International Archives of
BioMedical and Clinical Research
E-ISSN:2454-9894 P-ISSN: 2454-9886
(An Official Publication of "Ibn Sina Academy of Medieval Medicine & Sciences")
WWW.IABCR.ORG

Section Ophthalmology | Original Article

Recurrence Rate in Primary Pterygium Managed by Surgical Excision of Pterygium with Application of Mitomycin-C over Bare Sclera and Free Conjunctival Autografting

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ABSTRACT

Background: *To study recurrence rate in 50 cases of primary pterygium managed by surgical excision of pterygium along with application of mitomycin-C 0.02% over bare sclera for 2 minutes and ipsilateral free conjunctival autografting.* ***Methods****: This prospective observational study was carried out on 50 patients of primary pterygium operated between 25.05.2016—10.08.2016. Pterygium excision was done, 0.02% mitomycin-C was applied over bare sclera for 2 minutes and ipsilateral free conjunctival autografting was done using sutures. Patients were followed up for a mean period of 13.27 months for recurrence.* ***Results****: 55 eyes of 50 patients were operated by above technique by a single surgeon[1]. Three (3) patients were lost in follow up. In an average follow-up time of 13.27 months, recurrence was found in only 1 case (1.92%). No serious side effects were observed in this study.* ***Conclusions:*** *Primary Pterygium managed by excision of pterygium followed by intraoperative mitomycin-C application and conjunctival autografting is an easy, reproducible and cost effective method which helps in reducing recurrence with minimal complications.*

Key words*: Pterygium, mitomycin-C, conjunctival autografting, recurrence rate.*

Received: 02.09.17 | **Accepted**:21.09.17

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How to cite this article: Sharma D. Recurrence Rate in Primary Pterygium Managed by Surgical Excision of Pterygium with Application of Mitomycin-C over Bare Sclera and Free Conjunctival Autografting. Int Arch BioMed Clin Res. 2017;3(3):79-81.DOI:10.21276/iabcr.2017.3.3.21

Source of Support: Nil, **Conflict of Interest:** None

INTRODUCTION

Pterygium is a condition in which subconjunctival tissue proliferates as a vascularized granulation tissue to invade and destroy superficial layers of cornea as a triangular encroachment usually from nasal side. It has an apex (head), neck and body and contains abnormal, elastotic fibrous tissue. It may present as atrophic, flat & slow growing having less chances of recurrence or it may present as rapidly progressing fleshy growth with high recurrence rates after excision.

Ordinarily it is asymptomatic. Symptoms may arise due to repeated inflammation, infection and cosmetic disfigurement. It may diminish vision due to induced astigmatism and encroachment into pupillary area. It may cause diplopia, interfere with contact lens wear and very rarely it may undergo neoplastic changes. Etiology is not clearly understood. Presence of numerous fibroblasts and elastodysplasia implicate actinic damage leading to abnormal tissue formation.

Prophylactic treatment such as avoiding long exposure to sunlight, dry & dusty environment and using UV protected glasses may help. Medical therapy is usually symptomatic in the form of decongestant, NSAID & Lubricant eye drops. Surgery is the definitive treatment.

Excision of Pterygium by bare sclera technique alone has unacceptably high recurrence rates so different modalities of

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DOI: 10.21276/iabcr.2017.3.3.21	

treatment have been tried along with it. Closure Techniques have been tried using grafts (free conjunctival, Limbal-conjunctival, mucosal and amniotic membrane) with or without help of serum, glue or sutures. Antimetabolites such as Thio-tepa, Mitomycin-C & Daunorubicin and anti-VEGF drugs like bevacizumab & ranicizumab have also been tried. Keratoplasty may be used in special cases.

METHODS

The present study was conducted on 50 (fifty) patients with primary pterygium attending the eye-OPD of Ananta hospital from 25.05.2016—10.08.2016. They were managed by surgical excision of pterygium with intraoperative mitomycin-C 0.02% application for 2 minutes and free conjunctival autografting from same eye. All operations were performed by single surgeon so that surgeon's factor did not influence the outcome. Selection criteria were patients who had primary pterygium and were willing to undergo the surgery after understanding the nature of the treatment, its potential complications and prognosis.

Exclusion criteria were recurrent pterygium, associated ocular diseases and patients who did not turn-up in follow up. A written consent was taken from all the patients before the procedure. All pterygia were divided into 4 Grades as suggested by Youngson RM in 1972. Lab tests done were FBS, Hb, BT, CT, HIV, HBsAg and HCV

Surgical Technique

All patients were operated under peribulbar block. Pterygium head was shaved off the cornea trying for a minimal & smooth keratectomy and was excised midway between limbus and canthus. Freshly prepared Mitomycin 0.02% was applied over bare sclera for 2 minutes after which thorough irrigation was done using normal saline. Slightly larger sized superotemporal conjunctival flap was dissected as thin as possible without button holing. After excision, the graft was correctly oriented over bare sclera and sutured with interrupted 8-0 silk sutures. Post-operative Lubricant eye drops & Moxifloxacin eye drops QID was used. After 3 days moxifloxacin was switched over to Tobramycin-Dexamethasone eye drops QID. Patient was reviewed weekly for a month, fortnightly for 2 months and monthly thereafter for at least 6 months. Recurrence was defined as fibrovascular tissue crossing over limbus on to clear cornea in the area of previous pterygium excision.

RESULTS

Seventy patients (71) patients of pterygium attended eye OPD from 25.05.2016—10.08.2016.

As per selection criteria 50 patients (34 male and 16 female) of primary pterygia were selected and 21 were excluded. Five patients were operated for bilateral pterygia and; so, a total of 55 pterygia were operated. Three (3) patients were lost in follow-up leaving behind 52 cases of pterygia for the study. Maximum no. of patients (37.87%) was in 31-40 yrs age group.

Presenting complaints were Irritation, watering & redness in 45 (90%), discomfort & itching in 36 (72%) and cosmetic disfigurement in 5 (10%) patients.

Pterygia were graded as suggested by Youngson[1] R.M. (1972) into four Groups I—IV

And subdivided into 'a' for small sized pterygium and 'b' for large fleshy pterygium.

Most patients were in III b group 21 (40.4%) with majority falling in II and III grades 45 (86.5%)

Mean duration of disease was 8.25 years (Range 2—20 yrs). Follow up time varied from 7—15 months (Mean 13.27 months)

Pterygium was nasal in all cases and bilateral in 12 cases. In patients having bilateral pterygia 5 patients opted for surgery in both eyes and 7 patients opted for surgery in only one eye having advanced pterygium. Ocular movements were normal and IOP was within normal range (10—20 mm of Hg) in all cases. Post-op subjective complaints were mild ocular pain in 34(68%), redness & discomfort in 33(66%) and foreign body sensation, epiphora & itching in 21(42%). Treatment was conservative and symptoms resolved in coming days.

Objective signs in early Post-op were haemorrhage/hematoma beneath the graft in 8(15.4%), serous exudates beneath the graft in 8(15.4%), cut through one/two sutures in graft in 3(5.7%), encroachment of graft over cornea in 2(3.8%) and Superficial punctuate epitheliopathy of cornea in 2(3.8%). All were managed conservatively and they resolved in coming days. Superotemporal donor bed of conjunctiva healed uneventfully.

A late Post-op complication was graft retraction in 2(3.8%) cases which healed normally within 3—4 weeks. Recurrence was found in only 1(1.92%) case after 45 days of surgery in a 21-year-old patient who had bilateral fleshy pteryiga (Grade IV 'b') pre-operatively.

Anterior segment, ocular movements & IOP showed no significant changes when compared to pre-op findings.

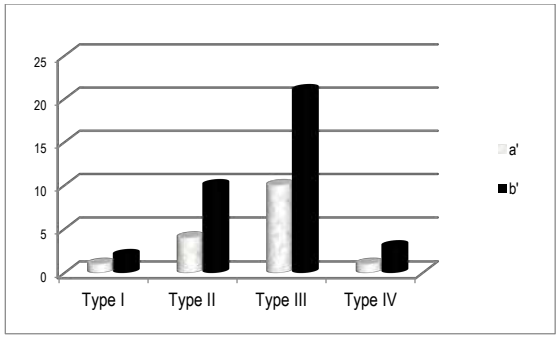

Figure 1. GRADING OF 52 PTERYGIA.

Grading of 52 Pterygia			
TYPE	PTERYGIUM-INVADING	'a'	'b'
I	<1.5 mm cornea	1	2
II	< half the radius of cornea	4	10
III	>half the radius of cornea	10	21
IV	almost center of cornea	1	3

DISCUSSION

One of the most important aim in management of pterygium is to prevent its recurrence after removal. Different modalities of treatment have been tried to prevent recurrence with varying success. We tried to combine two well documented modalities of treatment for management of pterygium.

In our study 55 primary pterygia (in 50 patients) were operated by surgical excision of pterygium, intra-operative application of 0.02% mitomycin-C over bare sclera for 2 minutes and ipsilateral free conjunctival autografting. Out of these 55 cases, 3 were lost in follow-up leaving 52 cases for the study. All the operations were performed by single surgeon[1], so that the surgeon's factor did not influence the surgical outcome in terms of complications and recurrence. Maximum number of pterygia was in II and III grades 45 (86.5%).

Duration of disease in our study varied from 2—20 yrs (mean 8.25 yrs). Follow-up time varied from 7—15 months (mean 13.27 months).

Post-operative complaints were mild and were successfully managed conservatively.

Post-operative complications were trivial and got resolved by conservative treatment.

Recurrence was found in 1 case (1.92%) in our study after 45 days of surgery in a 21 yr old person who had bilaterally large fleshy pterygia (grade IV 'b') preoperatively.

Hirst LW (1994)[2] found that 50% recurrences occur within 120 days of surgery and 97% by 12 months. Recurrence could be contributed to the fact that the disease activity is more in young age groups and the fleshiness of pterygium which is a significant risk factor in recurrence as was found by Tan et al[3] in 1999.

When only mitomycin-C was used, Recurrence rates observed was 4% by Frucht Pery[4] (1994), 25% by Levartovsky[5] (1998) and 7.9% by Cheng[6] HC (2001).

When only Conjuctival autografting was performed, Recurrence rate observed by Kenyon[7] (1985) was 5.3%, Riordan [8] Eva P (1993) was 7.64% and Ti se[9] et al (2000) was 20.8%.

Wong[10] VA & Law FC(1999) found 18% recurrence in conjunctival autograft cases and 9% recurrence in patients treated with mitomycin-C + conjunctival autograft.

Serious complications reported by Rubinfeld[11] (1992) such as corneal ulceration, scleral thinning, cataract formation, uveitis, secondary galucoma and plaque formation were not found in our study.

The combined use of these two modalities (mitomycin-C & conjunctival autografting) has not been studied extensively in the management of pterygium. We used mitomycin-C in low dose and for short duration, as recommended in previous studies, to minimize complications.

In our study combined use of these two modalities has been found to be synergistic to each other; thereby increasing the success rate and decreasing the complications.

CONCLUSION

In the present study 52 primary pterygia were managed by surgical excision of pterygium, application of 0.02% mitomycin-C over bare sclera for 2 minutes followed by ipsilateral free conjunctival autografting. In an average follow-up time of 13.27 months the recurrence was found in only 1 case (1.92%); which is much lower as compared to bare sclera technique alone or when combined with either mitomycin-C or with conjunctival autografting. Complications encountered in present study trivial in nature & were easily managed. No serious side effects were observed in this study. In the view of low recurrence rate with minimal and mild complications this cost-effective modality of pterygium management seems to be a very good choice as a first line of treatment for primary pterygium.

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