

Pterygium Excision Bare Sclera Technique Vs Autologous Conjunctival Autograft-A Prospective Study

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Abstract: Pterygium is defined as fibro vascular subepithelial in growth of degenerative bulbar conjunctival tissue over limbus onto cornea. Pterygium is now believed to be an limbal stem cell disorder and management is oriented to restore defective stem cells with healthy stem cells. This is a prospective randomized control study of 50 patients undergoing pterygium excision for primary pterygium attending and to evaluate the efficacy, safety and recurrence rates of conjunctival autograft and bare sclera techniques in treatment of pterygium. The pterygium surgery with conjunctival auto grafting has lower recurrence rates compared to bare sclera technique.

Keywords: pterygium, limbal stem cell deficiency, conjunctival auto grafting, bare sclera technique

I. Introduction

Pterygium is defined as fibro vascular subepithelial in growth of degenerative bulbar conjunctival tissue over limbus onto cornea. Several methods of surgical treatment for pterygium with or without adjunct therapy have been described which include bare sclera excision with or without mitomycin therapy or beta irradiation. Pterygium is now believed to be an limbal stem cell disorder and management is oriented to restore defective stem cells with healthy stem cells. Pterygium having a tropical predominance and linked etiologically to sun light , UV irradiation and hot and dusty climate may behave more aggressively in tropics due continuous exposure to environmental risk factors.¹

II. Aim

To evaluate the efficacy, safety and recurrence rates of conjunctival autograft and bare sclera techniques in treatment of pterygium

III. Materials And Methods

This is a prospective randomized control study. 50 patients undergoing pterygium excision for primary pterygium attending the outpatient department of ophthalmology.

Inclusion criteria:

- 1) Clinically significant symptoms related to presence of pterygium
- 2) Visual morbidity related to pterygium
- 3) Progressive pterygium
- 4) Corneal encroachment of 2mm or more

Exclusion criteria:

- 1) One eyed patients
- 2) Patients with previous history of pterygium recurrence in other eye
- 3) Active surface ocular surface disease
- 4) Recurrent pterygium

Surgical technique:

Out of 50 patients 25 patients were subjected to bare sclera excision technique and 25 patients to surgical excision with conjunctival autograft technique randomly.

All surgeries were performed using an operating microscope under peribulbar anesthesia. Bare sclera technique was done by subconjunctival infusion of balanced salt solution and removing head of pterygium by avulsion technique. The body of pterygium is separated from conjunctiva and underlying tissue by blunt dissection with wescott scissors .all involved conjunctiva, underlying tenons capsule and scar tissue was removed down to bare sclera. Care was taken not to damage underlying rectus muscle. After excision we have left the conjunctival edge after applying minimal cautery without suturing to sclera.

A standard surgical technique essentially that described by Kenyon et al was followed in all patients undergoing conjunctival transplantation with few modifications like limbus to limbus orientation was maintained and donor site was left to re-epithelise on its own.

Post operative regimen/follow up:

All cases received identical post operative regimen irrespective of type of surgery.

- 1) Tab diclofenac 50mg twice daily for 3 days
- 2) Ciprofloxacin with dexamethasone eye drops 6 times a day for the first week and then tapered Gradually over a period of 6 weeks
- 3) 1% atropine eye ointment twice daily for 3days

Post operative visits were as follows:

- 1st post operative day
- 1week post op
- 1 month post op
- 3 months post op
- 6 months post op

Postoperative evaluation of recurrent pterygium:

Recurrence is defined as presence of fibro vascular encroachment extending beyond the surgical limbus. Horizontal and vertical dimensions of corneal encroachment and morphology were recorded and correlated with original pterygium size and morphology. Time of recurrence was noted and symptoms related to recurrence was recorded.

Complications:

All intra operative and postoperative complications were monitored throughout the study.

Complications those are likely to occur are²:

1. Conjunctival graft oedema
2. Conjunctival graft hemorrhage
3. Conjunctival graft necrosis
4. Conjunctival donor site granuloma
5. Epithelial inclusion cyst
6. Corneal astigmatism
7. Corneal thinning
8. Corneal infection
9. Corneal perforation
10. Scleral perforation
11. Scleritis
12. Extra ocular muscle damage
13. endophthalmitis

Evaluation of results

Results were evaluated with particular attention to the following:

1. Recurrence rates
2. Efficacy of conjunctival autologous graft technique and bare sclera excision technique in reducing rate of recurrence of pterygium
3. Evaluation of complications after conjunctival autologous graft technique
4. Evaluation of age and pterygium morphology as possible risk factors related to pterygium recurrence

Data management and statistical methods:

The two procedures, bare sclera technique and conjunctival autograft transplantation were evaluated regarding the techniques and results individually. Values of variables were expressed as mean with standard deviation in reoccurrence rate and satisfactory post operative cosmesis were expressed as percentages. The significance of any difference in the rates of reoccurrence were assessed by z value hypothesis testing for differences between portion, with a p value<0.05 being considered as significant

IV. Observations And Results

Out of 50 patients who underwent surgical treatment for pterygium,25 patients underwent bare sclera excision(group1) and 25 patients underwent conjunctival autograft transplantation(group2) Out of 50 patients 39

were females(78%),11 were male patients(22%).the age group ranging from 20 yrs to 65yrs.yhe mean age was 42yrs.

Postoperative follow up was done from 1st week after surgery, one month, three months, six months. Out of 50 patients 1 patient is student and 4 patients were employees.20 patients belong to urban area and remaining 30 patients belong to rural area. The pterygia was present in 24 eyes on left side (48%),and in 26 eyes on right side(52%).all pterygia are on nasal side. Unilateral pterygium was present in 30 patients (60%), bilateral pterygium was present in 20 patients (out of which one side pterygium was operated first). 42 patients are with type 2 pterygium-(84%)(encroaching upto 4mm over cornea) and 8patients are with type 3 pterygia-(16%)-(encroaching upto papillary margin). All patients complained of growth in conjunctiva and 8 patients complained of decreased visual acuity due to induced astigmatism.10 patients also complained of watering and irritation. The conjunctival autograft was obtained from super temporal quadrant in all eyes.

The average corneal width of pterygium was 3mm and limbal height was 4mm for group 1 while the average corneal width was 2.5mm and average limbal height was 3mm in patients of group 2. The smallest graft used measured 3x4 mm and largest measured 5x5 mm. Average time taken for bare sclera technique was 10 minutes and average time for conjunctival autograft was 20-25 min. No significant intraoperative complications were noted in any patient. Out of 25 patients (group 1) postoperative hematoma formation was seen in 2 patients (8%) within 10 days postoperatively. Granuloma was observed in patient (4%) within one month after surgery.

Out of 25 patients (group 2) graft edema was observed in 10 patients.1 patient lost graft tissue due to loss of sutures and graft edema. There was no restriction of ocular motility. The minimal foreign body sensation disappeared by 10th post operative day.

None of eyes in (group 2) developed scarring or loss of mobility of conjunctiva or corneal vascularisation at donor site. No sight threatening complications were encountered. Recurrence was noted in 6 patient(24%) in group 1 and 2 patients(8%) in group 2.they were asymptomatic and detected on routine follow up around 5th post operative month in group 2.early recurrence was seen in group 1(2nd month).at the time of detection, the growth was 1mm over the cornea with a corneal width of 2mm and limbal height of 1mm.in group 1 the average rate of detection was 2 months and average growth across cornea was 2mm at the time of detection, the corneal being 3mm and the limbal height being 2mm.1 patient in group 2 developed dellen which responded to topical tears substitutes and pressure patching.

V. Discussion

Pterygium is a common clinical condition seen in coastal area, A.P. in which prospective study to evaluate the 2 well recognized procedures namely bare sclera excision and conjunctival autograft transplantation was conducted. India comes under the pterygium belt described by Cameron who had said that nearer to equator, the greater the prevalence. OU area falls within 37 degrees latitude from equator which could explain the high incidence compared to even northern parts of country. Prevalence rates of pterygia vary depending upon population from 0.7% to 31%³.

Our study included 50 patients, 25 of whom underwent conjunctival autograft transplantation and 25 bare sclera excision. The number of females were found to be more,39 females and 11 males. Some studies report equal incidence in males and females. Daola general hospital reported 54.8% in males and 45.2% females. The difference in prevalence rates in our study was attributed to difference in exposure to environmental factors. The mean age of study population was 42 years with a range of 20-65 years. While the elderly have highest prevalence rates, the younger have the highest incidence rates. reasons cited in literature for a higher incidence rate in younger age group was a lack of self reporting in elderly and regression on pterygium with senescence.⁴

All our patients were from north coastal district of A.P. prevalence rates have been known to vary with race and may be even hereditary. The genetic form may be inherit as autosomal dominant. The most common presentation in our group was burning of eyes and ocular discomfort which has been classified under ocular irritation⁵.schrimers test and tear film break up time have been reduced in pterygium patients compared to normal subjects.17.5% patients presented with reduced visual acuity due to astigmatism and concomitant lens opacities. Studies show that induced astigmatism in pterygium was due to pooling of tears at apex of pterygium and mechanical flattening of cornea

Pterygium was present in nasal side in all 50 eyes. Pterygium was present in 24 in left eyes (48%) and 26 in right eyes (52%). This is due to temporal surface of the eye is normally shaded from light by longer lashes and curvature of temporal. Age has also been shown to be a significant risk factor may be because fleshy pterygium was more common in young age group⁶.

Recurrence of pterygium which is defined as secondary encroachment of cornea by pterygium is defined as secondary encroachment of cornea by pterygium⁷ after primary surgical excision was noted in 2 out of 25 patients in auto grafting group and 6 out of 25 in bare sclera technique. Bare sclera technique was found to have high recurrence rates. The difference was statically significant at p<0.05 level of significance. The single

most important factor for recurrence has been said to be surgical technique. The inclusion of limbal tissue is said to be of utmost importance in preventing recurrence. In our study we have attempted to maintain limbus to limbus orientation in all cases of autograft transplantation. Recurrence rates for autograft transplantation were 8% and 24% for bare sclera technique.

VI. Conclusion

A prospective randomized study conducted in our hospital included 50 patients who were randomly assigned to bare sclera technique and autologous conjunctival graft technique. The pterygium surgery with conjunctival auto grafting has lower recurrence rates compared to bare sclera technique⁸.

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