ultraviolet radiations (UVR), especially UVR-A and UVR-B (290-400 nm) is considered the most dangerous.⁽³⁾

Other etiological factors been implicated from time to time for the genesis of pterygium are Environmental irritants (Heat, dry weather, dust, wind), Neoplastic, Inflammatory, Allergy, Trophic changes associated with malnutrition- deficiency of Choline and increased blood cholesterol, Neurotrophic conditions, Circulatory disturbances, Mechanical effects of extrinsic muscles.⁽⁴⁾

The main histopathological changes in primary pterygium are elastotic degeneration of conjunctival collagen.⁽⁵⁾ It is a worldwide cause of chronic irritative symptoms and decreased vision, secondary to involvement of the pupillary area or distortion of corneal surface with resultant astigmatism. It is also a worrisome cause for cosmetic complaints.

The mainstay of treatment is surgical. Various surgical procedures are used to treat pterygium. Total excision of the lesion was practiced in the ancient times, which still constitutes one of the methods of treatment. Recommended surgical management includes simple excision with or without adjunctive measures like postoperative Beta irradiation, thiotepa drops, intraoperative and postoperative mitomycin C and various techniques of conjunctival grafting.

The excision of a pterygium with bare sclera was widely practiced because it was believed to be safe and simple. However, with time it becomes apparent that the recurrence rate was unacceptably high. A recurrent pterygium can be associated with decreased visual acuity due to

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involvement of visual axis and/or irregular astigmatism, extra ocular motility restriction and symblepharon formation.⁽⁶⁾

In general the results of surgery are best in older patients with thin atrophic and stationary pterygia. Recurrences are quite common in younger and in patients with active inflamed and rapidly growing pterygia.

MATERIALS AND METHODS: Sixty patients with primary pterygium attending the outpatient department of Ophthalmology, M. S. Ramaiah Medical College & Hospital, formed subjects for this study.

The criterion for inclusion in this study was the pterygium being of primary nature. The exclusion criteria: a. Cases of recurrent pterygium b. Cases of pterygium associated with a history of any previous ocular surgery. c. Cases of pterygium with any active ocular inflammation/ infection. d. Debilitated patient's e. pregnant women and lactating mothers f. Those previously been treated with MMC.

These Patients were allocated at random, to two different groups of 30 cases each, of which group A was subjected to Bare Sclera technique and the other group B to bare sclera resection with mitomycin C at 0.02% concentration. Pre-operatively, a detailed history was obtained with reference to the presenting complaint of the patient, approximate duration and nature of any treatment taken for it in the past.

All patients had their visual acuities recorded employing Snellen's visual acuity charts. They were subjected to a routine ophthalmic examination of both eyes. A detailed slit lamp bio microscopy was done to record the exact site, location, extent, depth and vascularity of the pterygium.

Chronic dacryocystitis was ruled out by performing syringing in those patients who complained of watering. A course of systemic antibiotics was started. The patients were tested for xylocaine sensitivity. The experimental nature of the procedure was explained to them and informed consent was obtained prior to surgery. Pre-operative photographs were taken for documentation.

SURGICAL PROCEDURE: After preparing the lids and periorbital areas with Povidone Iodine 5 % solution, the area is draped in normal sterile fashion.

Group-A: Bare sclera resection (30 Cases) the eyelids are retracted using universal eye speculum. Surface anaesthesia is achieved with 4% lignocaine topical preparation. Lignocaine 0.2 - 0.4ml of 2% solution with 1:100000 adrenaline is injected into the pterygium to elevate it from its attachment to the cornea. The head of the pterygium is grasped with Lims forceps and excision is performed with a No.15 Bard-Parker blade.

Dissection is performed commencing about 0.5 mm ahead of the pterygium and meticulously carried down to the limbus. The conjunctiva and subconjunctival tissue are then learned over the sclera towards the insertion of the corresponding rectus muscle. Triangular excision of the pterygium and conjunctiva is then carried out. Haemostasis is achieved. No conjunctival sutures are placed. The eye is patched with antibiotic ointment.

Group B: Bare sclera resection with Mitomycin-C (30 cases). The eyelids are retracted using universal eye speculum. Surface anaesthesia is achieved with 4% lignocaine topical preparation.

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Lignocaine 0.2-0.4ml of 2% solution with 1:100000 adrenaline is injected into the pterygium to elevate it from its attachment to the cornea. The head of the pterygium is grasped with Lims forceps and excision is performed with a No. 15 Bard-Parker blade. Dissection is performed commencing about 0.5 mm ahead of the pterygium and meticulously carried down to the limbus.

The conjunctiva and sub-conjunctival tissue are then cleared over the sclera towards the insertion of the corresponding rectus muscle. Triangular excision of the pterygium and conjunctiva is then carried out. Mitomycin C 0.2mg/ml (0.02%) solution is prepared by dissolving 2mg of injection mitomycin C powder in 10 ml of sterile water.

Adequate precaution were taken to protect the surgeon and assistant from the cytotoxic effects of Mitomycin C while handling by using, double glove and also during the disposal of the drug. A cotton tipped applicator dipped in Mitomycin C 0.02% solution is kept over the bare sclera under conjunctiva for a period of exactly three minutes.

This bare scleral area which was exposed to mitomycin C is copiously irrigated with ringer lactate solution to remove all traces of the antimetabolite. Haemostasis is achieved. No conjunctival sutures are placed. The eye is patched with antibiotic ointment.

Post operatively, topical ciprofloxacin eye ointment and topical corticosteroid were used thrice daily for a post-operative period of 3-4 weeks.

FOLLOW UP STUDY: Comprehensive examination by slit- lamp bio microscopy and visual acuity assessment were done at 1 week, 2 weeks, 1 month and 6 month intervals. Photographs were taken post operatively for documentation and comparison.

Method of Statistical Analysis: Proportions were compared using Chi-square test of significance. The 'p' value of less than 0.05 was accepted as indicating statistical significance.

RESULTS: Sixty cases were included in the study, 21 (35 %) were male and 39 (65 %) were female (Figure 1). Majority of the patients were in the age ranged between 21 to 60 years (Figure 2).

Fig. 1

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Fig. 2

All the patients 60(100%) in both the group's presented with a symptom of growth on the cornea, in addition to that 21(70%) in group A and 23 (76.7%) patients in group B complained of redness. Irritation was also a presenting symptom in 24(80%) patients in group A and 25(83.3%) in group B (Figure 3).

Fig. 3

In group A, pterygium was present only on the nasal side in all the patients whereas in group B it was present on the nasal side in 26(86.7%) patients. Out of the remaining 4 patients in group B, pterygium was present on both sides in 3 (10%) patients and on the temporal side in 1(3.3%) patient (Table1).

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Location of pterygium	Bare sclera group	%	Bare sclera + MMC group	%
Nasal	30	100	26	86.7
Temporal	-	-	1	3.3
Both	-	-	3	10

Table 1

In group A, 8 (26.7%) patients had recurrence post-surgery and in group B only 1 (3.3%) patient had recurrence at the end of 6 months follow up (Figure 4). Chi square is 6.405 (P=0.011), revealing a statistically significant 'p' value.

Fig. 4

The commonest complication following surgery noted was pain, lacrimation and photophobia in all the patients. Dellen was present in 1 (3.3%) patient.

DISCUSSION: In the treatment of pterygium various surgical techniques have been employed. The main problem encountered after various pterygium treatment modalities concerns the unpredictable rates and timing of recurrences.⁽⁷⁾ A recurrent pterygium can be associated with decreased visual acuity due to involvement of visual axis and/or irregular astigmatism, extraocular motility restriction and symblepharon formation.

The simplest technique of bare sclera excision alone proved unsatisfactory because of high recurrence rates (24-89%).⁽⁸⁾ Adjunctive treatment after bare sclera excision with Beta irradiation reduced recurrence rates to as low as 0.5%-10%,⁽⁹⁾ but was associated with significant complications such as scleral necrosis.

This study provides evidence of the inherent risk for pterygium recurrence of bare sclera resection alone when compared with bare sclera resection with Mitomycin C. In the present study, recurrence was observed in 1 (3.3%) eye in mmc group and in 8 (26.7%) eyes in bare sclera group.

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Jose A Cardillo et al reported a recurrence rate 6.6 % in mmc group and 29.27% in bare sclera group.⁽¹⁰⁾ Cutis A Marrig MD et al have reported a recurrence rate of 10.3% in mmc group.⁽¹¹⁾

Caliskan S et al have reported a recurrence rate of 4 2% in mmc group as against 41.2% in control group.⁽¹²⁾ In the group treated with bare sclera technique 6 cases (40%) patients had recurrence, in the group with intraoperative mitomycin C 1 case (6.6%) had recurrence. 1 patient (6.6%) had sclera thinning following intraoperative mitomycin C application.⁽¹³⁾ The present study and all the above mentioned studies are similar.

CONCLUSION: The odds for pterygium recurrence following bare sclera excision of primary pterygium are high. With higher success rates and fewer complications reported with the use of Mitomycin C has become a favored form of adjunctive pharmacological therapy.

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AUTHORS:

1. S. Ananth Bhandary
2. Sathyendranath B. Shetty
3. Prarthana Bhandary

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Ophthalmology, M. S. Ramaiah Teaching Hospital, Bangalore.
2. Associate Professor, Department of Ophthalmology, M. S. Ramaiah Teaching Hospital, Bangalore.
3. Post Graduate Student, Department of Ophthalmology, M. S. Ramaiah Teaching Hospital, Bangalore.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. A. Ananth Bhandary,
Associate Professor,
Department of Ophthalmology,
M. S. Ramaiah Teaching Hospital,
Bangalore-560054.
Email: fundary@yahoo.com

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