International Journal of Advanced Biotechnology and Research (IJBR)
ISSN 0976-2612, Online ISSN 2278–599X,
Vol-9, Issue-2, 2018, pp200-204
http://www.bipublication.com

Research Article

Comparison of Recurrence rate of Pterygium, Mitomycin-C versus Conjunctival Autograft in pterygium surgery

[1]Muhammad Haroon Tayyab, [2]Muhammad Muneeb Aslam and [3]Toheed Ashraf

[1]House Officer, Services Hospital, Lahore
[2]Medical Officer, Basic Health Unit 28/14-L Chichawatni
[3]Incharge Medical Officer, BHU-168/E.B, Vehari

ABSTRACT

Objective: To compare the recurrence rate of pterygium following intraoperative use of mitomycin-c and conjunctival auto graft.

Methodology: This randomized controlled trial was conducted at Department of Ophthalmology,Services Hospital, Lahore from August 2016 to February 2017.One hundred and thirty patients participated in the study.They were randomized into two groups, one receiving intraoperative Mitomycin-C(n=65) and the other group underwent Conjunctivalautograft application(n=65).Patients were followed monthly for six months, to see any signs of recurrence.

Results: There were ten recurrences in Mitomycin-C group(15.3%) and only two recurrences in Conjunctivalautograft group(3%)over six months follow up period.There was a statistically significant difference in the recurrence rate between the two groups($p<0.05$).This implies that the Conjunctivalautograft has a better outcome interms of its success rate as compared to theMitomycin-C adjuvant.

Conclusion: In patients having visually significant pterygium,pterygium surgerywithconjunctivalautograft application has a lower recurrence rate as compared to the Mitomycin-C adjuvant.

Key words: Conjunctivalautograft, Mitomycin-C, Pterygium, Pterygium excision.

INTRODUCTION

Pterygium is a fibrovascular proliferation of conjunctiva onto the cornea.[1] Pterygium is a worldwide condition with a "pterygium belt" between the latitude 30^0 north and south of equator.[2] Ultraviolet radiation is the major risk factor for its development.[3] Patients with pterygium have symptoms of red eye, itching, blurred vision and cosmetically unacceptable growth in the eyes.

Treatment of pterygium is essentially surgical. Simple excision carries a high risk of recurrence. The recurrence rate ranging from 24-89% have been documented in different studies.[3,4] Two adjuvants most commonly used to prevent this recurrence of pterygium include the Mitomycin-c and the conjunctivalautograft.

Addition of Mitomycin-c in different concentrations at the time of surgery has been reported to be very effective in preventing the recurrence.[5] According to one study, the recurrence rate of pterygium after Mitomycin-c treatment was only 15.9%. Mitomycin-c is an alkylating agent which inhibits cellular proliferation of conjunctival fibroblasts by

blocking the synthesis of DNA and RNA within these cells.[6] However, Mitomycin-c may cause some serious complications such as bacterial infections and scleral necrosis.[7]

An alternative to Mitomycin-c is the use of conjunctival autograft.[7,8] When an autograft is applied to the area from where pterygium has been excised, the healthy stem cells within the graft restore the barrier function of the limbus, thus preventing the recurrence of pterygium. Recent studies have reported this procedure to be effective in prevention of pterygium recurrence. Recurrence rates ranging from 2-13% have been documented for conjunctivalautograft by different researchers.[8,9] Numerous Studies have been done nationally and internationally to compare the recurrence rates of Mitomycin-c and the conjunctivalautograft, but with variable results.[10-12]

In countries like Pakistan (and specially the hot and dusty areas like Bahawalpur), where most of the population is outdoor worker, the incidence of pterygium is very high and the pterygium surgery carries a high risk of recurrence.[4,13] The purpose of this study was to compare the recurrence rate of pterygium after primary excision by using either the conjunctivalautograft or the intraoperative application of Mitomycin-c, so as to assess the relative effectiveness of the two adjuvants. This study would help the eye surgeons in selecting a procedure which is easier to perform, has minimal complications and has a significantly low recurrence rate.

MATERIAL AND METHODS

It was randomized control trial. Approval for this study was taken from the local ethical committee.One hundred and sixty-five patients of primary pterygium,presenting to the outdoor patient department of Eye,Services Hospital, Lahore from August 2016 to February 2017were recruited for the study after taking a written informed consent from them. All the selected patients were randomly divided into two groups A & B.

Patients with double pterygium,recurrent pterygium,acutely inflamedpterygium on slit lamp examination and those not consenting for pterygium surgery were excluded from the study.

Preoperatively, all patients were thoroughly examined for visual acuity,extraocular movements,slitlampexamination(to document the size of the pterygium),intraocular pressure and dilated fundus examination.

All Operations were performed under topical anesthesia using 0.5% proparacaine(Alcaine,Alcon Labs,fortworth,Texas,U.S.A) eye drops.Pterygium head covering the cornea was detached and removed and the corneal surface was scraped with surgical blade No.11(Feather Labs, Japan) to make it smooth and regular.Dissection was continued till the neck and body of thepterygium were also removed.

In group A, intraoperative Mitomycin-c 0.02% was applied for 5 minutes to the bare Scleral area created after pterygium excision. The area where Mitomycin-c had been applied, was then thoroughly irrigated with 100ml of Ringer's lactate solution. The edges of the remaining conjunctiva were thensutured 2-3 mm from the limbus using 10/0 nylon suture.

In group B the area of bare sclera left after pterygium excision was measured by using calipers. A free conjunctival graft of size 2mm larger than the recipient bed was obtained from thesuperotemporallimbal conjunctiva. This free graft was transferred to the recipient bed and secured to the site with the help of interrupted 10/0 nylon suture.

Postoperatively eye was padded for 12-18 hours. Pad was removed next morning and all patients were then examined on slit lamp. Patients were prescribed steroid-antibiotic combination eye drops(Spersadexoline, Novartis Ophthlmics) 4 times daily for 4 weeks. Oral analgesics were also prescribed for three days. Patients were advised to follow up monthly for initial 6 months after the surgery.

At each visit, patients underwent detailed ocular examination including visual acuity, extraocular movements, slit lamp examination and funduscopy.

Patients were specially assessed for any signs of recurrence seen on slit lamp(recurrence was defined as a regrowth of conjunctivalfibrovascular tissue onto the cornea for an area of 2mm or beyond from the limbus).

Computer software SPSS (version 18) was used to analyze the data. Mean and SD was calculated for numerical data and frequencies was calculated for categorical data. Chi-square test was used to compare the frequency of recurrencesin two groups. A p-value <0.05 was considered statistically significant.

RESULTS

The age and sex distribution of patients is summarized in the Table-I. There were a total of 130 patients in this study who were randomized into two groups(65 patients in theMitomycin-c group and 65 in the conjunctivalautograft group). All patients completed the study with a six month of followup period. The two groups were comparable in terms of age and sex(Table-I).

There were a total of 10 recurrences in the Mitomycin-c group (15.38 %), two of these recurrences were seen at third month after the surgery, two recurrences were seen at fourth month postoperatively and six recurrences were seen at the sixth month of follow up (Table-II).

Of these, 7 patients(10.7%) were male and 3(4.6%) were females.

There were only two recurrences in conjunctivalautograftgroup(3.07%), both occurring at sixth month after the pterygium excision(Table-III). Both of these patients were males. As can be seen from theTable-IV, the difference in the recurrence rate of pterygium between the Mitomycin-c group and theconjunctivalautograft group was statistically significant(15.3% and 3.0% respectively)(p< 0.05).This shows that theconjunctivalautograft has a lower rate of recurrence as compared to the Mitomycin-c.

Table-I: Age and Sex Distribution of the patients.

Age & Sex Distribution		**MMC Group**	**CAG Group**	**MMC+CAG**
Mean age (years)		59.06 (14.67)	60.04(10.56)	59.50(12.93)
SEX	Male	42(64%)	81(62%)	39(60%)
	Female	23((36%)	49(38%)	26(40%)
Grand Total		65(100%)	65(100%)	130

Table-II: Recurrences in MMC group.

Age Range (years)	Male	Female	total
32-84	39(60%)	26(40%)	65(100%)
Recurrence	7(10.7%)	3(4.6%)	10(15.3%)

Table-III: Recurrences in CAG group.

Age Range (years)	Male	Female	Total
39-81	42(64%)	23(36%)	65(100%)
Recurrence	2(3%)	0	2(3%)

Table-IV: Recurrencesof MMC vs CAG group.

Followup (month)	MMC	CAG	MMC+CAG
1st	0	0	0
2nd	0	0	0
3rd	2	0	2
4th	2	0	2
5th	0	0	0
6th	6	2	8
Total.	10(15.3%)	2(3 %)*	12(9.2 %)

***P<0.05**, statistically significant.

DISCUSSION

Various surgical techniques have been employed to treat the pterygium.The unpredictable rates and timings of the recurrence are the main problems encountered after various treatment modalities.[7]A recurrent pterygium causes decreased visual acuity, ocular motility restriction and symblepharon formation.[6,7]Mitomycin-c and Conjunctivalautograft are two useful adjuncts in reducing the pterygium recurrence in recent times.

According to a study by Thomas et al, the mitomycin group, with an average follow-up of 12.1 months, had no recurrences.[14] The non-mitomycin group, with an average follow-up of 42.6 months, has had nine recurrences (32%); four required a second procedure. Recurrence was significantly lower in the mitomycin group (P = .006).

A study conducted recently showed that at a mean follow-up of 30 months, the respective recurrence rate with mitomycin was only 8.3% as compared to a recurrence rate of 75% in group treated with bare sclera technique.[15]

In our study,the recurrence rate after Mitomycin-c application was 15.38%. These results are comparable to the results of Young's study,which showed a recurrence rate of 15.9%after Mitomycin-c application.[8]

In 2005, Fahim et al reported a recurrence rate of 13.33% with conjunctivalautograft[9].

According to Hirst[16], the recurrences following CAG range from 0 to 40% while recurrences of 12.2% (n=42) were noted in those with primary pterygium and 31.3% (n=5) in those with recurrent pterygium in a recent study by Fernadeset al[4].

A report published by Riordan-Eva et al in a retrospective study described recurrences of 6% in 17 of 47 eyes with recurrent pterygium.[17]

A higher recurrence rate of 31.3% (five of 11 eyes) was noted in a small series of patients with recurrent pterygium by Fernandes et al in their study[4].

In a study conducted by Shimazaki et al, a combination of Conjunctival autograft for restoration of limbal barrier function, and amniotic membrane transplant for suppressing the fibrous growth, demonstrated good results andrecurrence rate of 17.3% was seen with this combined procedure.[18]

In our study the recurrence rate was found to be only 3.0% following conjunctival autograft application.This difference may be due to surgeon factors such as experience and technique, which have a profound influence on the recurrence rate after excision.[6,7,12]

Koryaniet al[1] in early 2012 carried out a study and showed that the recurrence rate was 38% in the mitomycin treated group and 15% in the conjunctival autograft group ($p < 0.05$)

CONCLUSION

Through our study we conclude that the Pterygiumexcision followed by application of either Mitomycin-c or the Conjunctivalautograft, has acceptable results. But at the same time,conjunctivalautograft has a lower recurrence as well as complication ratewhen compared to Mitomycin-c.

REFERENCES

1. Koryani G, Seregard S, Kopp ED. Cut and Paste: A no suture, small incision approach to pterygium surgery. Br J Ophthalmol 2004;89:911-14.
2. Al Fayez MF. Limbal versus conjunctivalautograft transplantation for advanced and recurrent pterygium.Ophthalmology 2002;109;1752-5[pubmed]
3. Bahar I, Weimberger D, Avisar R, Gaton DD. Fibrin glue versus Vicryl sutures for primary conjunctival closure in pterygiumsurgery: Long term results. Curr Eye Res 2007;32(5):399-405.
4. Fernendes M, Sangwan VS, Bansal AK, Gangopadhay N, Sridhar MS, Garg P, et al. Outcome of pterygiumsurgery: Analysis over 14 years. Eye2005;19(11):1182-90.

5. Ma DH, See LC, Liau SB. Amniotic membrane graft for primary pterygium; comparison with conjunctivalautograft and topical mitomycin c treatment. Br J Ophthalmol 2000;84:973-8.
6. Wong AK, Rao SK, Laung AT. Inferior limbalautograft transplantation for recurrent pterygium.Indian J Ophthalmol 2000;48:21-4.
7. Frau E, Labetoulle M, Lautier-Fraue M, Hutchinson S, Offret H. Corneoconjunctivalautograft transplantation for pterygium surgery. ActaOphthalmolScand 2004;82(1):59-63.
8. Young AL, Leung GY, Wong AK, Cheng LL, Lam DS. A randomized trial comparing 0.02% mitomycin C and limbalconjunctivalautograft after excision of primary pterygium.Br J Ophthalmol 2004;88(8):995-7.
9. Fahim MS, Sayed J, Ali M. After removal of pterygium role of mitomycin and conjunctivalautograft. Ann AbbasiShaheedHosp Karachi Med Dent Coll. 2005;10:757-61.
10. Yao F, Qiu WY, Zhang YM, Tseng SC. Mitomycinc,Amniotic membrane transplantation and limbalconjunctivalautograft for treating multirecurrentpterygia with symblepharon and motility restriction.Graefes Arch Clin Exp Ophthalmol 2006;244(2):232-6[Medline].
11. Diaz L, Villegas VM, Emanuelli A, Izquierdo NJ. Efficacy and safety of intraoperative mitomycin c as adjunct therapy for pterygiumsurgery.Cornea 2008;27(10):119-21.
12. Oguz H, Kiliticioglu A, Yasar M. Limbalconjunctival mini autografting for preventing recurrence after pterygium surgery. Eur J Ophthalmol 2006;16(2):209-13.
13. Burrato L, Philips RL, Carito J, Pterygium surgery. USA; SLACK incorporated;2000.
14. Thomas O Wood, Ellen E Williams, Danielle L Hamilton, Bryan L Williams. PTERYGIUM SURGERY WITH MITOMYCIN C AND TARSORRHAPHY. Trans Am Ophthalmol Soc. 2005 December; 103: 108–115.
15. Özdamar Y, Mutevelli S, Han U, Ileri D, Onal B, Ilhan O, Karakaya J, Zilelioglu O. A comparative study of tissue glue and vicryl suture for closing limbal-conjunctivalautografts and histologic evaluation after pterygium excision. Cornea. 2008;27(5):552–558.
16. Hirst LW. The treatment of pterygium. SurvOphthalmol 2003; 48(2):145–80.
17. Riordan-Eva P, Keilholn I, Ficker L A. Conjunctival autografting in the surgical management of ptery- gium. Eye 1993; 7:634-8.
18. Shimazaki J, Yang HY, Tsubota K. Amniotic membrane transplantation for ocular surface reconstruction in patients with chemical and thermal burns. Ophthalmology. 1997 Dec;104(12):2068-76.