



ORIGINAL RESEARCH PAPER

Ophthalmology

PTERYGIUM EXCISION WITH BARE SCLERA METHOD USING MITOMYCIN.C- 7 YEAR RETROSPECTIVE ANALYSIS

KEY WORDS: Pterygium recurrence, complication, mitomycin.C

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ABSTRACT

Purpose: To study the effect of modified pterygium excision with bare sclera method using mitomycin. C and evaluate its post operative results.
Methods: Non comparative, retrospective interventional study conducted on 87 eyes of 87 patients with primary pterygium from Jan 2007 to Jan 2014. Pterygium excision with bare sclera method using mitomycin. C was done.
Result measured as recurrence rate, periocular edema, corneoscleral melting and so on. Result: Mean age was 56± 10 years. M:F was 35:52. Mean follow up was 36± 10 months. No recurrence found. Sclero-corneal melting was noted as major complication in 1(1.15%) which was managed successfully.
Conclusion: Pterygium excision with bare sclera using mitomycin. C is a successful and safe procedure.

INTRODUCTION:

Pterygium is defined as a fibrovascular wing shaped ocular growth encroaching into cornea due to ultraviolet rays.(1,2).Pterygia are triangular fibrovascular connective tissue overgrowth of bulbar conjunctiva on to the cornea(3). They are located horizontally in the palpebral fissure on either the nasal or temporal side of cornea. A pigmented iron line (stocker's line) may be seen in advance of pterygium on the cornea. Wearing glass can decrease their incidence because the ultraviolet transmission is decreased. Pterygium is seen in all countries but more in "pterygium belt(4)"countries like India. Pterygium occurs at highest prevalence and most severely in tropical areas near the equator and to a lesser and milder degree in cooler climates (5,6). Both blue and ultraviolet have been implicated in its causation as demonstrated in watermen (5). Outdoor work in situations with highlight reflectivity including from sand and water enhances pterygium development, and the use of hats and glasses is protective(6). A pterygium may progress slowly toward axial cornea or may become quiescent. Indications of activity are corneal epithelial irregularity, opacification of bowman's layer, and prominence of active blood vessels and inflammation. New theories of pathogenesis include possibility of damage to limbal stem cells by ultraviolet light and by activation of matrix metallo proteinases(2,7). Generally pterygium excision is indicated if the visual axis is threatened or if the pterygium causes extreme irritation. A pterygium that recurs after excision does so within several weeks, starting from the conjunctival borders. The rate of recurrence is as high as 40% when a bare sclera excision is performed. The rate of recurrence reduced when surgery is followed by beta radiation treatment with strontium-90(8,9). Beta radiation is less used now because of report of late sclera necrosis(10). The treatment with autologous conjunctival transplantation has been shown to decrease the incidence of recurrence to 5% as has adjunctive treatment with mitomycin.C drops(11,12).Pterygium is elastotic degeneration of collagen of conjunctiva(13).Nasal pterygium is more than the temporal one due to light focussing on this area(4,14). Topical mitomycin.C applied at the time of surgery appears to be relatively safe(15) and to decrease the potential toxicity of post operative application, although scleral and corneal melting may still occur(16).

were analysed in the department of ophthalmology of a medical college which is a tertiary eye care centre in Chennai, India. Age, sex, history, vision before and after surgery, technique and complications were included in the data. In order to measure the severity, pterygium was graded as below. Grade-1:Pterygium crossed corneal limbus ; Grade-2:Pterygium between limbus and pupil; Grade-3:Pterygium touching pupillary margin; Grade-4:Pterygium entering pupil. Tenets of Declaration of Helsinki was fully followed in this study. Institutional Ethics committee had approved this project. Patients who had associated eye diseases were excluded from this study.

Procedure:

Pterygium excision was done similar to Singh G etal (12), Kawasaki etal (17), Safianic B etal(18) with some modification. Operation was done in a well cleaned and well fumigated standard operation theatre. 2% Lignocaine (Neon,India) and 0.5% Proparacaine (Sunways,India) were used as topical anaesthesia. Peribulbar infiltration was not given. Topical surface anesthesia was achieved with topical proparacaine eye drops. During surgery anaesthesia was supplemented with topical 2% lignocaine. With Lim's forceps and 11.G surgical blade, pterygium was excised. Fibrovascular tissue and body of nasal conjunctiva was lifted with Lim's forceps and cut with 11.G blade. Then the head was avulsed with crescent blade and iris spatula. Procedure was done with the help of high quality operating microscope. Bare sclera and cornea were shaved and cauterized with wet field bipolar cautery for minimum power and time. Adjunctive 0.02% mitomycin. C (MMC) was prepared by adding 2mg of mitomycin.C (Zydu,India) to 10 ml of tear substitute 0.5% carboxy methyl cellulose eye drops. Mitomycin.C was applied topically on fresh bare sclera and cornea. Small cotton roll was soaked with 0.02% mitomycin.C and applied only on excised area for 90 seconds without spilling over to nearby ocular areas in order to prevent toxicity. It was then washed thoroughly with continuous irrigation with sterile distilled water. Sterile eye pad was applied after antibiotic ointment for 1 day. Protective glass was advised after operation. 0.02% mitomycin.C eye drops was instilled thrice daily for 1 week after operation. Head bath was allowed after the healing of wound (Picture-1).

We report and document simple method of pterygium surgery without major complication, less time consuming after 7 years long term retrospective analysis.

Methods:

Medical records of 87 eyes of 87 patients with nasal pterygium were included in this 7 years long study from Jan 2007 to Jan 2014. Single surgeon had done all surgeries using same technique. Data

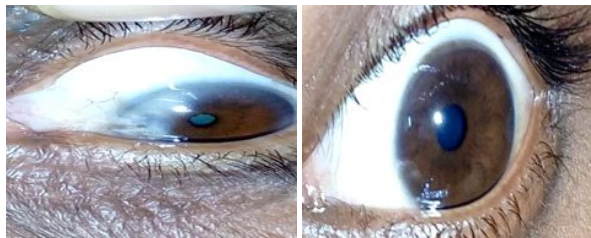


Picture-1:Mitomycin.C and other drugs

Post operative antibiotic tablets, eye drops and ointment were given for 7 days to 2 weeks till healing depending on the status of wound. Patients were given antihistaminic and tear substitute eye drops for 3 months. Patients were reviewed after 1 day, 3days, 1 week, 2 weeks, 1 month, 6 months and every year. Slit lamp examination after fluorescein staining, visual acuity recording and refraction were done on each visit. Results were documented and analysed at each visit. Recurrence was defined as regrowth of pterygium of 1.5mm or more to cornea as mentioned by Singh etal (12).

Statistics : Regrowth of pterygium, periocular edema, delayed wound healing and sclero corneal melting were initial side effects considered for variables. Descriptive analysis was done using mean and standard deviation for quantitative variables.

Results : Retrospective analysis of 87 eyes from 87 patients over a period of 7 years, who underwent nasal pterygium excision with bare sclera method using mitomycin.C showed the following results. Mean age was 56± 10 years, Male:Female ratio was 35:52. Mean follow up was 36±10 months. Other patients with associated eye diseases, recurrent pterygium and double head pterygium were excluded. 52 were left eyes and 35 were right eyes. 81 (93.1%) eyes were healed within 7 days which was confirmed by fluorescein staining. 6(6.9%) were healed within 14 days which required repeated patching for 5 to 7 days.(Picture-2 a&b).



Picture-2 : (a) Pterygium before operation Picture-2 : (b) No pterygium recurrence after 3 years

1 patient (1.15%) developed deep dellen with sclero-corneal melting which also healed after repeated patching. Periocular edema was present in 3 cases (3.45%) for 5 – 7 days. Punctate keratitis was seen in 1 case (1.15%). Table –1 indicates the percentage of various complications. No recurrence in any one of the patients.

Table 1: Result of this study

Complications	n(%)
Delayed wound healing	6(6.90)
Periocular edema	3(3.45)
Sclero corneal melting	1(1.15)
Punctate keratitis	1(1.15)

Discussion:

One of the major complications of pterygium surgery is recurrence. The management of recurrent pterygium is very difficult and the failure rate is about 33.33%(19). Aim of all pterygium surgeries are non- recurrence, better vision and better cosmetic look taking minimum surgical and healing time. In our study, pterygium excision with bare sclera technique using mitomycin.C application for 90 seconds was used. Mitomycin.C is an antimetabolic drug used for cancer treatment, which is used with proper care. Bare sclera technique without any adjunctive was out dated due to high rate of recurrence(20). Beta irradiation, thiotepa eye drops, drug 5-fluorouracil were used in various trials. Conjunctival autograft, amniotic membrane and fibrin glue methods were used in many studies. Conjunctival grafting consumes more surgical time with more healing period and more recurrence rate. Amniotic membrane is costly and needs preservation and has higher recurrence rate (20). Fibrin glue method is easy but has high cost and chance for transmission of infectious agents like parovirus B19 and prion (20). Double head pterygium excision with bare sclera technique with 0.02% mitomycin.C (5 minute) was reported by Avisar etal (19) showed recurrence rate of 0% in primary pterygium and 33.33% in recurrent double head pterygium. By various methods and research studies published earlier has

recurrence rate of 0% to 71.42 %.(22),(23),(24). Loss of limbal stem cells leads to loss of barrier at limbus and growth progress to cornea.(25),(26)

Pterygium recurrence occur usually within 6 months(27). In our study it is 0% recurrence after a follow up period of 36±10 months which is comparable to the study by Avisar etal (19) where they had 0% recurrence rate using adjunctive 0.02% mitomycin.C for 5mts. Mitomycin.C had reported complications like punctate keratopathy, scleral and corneal melting(18). In our study, the periocular edema was in 3 cases (3.45%) and was reduced within few days. It may be due to inflammation caused by surgical trauma. 83 eyes (93.10%) were healed within 7 days confirmed by fluorescein staining. 6 eyes (6.90%) were healed within 14 days after repeated daily patching with antibiotic ointment and pad. In such delayed healing cases, we had stopped mitomycin.C eye drops after 5 days. 1 patient (1.15%) developed deep dellen with sclero-corneal melting which was fully managed conservatively with daily patching for 7 days. Punctate keratitis and delayed healing can be attributed to the side effects of mitomycin.C and sensitivity of patient. All patients had achieved better vision and cosmetic appearance. Table-2 shows comparison of result with previously published pterygium studies.

Table-2 : Comparison of result with previously published pterygium studies

Authors	Pterygium type	Number of eyes	Surgery technique	Mean follow up (months)	Recurrence rate (%)	Granuloma	Subconjunctival hemorrhage	Conjunctival edema
Our study	Primary	87	Bare sclera using 0.02% mitomycin.C (90seconds)	36±10	0/87 (0)	0/87 (0)	0/87 (0)	0/87 (0)
Hirst and Smallcombe (22)	Primary	20	Conjunctival graft	12	0/20 (0)	-	-	-
Solomon et al(23)	Primary	11	Amniotic Membrane transplant	12.8±.3	1/11 (9)	-	-	-
Avisar et al(19)	Primary	10	Bare sclera using 0.02% mitomycin.C (5 min)	36.3±8	0/10 (0)	1/10 (10)	-	-

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