

Primary Pterygium Surgery –Comparison of limbal Conjunctival Autografting versus Intra- operative Mitomycin-C

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Abstract:

Pterygium is a fibro vascular encroachment of the conjunctival tissue on to the cornea, causing variable degree of ocular morbidity. Various surgical modalities have been developing to decrease the recurrence. The idea of study is to compare the relative efficacy of two well known procedures i.e. conjunctival autografting and intra-operative Mitomycin – C (0.02%) with reference to recurrence and complication rate.

Key Words:- Recurrent pterygium, Limbus, Limbal conjunctival autografting (LCAG).

Introduction :

Pterygium is one of the most common conjunctival disease among ophthalmic pathologies. Pterygium is a world wide condition with a “Pterygium belt” between the latitudes of 30 degree north and south of the equator. It is most prevalent in Hong Kong which is situated 22 degrees north of the equator. The risk factors for pterygium includes:- UV radiation; Hot climate; Dust and smoke; Chronic dry eye; Limbal stem cell deficiency & Genetic predisposition.

Cosmetic disfigurement and functional problem in the form of reduced visual acuity, diplopia and problems in contact lens fitting are the major indications of surgery.

Material and Methods:

A randomized prospective study was carried out on primary pterygium.

Patient with collagen vascular disorders, other autoimmune diseases, ocular surface pathology, eye infections, previous limbal surgery, recurrent pterygium & double head pterygium were excluded from the study.

Patients were selected for the study after full informed consent. One hundred eyes of 80 patients of primary pterygium were included in the study. Eyes were grouped into two equal group.

Group-I: In this group limbal conjunctival autografting (LCAG) was carried out.

Group-II: In this group Pterygium excision was carried out followed by intra-operative application of 0.02% Mitomycin-C (MMC) for five minutes.

Patients underwent detailed ocular examination including visual acuity, refraction, intraocular pressure, extra-ocular movements, biomicroscopy, documentation of size of pterygium and funduscopy. All patients were followed for every 3 months upto a year and then at the end of 18 month, to watch for recurrence & complications. Recurrence was defined as fibrovascular tissue invading the cornea by >1.5mm.

Operative Procedure:

In both the groups operations were performed under peribulbar anaesthesia. The pterygium excision consisted of the detachment of pterygium head after superficial demarcation with the help of 15 no. blade and blunt dissection of body from overlying conjunctiva. Subconjunctival tissue was excised thoroughly, bare sclera was exposed and gentle cautery was done.



Fig.I: Photograph showing advanced nasal pterygium.

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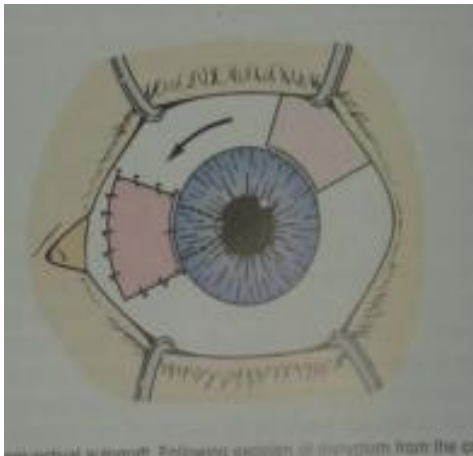


Fig. II: Photograph showing Conjunctival autograft Technique

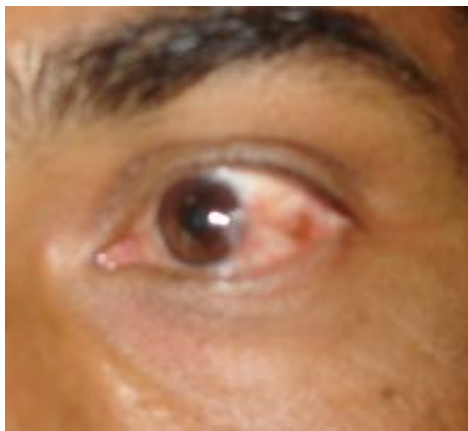


Fig. III: Photograph showing Conjunctival autograft Post operatively.

In Group I, the area of bare sclera was measured after excision of pterygium. Conjunctival graft was taken from superior temporal limbal region of size approximately 1mm larger than the recipient area. Inferior margin of the graft was dissected towards the cornea to include part of superficial limbus. Special precautions were taken to prevent any possibility of pseudopterygium formation at donor site. The graft was carefully transferred to maintain polarity of tissue and was secured with interrupted 10.0 Vicryl suture episclerally.

In Group II, after excision of Pterygium, intra-operative mitomycin - C (0.02%) was applied over bare sclera for five minutes. The site of application was then thoroughly irrigated with 150 to 200ml of balanced salt solution (BSS).

Postoperatively, antibiotic & steroid eye drops were prescribed for 4 weeks, 4 times a day in both the eyes.

Observations:

Table I: Showing demographic distribution in group I & II.

Description	Group I (LCAG)	Group II (MMC)
Age range (years)	32-85	35-84
Mean Age (years)	59	60
Sex		
Male	31	29
Female	19	21
Rural	38	40
Urban	12	10

Table II: Showing incidence of recurrence in both the groups.

Post operative period	Group I (LCAG)	Group II (MMC)
3 month	1	-
6 month	1	2
12 month	-	1
18 month	-	-
Total	02 (4%)	03 (6%)

Table III: Showing postoperative complications in both the groups.

Group I (LCAG)	Incidence	Group II (MMC)	Incidence
Graft oedema & Hyperemia	15(30%)	Oedema & hyperemia of surrounding conjunctiva	12(24%)
Graft retraction	01(02%)	Scleral thinning	01(02%)
Conjunctival cyst	02(04%)	Conjunctival cyst	00(00%)
Granuloma	01(02%)	Dallen	01(02%)

Complication & Managment:

In group I, graft oedema and hyperemia occurred in early postoperative period which recovered with frequent steroid and antibiotic eye drop instillation. Graft retraction was reported in one patient due to loose suture and was corrected by resuturing. Granuloma formation was noticed between graft host junction; it was later excised and then graft resutured.

In Group II, oedema and hyperemia of surrounding conjunctiva was noted, which subsequently disappeared within 15 days. Scleral thinning was noted in one patient. These eyes were followed up further to study possible long-term complications.



Fig. IV: Photograph showing Conjunctival autograft on 7th Post operative day.



Fig. V: Photograph showing Conjunctival autograft on 30th Post operative day.

Discussion:

Despite variety of surgical techniques for the treatment of pterygium, recurrence remains the single major and most enigmatic complication of pterygium surgery. Recurrence rate vary with the technique used. Recurrence rate in commonly performed procedure of resection with bare sclera technique varies from (24-89%). To prevent high recurrence rate of pterygium after bare sclera technique, many modification have been tried such as application of beta-rays, mucus membrane or conjunctival autograft, use of adjuvant mitomycin-C etc. These modifications have definitely reduced recurrences. The techniques of conjunctival autograft to resurface the exposed sclera have been reported with the excellent results, the inclusion of limbal epithelium in the conjunctival autograft would help to restore its barrier function.

The conjunctival autograft taken from superotemporal bulbar conjunctiva provides less

actinically exposed conjunctiva with intact basement membrane, goblet cells, and epithelium adjacent to limbus which acts as barrier and prevents migration of actinically injured bulbar conjunctiva of nasal aspect of palpebral aperture.

Table IV: Showing comparison of recurrence rate of pterygium in various study

Name of Author	Group I Limbal conjunctival autografting	Group II Intra Operative Application of 0.02 % Mitomycin-C
Akinei & Zilelioglu (2007)	3.33 %	5.79%
Frucht Pery et al (2006)	13.3 %	6.6 %
Young et al (2004)	1.9%	15.9 %
Present Study (2008)	4 %	6 %

The dissection and extent of clearance by surgeons would further contribute to variation in recurrence rate.

Mitomycin-C is an alkylating antineoplastic agent which inhibits cellular division and replication by inhibiting DNA synthesis. Intra operative MMC is preferred and current regimen of 0.02% MMC for 5 minutes has been found to be equally effective, simple, and has comparable recurrence rates. In conclusion, simple excision of pterygium followed by MMC or limbal conjunctival auto graft both yielded acceptable results (Sharma et al, 2003). Young et al (2004) in their study found recurrence rate higher in group II than group I while in the present study it was approximately equal in both the groups.

The choice of adjuvant should be carefully made by assessing individual recurrence risk factors, local practice preference and surgeon's expertise.

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