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Research Article

**EFFECTIVENESS OF MITOMYCIN “C” (MMC) VERSUS
CONJUNCTIVAL AUTOGRAFT (CAG) IN THE REDUCTION
OF PTERYGIUM RECURRENCE RATE**¹Dr. Muhammad Iftikhar Ali, ²Dr. Talha Nafees, ³Dr. Shahid Razzaq¹District Gujrat²House Officer, Allied Hospital Faisalabad³Medical Officer, R.H.C. Akhtarabad District Okara**Abstract:**

Objectives: We aimed at the recurrence rate determination subsequent to Conjunctival Autograft against Mitomycin “C” for the pterygium excision.

Methods: In our research a total of 50 cases were studied through a Randomized Clinical Trial who experienced pterygium excision in the timeframe of September 2016 to March 2017 at Ophthalmology Department, Allied Hospital, Faisalabad. Detailed ophthalmic assessment of every patient was carried out before the surgical assessment. We instilled few lidocaine drops and also injected subconjunctival xylocaine (2%). After that we excised pterygium from bulbar conjunctiva which was peeled off from corneal surface. Group A was managed with Mitomycin “C” which was applied on bare sclera and Conjunctival autograft was taken from the same eye from superior bulbar conjunctiva and it was sutured to bare sclera in B group. We gathered pterygium recurrence data and analyzed the data on SPSS software.

Results: Male to female proportion in the research population was respectively 32 males (64%) and 18 females (36%). The population was in the age bracket of (28 – 52) years and mean age was calculated as (44.8) years. We observed that 27 patients were affected from right eye (54%) and 23 patients were affected from left eye (46%). Group “A” (intra-operative MMC) we observed 1 case of conjunctival granuloma (4%), 4 cases of pterygium recurrence (16%) and 5 cases of ocular irritation (20%). Whereas, in Group “B” (CAG) 2 cases were of graft retraction (8%), 1 case of persistent redness over grafted tissue (4%) and 2 cases were of pterygium recurrence (8%). The follow-up in the patients was carried out at 1st day, 1st week, 4th week and 12th week.

Conclusion: Both Mitomycin “C” and Conjunctival Autograft are very much effective in the reduction of the pterygium recurrence; whereas, better cosmetic outcomes can be obtained from CAG with an associated drawback lies in the procedural duration and time taken in the procedure.

Key Words: Mitomycin “C”, Pterygium and Conjunctival Autograft.

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INTRODUCTION:

Pterygium is graded among the conjunctival disorders that occurs with the increasing age factor. The incidence is observed in interpalpebral aperture having palpebral conjunctiva nasal aspect which is frequently affected. There is a rare occurrence on temporal and nasal aspect at the same time. The condition is progressive, which is extended and it involves peripheral cornea which causes the astigmatism and also causes the visual axis blockage with an overall (2% – 7%) worldwide prevalence [1]. There is no clear evidence available about the disease pathogenesis but the strongest disposition about the disease development in the presence of hot and warm climate with dry eye etc. It is suggested in the recent literature that P-53 gene mutations on chromosome 17 may contribute to it [2]. Males are more risk as they are excessively exposed to outdoor environment, the occurrence is two times higher in men the women [3].

Its presentational symptoms may include watering, foreign body sensation, red eye, cosmetic disfigurement and visual impairment. It is also observed that asymptomatic cases are also not very much uncommon. Lubricants and anti-inflammatory agents bring relief; whereas, regression is not caused by them in pterygium. Surgical excision is graded as the standard management of the pterygium with bare sclera method which has an association with the higher reoccurrence rate in the range of (24 – 89) percent [4]. Reoccurrence is reduced through adjunct treatment options which includes beta radiation, amniotic membrane grafting, conjunctival autograft and mitomycin “C”. Recently, recurrence is also reduced with the help of fluorouracil [5].

Pterygium recurrence may be attributed to fibroblast proliferation which contributes in the healing followed by conjunctival excision. Another hypothesis states that limbal stem cell barrier loss function permits conjunctiva for development over the cornea [2]. It is therefore the aim of the adjunct treatment inhibits the fibroblast proliferation or bare sclera covering with same featured tissue.

Mitomycin “C” is an antibiotic agent which is antineoplastic that selectively inhibits DNA synthesis, protein and cellular RNA, hence it is affecting from long time the cellular proliferation. We can employ it before operation, during operation and after the operation. A single low dose of MMC when employed preoperatively is graded safe against the pre-operative & post-operative management.

A usual dose may vary from (0.01% – 0.04%) for a time period of (3 – 5) minutes. With an increase in the concentration and duration of MMC numerous complications such as scleromalacia, glaucoma, corneal perforation, punctate keratopathy and iritis may also be associated [6]. However, national studies have reported the intra-operative MMC recurrence from 6.7 percent to 22.5 percent [3, 7].

CAG as an adjunct to pterygium excision is considered safe as better yielding is observed in the limbal stem cells in donor tissue of corneal tissue and conjunctival tissue, it proves a barrier to the fibroblast proliferation. The overall procedure brings post-operatively better cosmesis outcomes. It has drawbacks like it is time taking and more demanding. Recurrence is reported from 5 – 9.09 percent with CAG [3, 8, 9].

We aimed in this research at the recurrence rate determination subsequent to Conjunctival Autograft against Mitomycin “C” for the pterygium excision.

METHODS:

In our research a total of 50 cases were studied through a Randomized Clinical Trial who experienced pterygium excision in the timeframe of September 2016 to March 2017 at Ophthalmology Department, Allied Hospital, Faisalabad. Detailed ophthalmic assessment of every patient was carried out before the surgical assessment. We included all the cases with recurrent inflammatory primary pterygium cases, cosmetic disfigurement and impaired vision with random selection for pterygium excision with either conjunctival autograft or intraoperative MMC. The patients who had a recurrence of pterygium, conjunctival scarring, glaucoma or dry eyes were not made a part of research. Random division in the A and B groups was made. Protocols were explained to the participants specific to the CAG and MMC. We documented the assessment of the posterior and anterior segments which was carried out by surgeon.

Hospital ethical review was secured before the commencement of research and informed consent from the patients was also taken. Local anesthesia managed all the patients. We instilled few lidocaine drops and also injected subconjunctival xylocaine (2%) (Figure – I). After that we excised pterygium from bulbar conjunctiva which was peeled off from corneal surface. Group A was managed with Mitomycin “C” which was applied on bare sclera and Conjunctival autograft was taken from the same eye from superior bulbar conjunctiva and it was sutured to bare sclera in B group (Figure – II). Group “A”

was managed with soaked cotton bud (0.02% MMC) which was applied for two minutes on bare sclera after that ringer's lactate solution rinsing was carried out. We also measured defect size in "B" group with the help of Castroviejo caliper and dissected the CAG from site of superior bulbar after administering subconjunctival xylocaine. We took and planted the graft on bare sclera with limbal site as it was facing to the limbus side and it was further secured with (10/0) nylon sutures (Figure III & IV). Steroid and subconjunctival antibiotic were administered to all subjects and we also applied for twenty-four hours the eye pad. For further six weeks we given postoperative topical antibiotic with the combination of steroid.

The follow-up in the patients was carried out at 1st day, 1st week, 4th week and 12th week. We examined every patient for the conjunctival and corneal healing of the wound. We also observed recurrence sign which can be defined as the fibrovascular re-growth crossing or reaching up to limbus. Single surgeon was detailed to perform every surgical intervention. We gathered pterygium recurrence data and analyzed the data on SPSS software.

Figure – I: Pre-operative: Injection of Subconjunctival xylocaine (2%)



Figure – II: Pre-operative: Bare Sclera to apply MMC



Figure – III: Six weeks postoperative CAG (nasal pterygium)

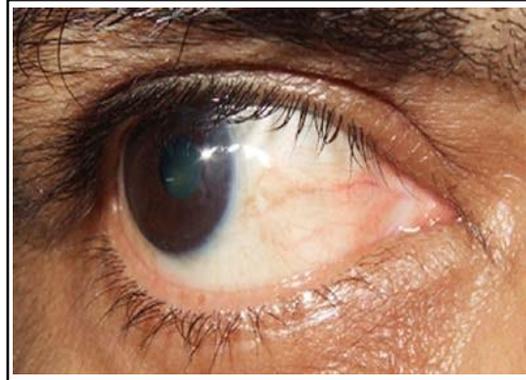


Figure – IV: Three Months postoperative CAG (temporal pterygium)



RESULTS:

Male to female proportion in the research population was respectively 32 males (64%) and 18 females (36%). The population was in the age bracket of (28 – 52) years and mean age was calculated as (44.8) years. We observed that 27 patients were affected from right eye (54%) and 23 patients were affected from left eye (46%) (Table – I). Group "A" (intra-operative MMC) we observed 1 case of conjunctival granuloma (4%), 4 cases of pterygium recurrence (16%) and 5 cases of ocular irritation (20%). Whereas, in Group "B" (CAG) 2 cases were of graft retraction (8%), 1 case of persistent redness over grafted tissue (4%) and 2 cases were of pterygium recurrence (8%). The follow-up in the patients was carried out at 1st day, 1st week, 4th week and 12th week. Self-healing process was observed at donor site. On the 2nd post-operative visits we removed the sutures. High recurrence was seen in intraoperative MMC patients who were treated with CAG with a significant P-value as (0.667) (Table – II).

Table – I: Patient Data

Group	Laterality		Site of Pterygium		Gender	
	Right	Left	Nasal	Temporal	Male	Female
Group - A	14	11	25	0	15	10
Group - B	11	14	24	1	18	7

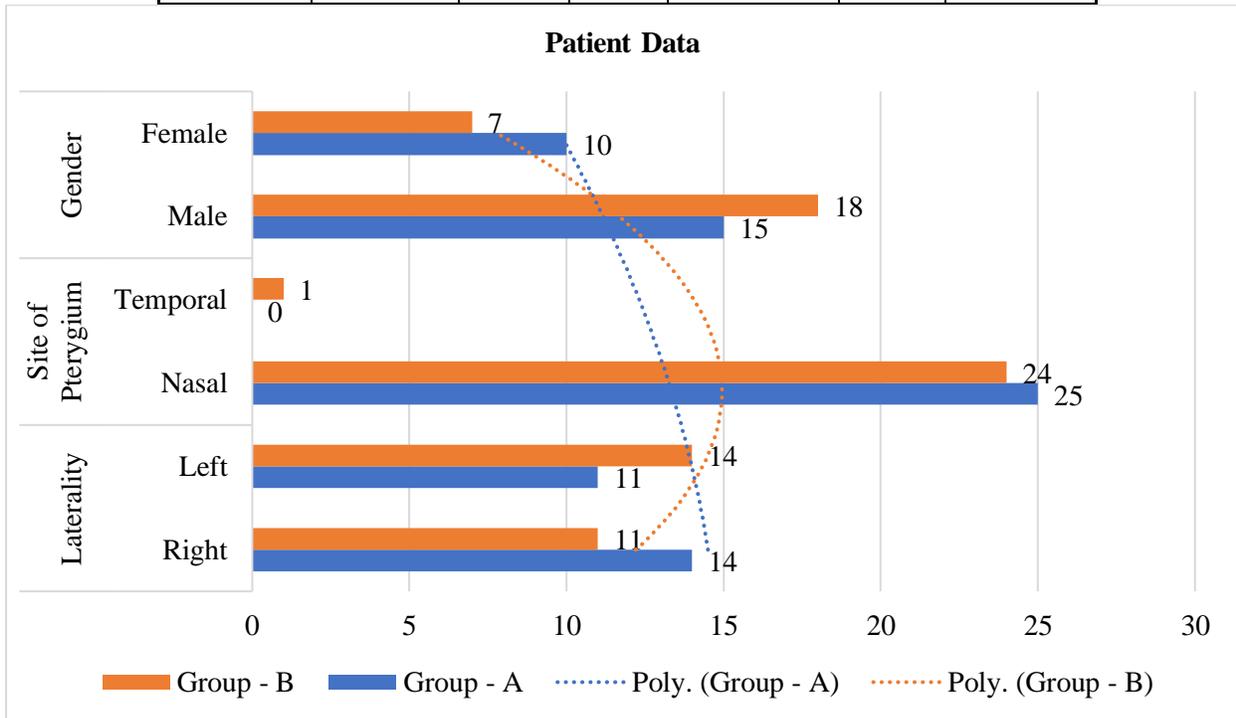
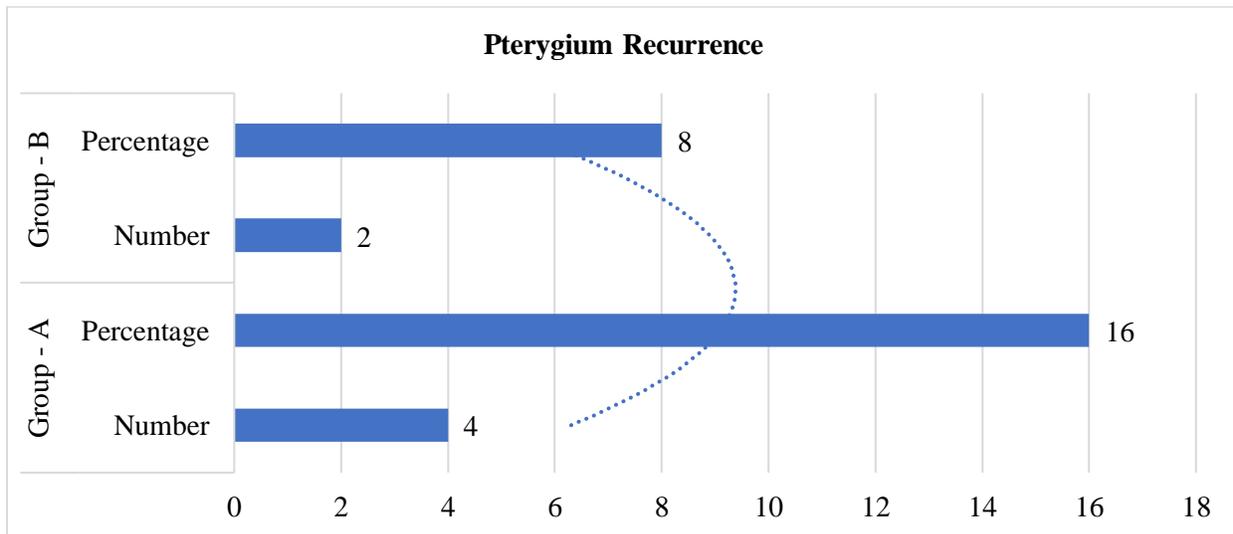


Table – II: Pterygium Recurrence

	Group - A		Group - B	
	Number	Percentage	Number	Percentage
Recurrence	4	16	2	8



DISCUSSION:

Our research aimed at the minimum rate of recurrence with better cosmesis after being managed following pterygium excision. Males were predominant over female, same has been reported by Kamil Z [3]. Khan N states males as (63%) and females as (37%) which is also favors our research outcomes in the pterygium patients [10].

Kenyon coined the term of conjunctival auto grafting back in 1985 with a recurrence rate of (5.3%) [11]. According the Narsani AK the recurrence rate was observed as (4.6%) back in 2013 [9]. Recurrence rate with limbal CAG as observed by Fahmi (2005) was (13.3%) [12]. Numerous other authors have also reported varying occurrence rate in their respective research outcomes which can be compared to this particular research [7 – 9].

Same surgical method was opted by one patient when he came for the second eye management due to better cosmesis. Mitomycin “C” is used pre-operatively as subconjunctival injection and topical drops after the procedure for a time period of one to two weeks, it was also observed that single use is safer and recommended [13, 14]. For a short duration low MMC dose was administered (0.02% for two minutes), complication rate and recurrence rate can be reduced through this process. Rubinfeld RS states about the associated complications that they are linked with the prolonged and uncontrolled MMC use [15]. According to Kamil Z and Narsani AK respective recurrence rate was 22.5% and 16.13% with an adjunct use MMC intra-operative management [3, 9]. Our series observed recurrence as 16% with associated post-operative complication including scleral necrosis and corneal melting were not presented in this particular research.

CONCLUSION:

Male to female proportion in the research population was respectively 32 males (64%) and 18 females (36%). The population was in the age bracket of (28 – 52) years and mean age was calculated as (44.8) years. We observed that 27 patients were affected from right eye (54%) and 23 patients were affected from left eye (46%). Group “A” (intra-operative MMC) we observed 1 case of conjunctival granuloma (4%), 4 cases of pterygium recurrence (16%) and 5 cases of ocular irritation (20%). Whereas, in Group “B” (CAG) 2 cases were of graft retraction (8%), 1 case of persistent redness over grafted tissue (4%) and 2 cases were of pterygium recurrence (8%). The follow-up in the patients was carried out at 1st day, 1st week, 4th week and 12th week. Both Mitomycin “C”

and Conjunctival Autograft are very much effective in the reduction of the pterygium recurrence; whereas, better cosmetic outcomes can be obtained from CAG with an associated drawback lies in the procedural duration and time taken in the procedure.

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