

ORIGINAL ARTICLE

PRIMARY PTERYGIUM – COMPARISON OF LIMBAL CONJUNCTIVAL AUTOGRAFTING SURGERY VERSUS INTRA OPERATIVE MITOMYCIN - C (0.02%) AFTER EXCISION OF PRIMARY PTERYGIUM

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ABSTRACT

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

Key words: Pterygium, Recurrent Pterygium, Limbus, Autografting, Mitomycin-C (MMC), Limbal conjunctival autografting (LCAG), Slit lamp biomicroscopy, Platelets derived growth factors (PDGF).

INTRODUCTION

Pterygium is one of the most common conjunctival diseases among ophthalmic pathologies. Pterygium is a worldwide condition with a "Pterygium belt" between the latitudes 30° north and south of the equator, most prevalent in Hong Kong, situated 22 degrees north of the equator¹. Ultraviolet radiation exposure is a major risk factor for its development². Susrata the great Indian surgeon recognized the problem of recurrent pterygium.

Pterygium is defined as triangular fibro vascular sub epithelial in growth of degenerative bulbar conjunctival tissue over limbus on to the cornea.

Indication for surgery:-

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.

Risk factors:-

- UV radiation
- Limbal stem cell deficiency
- Hot climate
- Dust & smoke
- Chronic dry eye

Pterygium is considered to represent a localized Limbal cell deficiency. Limbal epithelium acts as junctional barrier to conjunctival over growth. Recurrence of Pterygium is due to accelerated fibroblastic proliferation (as in keloid formation), due to release of growth factor (PDGF). Despite a variety of surgical technique recurrence remains the single and most enigmatic, complication of Pterygium surgery with various treatment advocated in the scientific literature.

Simple excision (bare sclera) is now no longer accepted as a standard surgical procedure because of higher and unpredictable recurrence and complications

To prevent high recurrence of bare sclera technique many modification of bare sclera technique have been under consideration.

- Application of beta rays
- Thiotepa application
- MMC application
- Conjunctival autografting.
- Limbal conjunctival autografting.
- Fibrin glue.

Indication for surgery:-

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REVIEW OF LITERATURE

Susrata the great Indian surgeon had recognized the problem of recurrent Pterygium. Desmarres - (1855) introduced the shifting of head of Pterygium to a new position away from cornea. Knapp- (1868) initiated splitting the head of Pterygium. Mac Reynolds- (1902) modified the technique by burying the tissue under the conjunctiva. Blaskowics - (1931) folded the head under the body. Arlt (1872) Terson - (1941) Arruga (1937) designed various rotating flaps to prevent recurrence. Belting (1926) Majoras (1930) Gomez- Malquez (1931) introduced the use of conjunctival graft from the same and opposite eye. Kunitoma & Mauri - (1963) first introduced the use of MMC in Pterygium surgery.

AIM AND OBJECTIVES

The aim of study is to compare the relative efficacy of two well known procedure i.e. conjunctival autografting and intra operative Mitomycin -C (0.02%) with recurrence to recurrence and complications.

All patients had preoperative counseling and both the procedures were explained in detail with their advantages and disadvantages.

MATERIAL AND METHODS

Randomized prospective study of 80 eyes of 80 pts of primary Pterygium (Jan 2009 to Jan 2010) was done to assess the relative effectiveness of two well known adjuvants LCAG and MMC 0.02%.

Inclusion & exclusion criteria

In the study cases of primary Pterygium were included. Patient with followings were excluded from the study.

- Recurrent Pterygium
- Previous Limbal surgery
- Ocular surface pathology
- Collagen vascular disorder
- Autoimmune diseases
- Infections

Detail ocular examination including visual acuity, refraction, IOP, extra- ocular movement, slit lamp biomicroscopy and fundoscopy was done before operative procedure. All 80 patients were randomly assigned to two groups.

Group A: Primary Pterygium excision with LCAG - 40 eyes

Group-B: Primary Pterygium excision with MMC 0.02% - 40 eyes

Operative Procedure

Group-A (LCAG)

- Detachment of Pterygium head & dissection of body from overlying conjunctiva
- Excision of sub conjunctival Pterygium tissue
- Bare sclera gently cauterized
- Graft taken from supero-temporal aspect of limbus, 1mm larger than the recipient bed
- Secured with 10.0 vicryl (episclerally)

Group-B (MMC-0.02%)

- Intraoperative (MMC 0.02%) applied over bare sclera for 5 minutes
- Site of application was thoroughly irrigated with BSS solution.

All patients were followed up for period of 18 months (3, 6, 9, 12 and 18). Any recurrences or complications were recorded (Recurrence defined as fibro vascular tissue invading the Cornea >1.5 mm).

OBSERVATION AND RESULTS

Table 1 shows demographic data of patients in group A and group B.

Recurrence was 4% and 6% in group A and Group B respectively.

Table 1: Demographic data of study participants

	Group -A (LCAG)	Group-B (MMC)
Mean age (in yrs)	60	60
Age (in yrs)	35 - 70	35 - 70
Sex		
Male	26	24
Female	14	16
Rural	33	32
Urban	07	08

Table 2: Observed recurrences in both groups

Month post operative	Group -A (LCAG)	Group-B (MMC)
3months	01	-
6months	01	02
12months	-	01
18 months	-	-
Total	02(4 %)	03(6%)

In group 1 Graft edema and hyperemia are noted which was recovered by frequent Steroid and antibiotic eye drop instillation. Graft retraction (because of loose suture) was corrected by re-suturing. Granuloma formation occurs between graft and junction was excised and resuturing. In group 2 Edema and hyperemia of surrounding conjunctiva was noted, subsequently disappeared in two weeks. Scleral thinning was noted in one patient. These eyes have been followed up further to study possible long term outcome.

Table 3: Observed complications in both groups

Group -A (LCAG)	Group-B (MMC)
Graft edema, hyperemia-(15)	Edema & hyperemia of surrounded conjunctiva - (12)
Graft retraction (01)	Scleral thinning (01)
Conjunctival cyst (02)	Conjunctival cyst (0)
Granuloma (0)	Granuloma (0)
	Dellen (01)

CONCLUSION

Simple excision of Pterygium followed by Limbal conjunctival autografting (LCAG) and Mitomycin -C (MMC) 0.02% for 5 minutes. Both yielded acceptable and comparable results & both are safe and effective adjuvant of Pterygium surgery.

LCAG appeared to be technically difficult, time consuming and required skillful dissection and placement of graft, which is main limiting factor for successful grafting.

Single intra operative MMC (0.02%) for five minutes appear to be simple and equally effective and useful adjunctive therapy without serious complication.

The choice of adjuvant should be carefully made by assessing the individual recurrence risk factors, and most importantly surgeon's expertise.

DISCUSSION

Pterygium is considered to represent localized Limbal cell deficiency. Limbal epithelial is an important cell for the continue renewal of corneal epithelial which are most important for normal corneal surface. Due to deficiency of Limbal epithelial cells, its barrier function has lost which leads to conjunctival over growth on to the cornea. Conjunctival autografting with inclusion of Limbal cells is an excellent method of decreasing Pterygium recurrence.

Recurrent Pterygium is difficult clinical condition to manage due to accelerated fibroblastic proliferation (due to release of growth factors). Inclusion of Mitomycin -C in different concentration in the management of recurrent Pterygium is found to be the excellent mode to prevent its recurrence.

In our series of cases of **group -1** (Pterygium excision with LCAG, The recurrence rate was 04% with minimal ocular complication (few suture related complication) but in **group -2** (Pterygium excision with MMC 0.02%) the recurrence rate was 06%, with irritation, lacrimation, photophobia and hyperemia and Edema of surrounding conjunctival were more in MMC group.

We compare our results with other studies which shows the following.-

1. Comparison of Limbal conjunctival auto graft and intraoperative 0.02% MMC for treatment of Primary Pterygium. Recurrence in group1 -3.3%, group-2 5.76% - Akinei A, Zilelioglu O. Viteroretinal sugery unit, Turkey, Br.J Ophthalmology 2007 Oct25.
2. Treatment of Pterygium with conjunctival limbal auto graft and MMC- a comparative

- study -recurrence in **group-I 3% and group-II recurrence 10%** - Biswas MC, Shaw C, Mandal R, Islam MN, Chakraborty M. Department of ophthalmology, NRS Medical College Kolkata. Indian J Ophthalmol 2007 March - April)
3. Conjunctival autografting combined with low-dose MMC for prevention of primary Pterygium recurrence. Frucht Pery, Raiskup E, Ilsar M, Landau D, Orucov F, Solomon A. Department of Ophthalmology Hadassah University, Hadassah. **Recurrence 6.6% in group -I & 13.3% in group-**
 4. Randomized trial comparing 0.02% Mitomycin C and Limbal conjunctival auto graft after excision of primary Pterygium **Recurrence- in group-1 (1.9%) in group-2 (15.9%)**. Young AL, Leung GY, Wong AK, Cheng LL, Lam DS. Department of Ophthalmology & Visual Sciences, The Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, NT, Hong Kong..
 5. Conjunctival-Limbal auto graft, amniotic membrane transplantation, and intraoperative Mitomycin C for primary Pterygium. **Keklikci U, Celik Y, Cakmak SS, Unlu MK, Bilek B.** Department of Ophthalmology, Faculty of Medicine, Dicle University, Diyarbakir, TR-21280, Turkey.
 6. Comparison of three methods for the treatment of pterygium: amniotic membrane graft, conjunctival auto graft and conjunctival auto graft plus Mitomycin C **recurrence in - Group -I (4%) to (16%) Group -II (25%), Group-III (0%)** Katircioglu YA, Altiparmak UE, Duman S. Department of Ophthalmology, S.B. Ankara Research & Training Hospital, Ophthalmology Clinics, Ankara. Turkey.
 7. A randomized trail comparing 0.02% Mitomycin C and Limbal conjunctival auto graft after excision of primary pterygium. **Recurrence in group-I (15.9%) & group-II (1.9%)** Young AL, Leung GY, Wong AK, Cheng LL, Lam DS. Department of Ophthalmology & Visual Sciences, The Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, NT, Hong Kong.
- Our results were comparable to study of Akinei A, Zilelioglu O. Vitreoretinal surgery unit, Turkey, Br.J Ophthalmology 2007 Oct25., Comparison of limbal conjunctival auto graft and intraoperative 0.02% MMC for treatment of Primary Pterygium. Recurrence in group-1-- 3.3%, group-2-- 5.76% & study of Biswas

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