ORIGINAL ARTICLE

Comparison of Limbal Conjunctival Autograft with Conventional Bare Sclera Technique in the Prevention of Recurrence of Pterygium

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ABSTRACT

Aim: To determine the efficacy of limbal conjunctival autograft as compared to conventional bare sclera technique in the prevention of recurrence of pterygium.

Material and methods: The study was carried out at Ch. Rehmat Ali Memorial Trust Hospital Lahore from Aug 2008 to May 2011. All the patients with pterygia were randomly divided into two groups with fifteen patients in each group. One group was operated by conventional bare sclera technique while the other group received limbal conjunctival autograft following excision of pterygia.

Results: Thirty patients were included in the study which were divided into two groups. Of these patients, 21 were males while 9 were females. The age range was 30–75 years with a mean age of 55.4±6.2 years. Patients were followed up for eight months post operatively. Out of the fifteen patients who underwent conventional bare sclera technique, six patients had recurrence of pterygium (40%) while in patients receiving limbal conjunctival autograft only one case reported with recurrence (6%). The recurrent cases were successfully managed by repeating limbal conjunctival autograft.

Conclusion: Limbal stem cell transplantation is the better of the choices in preventing recurrence of pterygium as compared to other treatment modalities and thus can be safely recommended for pterygium surgery.

Key words: Pterygium, limbal conjunctival autograft

INTRODUCTION

Pterygium is a fibro vascular overgrowth of degenerative bulbar conjunctiva, growing over the limbus onto the adjacent cornea[1]. It extends from the medial canthus of the eye to the border of the cornea or beyond, with the apex pointing towards the pupil[2]. It is a worldwide disease that causes chronic irritation and discomfort, restricted ocular motility, decreased vision secondary to growth over the papillary area or induced astigmatism and disruption of the precorneal tear film[3].

Ultraviolet radiation is a major environmental risk factor for the development of pterygium, especially UVB (290–320nm) exposure[4]. It leads to limbal stem cell P53 mutation which results in decreased apoptosis and increased TGF–B, subsequently leading to increased growth of pterygium onto the cornea.

The treatment of pterygium is surgical which involves its excision but the main complication that surgeons have to deal with is its recurrence. Studies show that simple excision results in 30 – 70% of recurrence[5,6]. To deal with this high rate of recurrence, surgeons are devising many different techniques like beta irradiation, use of mitomycin C[6,7], amniotic membrane graft but all these techniques have their own potential side effects which limit their efficacy[8].

Since the pathogenesis of pterygium reveals that ultraviolet radiation damages limbal stem cells thus destroying the barrier which in turn results in growth of pterygium over the limbus onto the cornea therefore by replacing damaged stem cells with the healthy ones we can stop the growth and subsequently the recurrence of pterygium. The idea of limbal stem cell transplant in pterygium surgery was first introduced by Vastine et al. and Kenyon et al[9]. Pterygium excision followed by conjunctival auto graft is associated with recurrence rate of 5.3 to 39%[9].

In our study we wished to compare the rates of recurrence after pterygium excision with a stem cell graft as compared to conventional bare sclera technique thus establishing the role of stem cell graft in the prevention of recurrence of pterygium.

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MATERIAL AND METHODS

This was a prospective randomized comparative study conducted at Ch. Rehmat Ali Memorial Trust Hospital, Lahore from Aug2008 to May 2011 with a follow up period of 8 months after surgery. All patients having pterygium were included by purposive non probability sampling. A total of 30 patients were selected and operated for pterygium. Age and gender of the patients were recorded. Informed consent was taken. Patients were randomly divided into two groups. Group 1 included 15 patients who underwent pterygium excision with conventional bare sclera technique while group 2 comprised of patients who underwent pterygium excision with stem cell graft. Limbal stem cell grafting was done under local anesthesia with 2% xylocaine with 1:100 000 adrenaline mixture injected into the pterygium separating it from the overlying conjunctiva. Pterygium was completely resected from the cornea with the help of No. 15 surgical blade. The pterygium was separated from underlying sclera with the help of blunt dissection and resected upto medial rectus. After complete resection of the pterygium a limbal conjunctival autograft measuring about 2mm wide and about 0.5mm extra long from each end was taken from the suprotemporal portion of the same eye. Tenon's fascia was carefully dissected from the graft. The graft was then stitched on to the recipient bed with 10 / 0 nylon and care was taken to keep the limbal side of the graft towards the limbus of the recipient bed. The eye was padded after instillation of antibiotic drops. The dressing was removed after 3 days and topical antibiotic and steroids were administered for at least 4 weeks. Patients were evaluated postoperatively on 3^{rd}, 7^{th}, 14^{th}, 30^{th} days and then after 3 months, 6 months and finally at 8 months postoperatively. Recurrence was defined as post operative growth of fibro vascular tissue onto the cornea. SPSS 14 was used to analyze the data. Frequencies and percentages were used to describe the data. Means, median and standard deviation for ages were calculated. Fischer's test was used to compare the two groups. The level of significance was set at $p<0.05$.

RESULTS

A total of 30 patients were included in the study which was divided into two groups with each group comprising of 15 patients. Out of 30 patients, 21 were male while 9 were females with age range of 30–75 years, the mean age being 55.4$\pm$6.2 years.

In group 1, out of 15 patients, 6 patients (40%) suffered from recurrence while in group 2, out of 15 patients only 1 patient (6%) developed recurrence. Three patients showed graft oedema which resolved spontaneously in a couple of days. In one patient a hematoma under the graft was observed while rest of the patients showed good recovery. In all cases donor area healed without scar formation. None of the patients complained of pain postoperatively but 12 patients complained of foreign body sensation which resolved after removal of the sutures.

Recurrence (%)	Duration	No recurrence(%)
Group 1		
6(40%)	8 months	9(60%)
Group 2		
1(6%)	8 months	14(94%)

DISCUSSION

Pterygium is a degenerative disease affecting mostly the people living in the tropical and subtropical countries[1], the main culprit being the UV radiations. It mostly occurs on the nasal side as the eyeballs are placed laterally in the sockets thus exposing the medial limbus to the potential effects of UV radiations. It has a high recurrence rate and to deal with such high recurrence rates surgeons are proposing various different treatment modalities. The idea of using amniotic membrane graft[10] in the prevention of recurrence is advocated by many surgeons but in countries like Pakistan, its retrieval and then its preservation is a great menace. Also the post operative results are not much encouraging. Some surgeons advocate the use of mitomycin C drops postoperatively[11] but the constitution of drops is not an easy task and if dilution is not according to the prescribed dosage its toxicity may lead to scleral necrosis and perforation. So in our opinion limbal stem cell grafting is a safe and effective means of dealing with the recurrence as the success rate is much higher and also there are minimal complications. No major complications were noted by Mohamed Soliman Mahdy & J Bhatia in their study of 42 patients[12]. Our study compares favorably well with that conducted by Petra Kralj with a recurrence in 2 out of 18 patients with recurrent pterygium[1]. This technique is easy to master and is not much time consuming.

CONCLUSION

The main complication following conventional pterygium excision has been its recurrence. Surgeons have devised many ways aiming at prevention of recurrence of pterygia but the technique of limbal conjunctival autograft have been proved to be the most efficient in this regard as in

our study only 1 case reported with recurrence. So based on our study we can safely conclude that conjunctival limbal autograft is an efficient mean of preventing the recurrence of pterygium.

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