

Comparative Study of Pterygium Excision with Symmetrical Conjunctival Flap Transpositioning and Using Mitomycin C as an Adjunctive Therapy

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Abstract: Pterygium is a common ocular condition characterized by a triangular growth of conjunctival tissue encroaching onto the cornea, potentially leading to corneal distortion and vision loss. This study compares the recurrence rates and postoperative complications between two surgical techniques: pterygium excision with symmetrical conjunctival flap transposition alone and with the adjunctive use of intraoperative low-dose mitomycin C (0.02%). Conducted at RAMA Medical College & Hospital, Hapur, 100 eyes were randomized into two groups of 50 each. Results revealed a lower recurrence rate in the mitomycin C group (2.27%) compared to the non-mitomycin group (6.5%). Complications were minimal in both groups, with no severe adverse effects reported. The combined technique of symmetrical conjunctival flap transposition with mitomycin C appears to be a promising approach for reducing pterygium recurrence, though long-term awareness of potential late complications of mitomycin C remains essential.

Keywords: pterygium, mitomycin C, conjunctival flap transposition, recurrence rate, ocular surgery

1. Introduction

Primary pterygium is a triangular encroachment of the bulbar conjunctival tissue onto the cornea¹, consisting of bulbar conjunctival epithelium and hypertrophied subconjunctival connective tissue, usually within the intrapalpebral fissure and most often from the nasal side.

The pathophysiology of pterygium is characterized by elastotic degeneration of collagen and fibrovascular proliferation, with an overlying covering of epithelium. The pterygium may invade the superficial peripheral cornea (with the apex of the lesion towards the cornea), beneath the body of the lesion there may be destruction of Bowman's layer and the superficial corneal lamellae. As it moves towards the pupillary area it can eventually cause corneal distortion and visual loss.⁽²⁾

Multiple options have been advocated in treating a pterygium. These range from simple excision to the conjunctival or amniotic membrane grafts, external beta irradiation and the use of topical chemotherapeutic agents such as intraoperative or postoperative mitomycin - C.⁽³⁻⁵⁾ The aim is to excise the pterygium and prevent its recurrence.

Recurrence of Pterygium is due to accelerated fibroblastic proliferation (as in keloid formation) and release of growth factor (PDGF).

Transplantation of head of pterygium has been used in which dissection of head of pterygium from the cornea and its transplantation under the conjunctiva away from the limbus, so that any future growth may be curbed.⁽⁶⁾

Mitomycin C has been used as an adjunctive treatment because of its ability to inhibit fibroblasts. However, the

minimal safe and effective dosage levels have yet to be determined. Two forms of mitomycin C are currently used: the intraoperative application of mitomycin C directly to the sclera bed after pterygium excision, and the postoperative use of topical mitomycin C eyedrops.

Objectives of the study

- 1) To compare the recurrence rate of pterygium using the technique of "Pterygium excision with symmetrical conjunctival flap transpositioning and using mitomycin C as an adjunctive therapy."
- 2) To compare any postoperative complications using the above new technique.

2. Material & Methods

Study site: This prospective, randomized, comparative study has been conducted in the Department of Ophthalmology, RAMA Medical College & Hospital Hapur.

Sample size & sample technique:

100 eyes of 100 patients attending the eye outdoor patient department who fulfilled the inclusion and exclusion criteria have been taken. Patients were randomly divided in two groups: 50 patients in each group.

Group 1— Pterygium excision with symmetrical conjunctival flap transpositioning Group 2—Pterygium excision with symmetrical conjunctival flap transpositioning with intraoperative Mitomycin -C (0.02%) for 2 minutes.

As both the procedures had surgical intervention and the drug mitomycin - C was given intraoperatively. Therefore, no blinding was as such required in present study.

Inclusion Criteria:

- 1) Nasal and/or temporal pterygium.
- 2) One or both eyes of the patient with pterygium.
- 3) Pterygium encroaching over the cornea

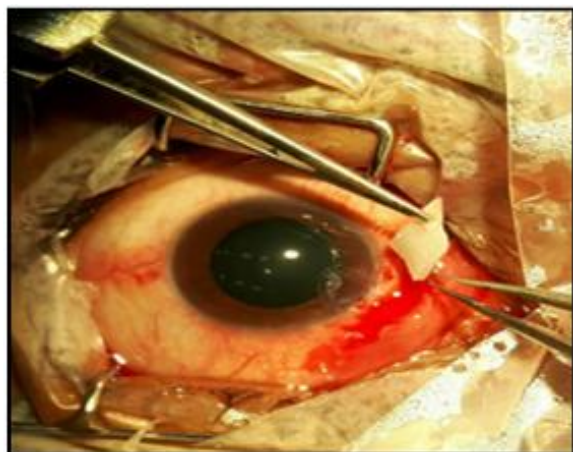
Exclusion criteria:

- 1) Pseudo pterygium.
- 2) Old atrophic pterygium.
- 3) Recurrent pterygium

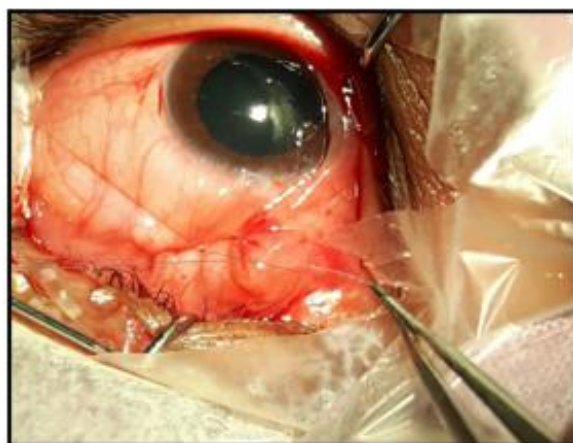
Data analysis: Chi - square test and Fisher Exact test were used for analysis of nominal/categorical variables, whereas unpaired 't' test was used for comparison of continuous variables. p value less than 0.05 was taken as significant.

Operative procedure: The patients were properly examined and detailed consent for surgery was taken. In Group 1, 50 patients underwent a technique in which pterygium was excised and buried into lower fornix with 8 - 0 vicryl suture after delineating and separating it from overlying conjunctiva and underlying sclera and then symmetrical conjunctival flap were fashioned and sutured by transpositioning them over bare sclera by 8 - 0 vicryl suture.

In Group 2, 50 patients underwent same operative procedure as in group 1 with adjunctive mitomycin - C 0.02% for 2 minutes.



Intraoperative Scleral Application of Mitomycin C in Group 2.



Burying Excised Pterygium Tissue in to Lower Fornix by 8 - 0 Vicryl Suture in Group 1 and Group 2

3. Result**Type of complications other than recurrence occurred in the study populations.**

Type of complications other than recurrence	Group I (N=46)		Group II (N=44)		Total
	No.	%	No.	%	
Corneoscleral Melting & Iritis	0	0.00	1	2.27	1
Granuloma	4	8.69	1	2.27	5
Broken Sutures	2	4.34	1	2.27	3
Delayed Wound Healing	1	2.17	6	13.64	7
Superficial Punctate Keratitis	0	0.00	6	13.64	6

In Group 1, 84.8% and In Group 2, 65.91% patients had no complications in the study population.

Recurrences in group 1 and group 2 in the study population at the end of the study

Recurrences occurred within 3 - 6 months postoperatively. The actual recurrence i. e. grade III (fibrovascular tissue invading the cornea i. e. corneal recurrence) occurred 6.5% in group 1 and 2.27% in group 2.

Recurrence grade	Group I		Group II		Total
	No.	%	No.	%	
Grade 0	32	69.6	37	84.09	69
Grade 1	8	17.4	4	9.09	12
Grade 2	3	6.5	2	4.54	5
Grade 3	3	6.5	1	2.27	4
Total	46	100.00	44	100.00	90

4. Conclusions

Pterygium is one of the most common diseases among the patients. Combined 'symmetrical conjunctival flap transposition' and intraoperative low - dose mitomycin C application may be an effective surgical alternative in preventing recurrence of pterygium. Although the procedure seems to be free from severe complications, surgeons and patients should be well aware of the risk of late complications of mitomycin C.

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