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Original Research Article
**A comparative study of Pterygium excision
using autologous blood versus sutures; A
study from remote eastern Bihar, India.**

*Manuscript title: A comparative study of Pterygium excision using
autologous blood versus sutures; A study from remote
eastern Bihar, India*

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19 **ABSTRACT**
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Aims: The study was undertaken to assess the surgical modalities for treatment of Pterygium in rural population.

Study design: Prospective study

Place and Duration of Study: Study was conducted in the Department of Ophthalmology for a period of July to December 2013.

Methodology: All the grade 1 and 2 patients between age group 25-50years without any history of diabetes and /or oral anticoagulant agent intake were included in this study while others were excluded. The patients were randomly divided into two groups for pterygium excision with autograft using either autologous blood or sutures. Post operatively, these patients were then observed for presence of pain, irritation and graft failure on day 1, day 7 and 1month.

Results: The surgical rate of success was better for sutures compared with autologous blood in rural eastern population.

Conclusion: Autologous conjunctival graft with sutures was found to have better outcome in terms of surgical success when compared with a new approach of autologous blood especially in the areas with patients of poor compliance.

Keywords: pterygium, autologous blood, sutures

1. INTRODUCTION

A pterygium is a degenerative condition of the sub-conjunctival tissue which proliferates as vascularized granulation tissue to invade the cornea destroying the superficial layers of stroma and Bowman's membrane, the whole being covered by conjunctival membrane. It varies from small, atrophic quiescent asymptomatic lesions to large, aggressive, rapidly growing fibro-vascular lesions that cause impairment of vision by covering the pupillary area of the cornea and also by altering the curvature of the cornea due to fibrosis, causing astigmatism. It may also invade the cornea leading to corneal opacity. [1, 2] For treatment of this condition various treatment modalities are available but surgery still remains gold standard. During the past decade, debate over the best approach to pterygium surgery was centered on sutures and fibrin glue to affix the conjunctival graft but recent introduction of patient's own blood (autologous blood) for fixation of conjunctival flap has proven to be better over the previous two approaches. Although, none of the approaches have been tested in the rural settings.

In this study, we are comparing two patient groups who had pterygium excision with autograft using either sutures or autologous blood in rural eastern India where majority of the population are outdoor workers like farmers, labourers etc and have a predilection for developing pterygium.

2. MATERIAL AND METHODS

The present study was conducted at the Department of Ophthalmology. A total number of 50 cases with pterygium classified as grade 1 or 2 were selected from out-patient department (OPD) for surgical intervention during the period of 6 months from July to December 2013. The following points were tabulated as under name, age, sex, address, occupation, history, general examination, local examination. Informed consent was taken from the patient before performing the surgery. The patients were randomly divided into two groups for pterygium excision with autograft using either autologous blood or sutures. Post operatively, the eye was patched overnight, and it was treated subsequently with topical antibiotics and anti-inflammatory drops and/or ointments. These patients were then observed for presence of pain, irritation and graft failure on day 1, day 7 and 1month. Surgical success was taken as presence of graft in place, no recurrence of pterygium and no signs of inflammation at the end of 1 month. Statistical analysis of the data was performed using chi-square test.

2.1 Inclusion criteria- All the grade 1 and 2 patients between age group 25-50 years without any history of diabetes and /or oral anticoagulant agent intake were included in this study. [The grading of pterygium is given in table-1]

2.2 Exclusion criteria- All patients more than 50 or less than 25 years or with grade 3 pterygium between age group 25-50 years, any history of diabetes and /or oral anticoagulant agent intake were excluded from this study.

Table -1 shows grading of pterygium

Grade	Description
1	Extends less than 2 mm onto the cornea.
2	Involves upto 4 mm of the cornea and may be primary or recurrent following surgery
3	Encroaches onto more than 4 mm of the cornea and involves the visual axis.

3. RESULTS AND DISCUSSION

3.1 Results

Males (88%) and females (12%) were randomly distributed in the study for pterygium excision via autologous blood and sutures. (Table-1)

Table -2: showing the distribution of males and females into two groups

	Group 1(sutures)		Group 2 (autologous blood)	
	Total -25		Total -25	
	Males	Females	Males	Females
Number	21	4	23	2
Percentage	84 %	16 %	86%	8%

All the patients belonged to lower socio-economic group and were outdoor workers. Majority of the pterygium examined were nasal in both the study groups. Grade 1 was observed in 19(38%) whereas grade 2 was seen in 31(62%) (Table-2)

Table-3: showing distribution of stage of pterygium in the two study groups

	Group 1(sutures)		Group 2 (autologous blood)	
	Total -25		Total -25	
	Stage 1	Stage 2	Stage 1	Stage 2
Number	10	15	9	16
percentage	40%	60%	36%	64%

All these patients were post-operatively observed for day1, 7 and at 1 month. (Table 3)

Table 4: showing post operative follow-up of the two study groups for pain and foreign body sensation

	Autologous blood	Sutures
Total no. of patients	25	25
Pain and irritation at day 1	15 (60%)	25 (100%)
Pain and irritation at day 7	8 (32%)	10 (40%)

Post-operative 1 month	8 (32%)	-
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Post operative examination of the two groups showed that twenty-three patients had successful grafting in which sutures were used compared to fourteen patients who were treated with autologous blood. The rate of surgical success was 68% in autologous blood compared to 100% when sutures were used. (Table 4)

Table -5: showing surgical success in two study groups

Patient group	With sutures	With autologous blood
Surgical success	25 (100%)	17 (68%)
Failure	-	8 (32%)

But post-operative pain, foreign body sensation was seen in patients with sutures. Surgical failures were seen on post-operative day 1 in patients where autologous blood was used. Statistical analysis by Chi-square test shows that the p-value is less than 0.001, hence using sutures for the patient compared to autologous blood is better.

3.2 Discussion

Pterygia are characterized by elastotic degeneration of collagen and fibrovascular proliferation, with an overlying covering of epithelium. Histopathology of the abnormal collagen in the area of elastotic degeneration shows basophilia with hematoxylin and eosin stain. Pterygium is commonly seen in patients above 20 years with highest prevalence in more than 40 years of age. The incidence of pterygium was 4% in the age group of less than 30 years and reaches maximum of 32% in the age of 30-39 years and then it gradually declines. Male gender and high sun exposure are strong and independent factors related to development of pterygium. Majority of patients were in our study were outdoor workers like farmers, labourers etc. The incidence was found to be maximum among farmers (40%) followed by labourers (20%). Globally, prevalence rates vary depending on the latitudes. [3,4] Nasal presentation being more common is seen due to transmission of UV light from temporal side of cornea through the stroma on to the nasal aspect of eye, perhaps explaining why these lesions are more common nasally.

Various treatment modalities are available but conjunctival autografts using sutures remains the gold standard. These grafts are stable with acceptable cosmetic results. Studies were done using fibrin, including lamellar corneal grafting and the closure of corneal perforations as it is a faster and simpler with less postoperative pain and discomfort. [5] The newest approach is autoblood graft fixation, a technique also known as suture- and glue-free autologous graft. Autologous blood is natural, has no extra cost or associated risks, and can overcome the postoperative irritations to a great extent. [6] However in the present study, 100% surgical success was seen in conjunctival graft with sutures whereas only 68% surgical success was seen those patients with autologous blood. This is different from the findings of a cross-sectional study performed in the United Kingdom, 15 eyes received grafts affixed with autologous blood. No transplant dislocations or failures occurred. [7] Patients who regularly take aspirin or other blood thinners—or who suffer from a coagulation factor deficiency would not be good candidates for autologous blood graft fixation. In the present study, patients on aspirin and other anti-coagulants were excluded so there was no evident reason for graft failure in autologous blood grafts. The reason hypothesized was that they were not compliant with the post operative precautions that were ought to be followed. Similar observation was found in other studies where graft retraction was seen in more patients in fibrin glue group than

suture group. The surgeon concluded that this can be due to movement of the graft due to lid movement causing displacement of the graft. [8, 9,10]

The main disadvantage of the autologous blood is the risk of graft loss in the immediate postoperative period. Graft loss is usually seen in first 24 to 48 hours. One of the important advantages seen with autologous blood was that this procedure was cosmetically better, pain and foreign body sensation was less prominent in early post operative period as compared to autograft with sutures. Limitation of the study is that only one month follow-up was performed and true recurrence could only be assessed after a follow up of 1 year. In the current clinical settings of rural India, patients are difficult to follow-up for a long period of time due to various financial and logistical limitations which makes it difficult to assess true recurrence. In India, majority of the population resides in the rural area; hence more study needs to be done in the area.

4. CONCLUSION

Autologous conjunctival graft with sutures was found to have better outcome in terms of surgical success when compared with a new approach of autologous blood especially in the areas with patients of poor compliance.

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