

To Compare the Recurrence Rate of Pterygium Excision with Bare-sclera, Free Conjunctival Auto Graft and Amniotic Membrane Grafts

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Purpose: To compare the recurrence rate in pterygium excision with bare sclera, conjunctival auto graft & amniotic membrane grafts.

Material and Methods: Patients presenting to the outpatients clinic of ophthalmology department in Khyber teaching hospital with pterygium were included in this study. Total 118 patients were included in this study. These patients were divided into three groups, group-A with bare sclera technique, group-B conjunctival auto graft & group-C amniotic membrane graft.

Cases were randomly selected on the basis of inclusion and exclusion criteria and details were recorded on a pre-developed proforma.

All patients were operated under sub conjunctival anesthesia, injection xylocaine with adrenaline 0.25 cc was given into the head of pterygium and 0.5 cc of the same injection was administered at the donor site.

In bare sclera (group-A) the pterygia were excised, the abnormal tissues were cleared from the sclera & the remaining area including the healthy conjunctiva was left as such.

In conjunctival auto graft (group-B), the bare area first measured with caliper. Then the auto graft of the same size was fashioned from the superio-temporal region of the bulbar conjunctiva and sutured with 10/0 nylon to the surrounding conjunctiva.

In-group C, after excising the pterygium, the bare area and the conjunctival defects were covered with stitch amniotic membrane grafts using 10/0 nylon suture.

At the conclusion, antibiotic drops and ointment were instilled in the eye and the eye was patched for 24 hours. Each patient was followed for a period of six months.

The primary outcome was to measure pterygium recurrence. The recurrence is defined as the 2mm or more re-growth of the fibro vascular tissue over the cornea.

Results: Total 118 patients were included in this study. Out of the 118 cases, 74 (63%) were male & 44 (37%) were female.

30 patients were operated with bare sclera technique, 34 were with conjunctival auto graft & in 54 eyes amniotic membrane was grafted.

11 i.e. 36.6% recurrence was noted in-group A, in-group B, 3 (8.8%) cases developed recurrence & four (7.40%) developed corneal recurrence in-group C.

The ages of the patients ranged from 15-60 years.

Conclusion: It was concluded that free conjunctival auto graft & amniotic membrane graft, are better and safe techniques, for prevention of recurrence after pterygium surgery as compared to bare sclera method.

Absorbing excessive stem and progenitor cells may be one of the mechanisms of reducing the recurrence rate using amniotic membrane.

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Pterygium appears as a fleshy vascular mass that occurs in the inter palpebral fissure. The typical pterygium is triangular in shape and is made up of a cap, head and body. It is more frequently located nasally rather than temporally¹. The cause of pterygium is not known but those who work outside in the sun and wind are more prone to develop pterygium probably from conjunctival irritation² and is more common in tropical & subtropical region with a reported prevalence of 2 to 7 % worldwide³. It is more frequent in areas with more ultraviolet radiation,⁴ especially UVR-A and UVR-B (290-400nm) is considered the most dangerous^{5,6}.

The mainstay of treatment is surgical. Various surgical procedures are used to treat pterygium. Total excision of the lesion was practiced in the ancient times, which still constitutes one of the methods of treatment. The excision of a pterygium with bare sclera was widely practiced because it was believed to be safe and simple. However, with time it becomes apparent that the recurrence rate was unacceptably high ranging from 24% to 89%⁸. The recurrence rate is significant and recurrent pterygia are often worse than primary ones⁹. A recurrent pterygium can be associated with decreased visual acuity due to involvement of visual axis and/or irregular astigmatism, extra ocular motility restriction and symblepharon (scarring and adhesions between palpebral and bulbar conjunctiva) formation¹⁰.

Kenyon et al, first described a conjunctival auto graft in 1985. They reported a recurrence rate of 5.3% and infrequent and relatively minor complications. The primary disadvantage of this procedure is the prolonged operative time as compared to the bare sclera technique¹¹.

The first use of amniotic membrane transplantation (AMT) in ophthalmology was by De Roth in 1940 who reported partial success in the treatment of conjunctival epithelial defects after symblepharon¹². As a natural basement membrane, amniotic membrane contains various matrix proteins which facilitate the

adhesion, migration and differentiation of epithelial cells and prevent their apoptosis. Promotion of conjunctival epithelial wound healing, suppression of fibroblasts and reduced extracellular matrix production are thought to be the major mechanisms by which amniotic membrane transplantation inhibits recurrence of pterygia¹³.

Many other methods were implemented with the aim of improving the success rate, among them transplantation of the head of the pterygium, conjunctival flaps, lamellar keratoplasty, mucous membrane grafts, chemotherapy by Thiotepa, radiation therapy by radon bulbs, radium plaques, beta irradiation ablation with erbium YAG laser¹⁴ and smoothening the corneal surface with excimer laser¹⁵ and antimetabolite such as 5-fluorouracil, Mitomycin c¹⁶ has been tried. Several of them succeeded in lowering the recurrence rates but did so at the price of sight-threatening complications from the tissue damage associated with the treatment¹⁷.

In general the results of surgery, whatsoever method is applied are best in old patients with thin atrophic and stationary pterygia. Recurrences are quite common in young patients and in patients with active inflamed and rapidly growing pterygia, even with surgery and adjunctive treatment.

MATERIAL AND METHODS

A total of 118 patients were operated for pterygium with bare sclera, conjunctival auto graft and amniotic membrane graft, in the department of ophthalmology Khyber Teaching Hospital, Peshawar. The total duration of study was from Aug. 2006 to July 2007. Diagnosis of pterygia was made by clinical examination. After informed consent, cases were included in the study and were divided randomly into 3 the groups.

Patients between age between 15 and 60 years were included in the study. Other inclusion criteria were pterygium on nasal side of 3mm or more in size.

Pterygia that interfered with vision occluding visual axis or inducing astigmatism, when it is cosmetically disfiguring) and exclusion criteria (glaucoma, ocular surface abnormalities, lid abnormalities, ocular or adnexal infections, age below 15 years and above 60 years).

History was taken on a pre developed proforma in which special enquiry was made about the chief complaints, occupation, duration of growth, and any previous medical or surgical treatment. Complete ocular and systemic examination was performed. The state of the growth was asked whether it was stationary, slow growing or rapidly growing. All the procedures performed by same surgeon with six months followed up of the cases. All the operations were performed under microscope using topical and local subconjunctival anesthesia. No significant intraoperative complications were noted. All patients were followed up post operatively at one month, three month's and six month's intervals.

RESULTS

One hundred and eighteen cases were included in the study, 74 (63 %) were male and 44 (37 %) were female (Table-1). Age ranged between 15 to 60 years.

They were divided into three groups. In group-A, the patients with bare sclera were included. In this group 30 cases were operated, out of which recurrence was noted in 11 (36.6%) patients.

In group-B, patients with conjunctival auto graft were included. In this group thirty four cases were operated and 8.8% recurrence rate was noted in this group.

In group-C, 54 eyes with amniotic membrane graft were included, and recurrence occurred only in four (7.4%) cases.

The complications noted in bare sclera technique included scleral necrosis in 2 patients (6.6%), conjunctival cyst in 3 cases (10%), sub-tenon granuloma in 4 cases (13.3) and Symplepharon in 2 cases (6.6%). Complication after free conjunctival auto graft were graft edema in 2 cases (6.6%), graft retraction in 3 patients (10%) and sub-tenon granuloma, in 4 cases (13.3%).

There was no major case of scleral perforation, scleral melt or endophthalmitis in patients with amniotic membrane graft. Three patients had graft retraction before 15 days, one patient developed graft retraction on 2nd day for which re-grafting was done.

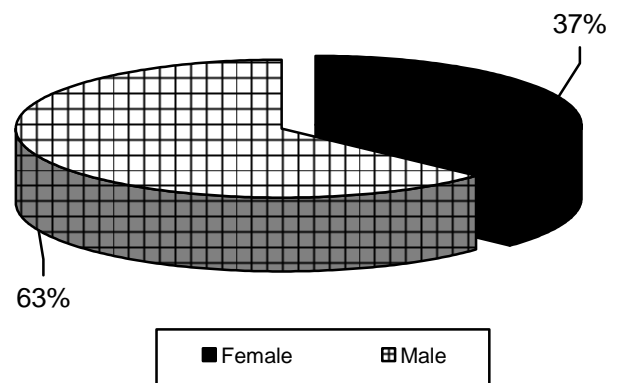
One patient developed conjunctival cyst, for which he was operated on again.

Table I. Total no of recurrences (n=54)

Gender	No. of patients n(%)
Male	74 (63)
Female	44 (37)
Total	118

Table 2: Groups wise patients

Groups	No. of Patients	Recurrence rate n (%)
Group-A	30	11 (36.6)
Group-B	34	03 (8.80)
Group-C	54	02 (7.40)



Graph-1 : Distribution of patients by gender

DISCUSSION

Pterygium is a protective mechanism¹⁸. It grows on to the cornea because of a chronic dellen initiated by tear film inadequacy.

Pterygium excision is often considered a trivial procedure, but without any adjunctive therapy, the recurrence rate after surgery may be as high as 69% especially in hot, dry and sunny atmospher¹⁹. While the definitive management of a pterygium is surgical, the ideal adjunctive procedure is still to be determined. Suture less applications with fibrin glue have been aimed at making the procedure easier and more comfortable for the patient.

We did this comparative study and the conclusion was that simple excision of pterygium was associated with very high recurrence as compared to that of conjunctival auto graft or amniotic membrane graft.

In similar study Prabhasawat²⁰ first compared amniotic membrane graft (n=54) to a retrospective study using conjunctival auto graft (n=122) in both primary and recurrent pterygium. They noted that the recurrence rate is 10.9% using amniotic membrane graft, which is still higher than 2.6% of conjunctival graft. Nevertheless, both results of amniotic membrane grafts and conjunctival auto grafts are significantly better than the primary closer (n=20), which resulted in 45% high recurrence rate for primary pterygium which is comparable to our study. Subsequently, Solomon²¹ reported that by incorporating a larger removal of subconjunctival fibrosis tissue and injection of long acting steroids, amniotic membrane grafts achieved a lower recurrence rate of 3.0%, compatible with 2.6% of conjunctival auto grafts published by Prabhasawat.

Similarly Lateefur-rehman et al²² during follow up period, showed that recurrence of pterygia was high 41.33% in the patients with Bare sclera method as compared to recurrence 33.33% while using 5-Fluorouracil antimetabolite. Mohammad Saleem et al²³ also show high results of recurrence 30% in pterygium with simple excision, as compared to that with Mitomycin C drop. Ashok Kumar Narsani et al²⁴ showed that there was 7.69% recurrences in Conjunctival Auto Graft as compared to 16.13% recurrences with Mitomycin C i.e. the graft yielded better results, In another study conducted in Iran, Asadollah Katbaab, MD; et al²⁵ claims only 2% recurrence after pterygium excision with amniotic membrane graft.

In a study by Fallah et al,²⁶ conjunctival limbal auto graft with AMT appeared to be more effective than intraoperative MMC with AMT for treatment of recurrent pterygia.

In our study the most common recurrence was noted in young patients, old patients had a lower recurrence rate. No association was found between pterygium recurrence and pterygium size, and patient sex.

In conclusion we found that adjunctive therapy reduced the rate of recurrence compared to bare sclera technique.

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Gonioscopy

As therapy for each type of glaucoma must be specific in order to be effective the site and cause of impeded flow of aqueous humour must be determined hence it is essential to perform gonioscopy in every examination for glaucoma. It is a mistaken assumption that on slit lamp examination if the anterior chamber is not shallow the glaucoma must be open-angle type

Prof. M Lateef Chaudhry
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