Section A-Research paper
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COMPARATIVE STUDY OF AMNIOTIC MEMBRANE GRAFT AS AN ALTERNATIVE TO CONJUNCTIVAL AUTOGRAFT IN PTERYGIUM SURGERY

Dr. Gopal Prasad Singh[1], Dr. Rajesh Kumar Singh[2], Dr. Pranay Kumar[3] and Dr.Rajiv Kumar Singh[4]
[1]Senior Resident, Sri Krishna Medical College And Hospital, Muzaffarpur, Bihar.
[2]Senior Resident, Sri Krishna Medical College And Hospital, Muzaffarpur, Bihar.
[3]Senior Resident, Sri Krishna Medical College And Hospital, Muzaffarpur, Bihar.
[4]Associate Professor & Hod, Department Of Ophthalmology, Shri Krishna Medical College & Hospital, Muzaffarpur, Bihar
(Corresponding Author)
Dr. Rajesh Kumar Singh, Senior Resident, Sri Krishna Medical College And Hospital, Muzaffarpur, Bihar.

ABSTRACT
Introduction: Pterygium was recognised 3000 yrs ago. It was described by Susrutha way back in 1000 B.C. in India. Pterygium literally means "wing" and is an encroachment of the conjunctiva on the cornea, more often on the nasal side and is found in areas of high ultraviolet radiation, dry, hot, windy, dusty, and smoky environments.
Aim: To compare the efficacy and safety of amniotic membrane graft as a viable alternative to conjunctival autograft in pterygium surgery.
Material & Methods: To compare the efficacy and safety of amniotic membrane graft as a viable alternative to conjunctival autograft in pterygium surgery. Patients were randomly selected and divided into two groups of 35 each. Patients were randomly selected and divided into two groups of 35 each. SRI KRISHNA MEDICAL COLLEGE AND HOSPITAL, MUZAFFARPUR, BIHAR.

Result: Out of the 70 patients included in the study, 67 patients (95.71%) had nasal pterygium, and 3 patients (4.29%) had temporal pterygium. Incidence of double headed pterygium was 0% Incidence of nasal pterygium was much higher than that of temporal pterygium.
Conclusion: We conclude that both amniotic membrane graft and conjunctival autograft methods are equally effective treatment options for pterygium surgery, with comparable recurrence rates and cosmetic results and either may be selected based on the patient characteristics and the facilities available to the ophthalmologist.
Keywords: Pterygium surgery, ophthalmologist, environments and radiation.

INTRODUCTION

Pterygium was recognised 3000 yrs ago. It was described by Susrutha way back in 1000 B.C. in India. Pterygium literally means "wing" and is an encroachment of the conjunctiva on the cornea, more often on the nasal side and is found in areas of high ultraviolet radiation, dry, hot, windy, dusty, and smoky environments[1]. There are usually no problems in diagnosing it but treatment can be difficult[2]. Currently it is believed that limbal stem cells and pterygial fibroblasts exposed to ultraviolet rays are damaged[3]. The indications for surgery include reduced visual acuity due to encroachment upon the visual axis and irregular astigmatism and also due to chronic irritation and recurrent inflammation, and cosmesis[4].

The treatment of choice is surgery[5] and various techniques exist with the resulting defect being left exposed or covered by surrounding conjunctiva or a limbal autograft or other tissues. Adjunctive therapy with anti-metabolites has been tried[6]. The use of amniotic membrane has been used as a viable alternative to conjunctival autografts.

The need for conducting the present study is to evaluate the clinical presentation and effective management of primary pterygium with conjunctival autograft and amniotic membrane graft.

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MATERIALS AND METHODS

70 Patients (70 eyes) presenting to the outpatient department of SRI KRISHNA MEDICAL COLLEGE AND HOSPITAL, MUZAFFARPUR, BIHAR with Pterygium were included in this study.

Patients were randomly selected and divided into two groups of 35 each. One group underwent pterygium excision and replacement with conjunctival autograft using fibrin thrombin glue and the other group pterygium excision and replacement with amniotic membrane graft using fibrin thrombin glue.

Amniotic membrane was obtained from SRI KRISHNA MEDICAL COLLEGE AND HOSPITAL, MUZAFFARPUR, BIHAR and then processed and stored as per the guidelines. The importance of surgical excision and the surgical procedure was explained to the patient following which informed consent was obtained.

INCLUSION CRITERIA

1. Patients above 20 years of age
2. Primary pterygium invading >2mm of cornea.

EXCLUSION CRITERIA

1. Eyelid disorders
2. Recurrent Pterygium
3. Pseudo pterygium
4. Anterior segment disorders
5. Prior history of ocular surgeries

RESULT AND DISCUSSION

Table 1: Location of pterygium

Location	No. of Patients	%
Nasal	67	95.71
Temporal	3	4.29
Both	0	0

COMPLICATIONS- EARLY POST OPERATIVE

Table 2: Complications observed in the two study groups

Complications	CAG		AMG	
	Count	%	Count	%
Graft Edema	5	7.14	2	2.86
Graft Edge Recession	3	4.29	2	2.86
Graft Loss	1	1.43	2	2.86
Infection	0	0.00	1	1.43

COMPLICATIONS- LATE POST OPERATIVE

Procedure	No. of Patients	No. of Recurrences	%
Conjunctival Autograft Group	35	2	5.7143
Amniotic Membrane Graft Group	35	4	11.43

In India, pterygium is a common problem encountered by ophthalmologists in their day-to-day practice. Though surgery is the treatment of choice, it is associated with a high recurrence rate. Several surgical techniques evolved over the years, indicating the difficulty in finding one 'ideal' procedure.

Autologous conjunctival grafting is a simple and effective procedure and it does not involve loss of tissue. The low recurrence rate is attributed to the fact that normal conjunctiva acts as a barrier, preventing proliferation and advancement of the abnormal tissue towards the limbus. Inspite of the reduction in recurrences, one of the major concerns has been that it may affect the outcome of glaucoma-filtration surgery if required in the donor at a later date. In cases with double headed pterygium or extensive pterygium, this procedure may not be possible due to the dearth of healthy tissue for grafting.

Hence the need for a viable alternative arose and amniotic membrane was found to be a good option in this regard.

Hence the need for a viable alternative arose and amniotic membrane was found to be a good option in this regard.

Pterygium is more common in adults in the middle age group. In the present study, most of the patients were found to be in the age group of 41-50 years (35.71%). The next highest affected group was the 31-40 years age group (32.86%). The high incidence seen among these age groups may be attributed to occupational exposure.

Pterygium is more common in men than women probably due to greater exposure to dust and environmental factors. But if the individuals are involved in the same kind of occupation, this sex difference disappears as reported by J.H. Hillgers[7]. In the present study, out of 70 patients, 32 (45.71%) were males and 38 (54.29%) were females.

Occupation plays a major role in the aetiopathogenesis of pterygium. In the present study, pterygium was more common in persons engaged in outdoor occupations eg. farmers, coolies, vendors and they account for upto 44 out of the total 70 cases (62.85%). This is in accordance with the findings of MacReynolds66, who stated that pterygium is more 75 common among farmers than those people employed in sedentary occupations. Similar studies have been published by Hillgers[7], Anderson and Kerknezov[8].

In the present study, 47 (67.14%) patients had unilateral pterygium of which right eye was affected in 25 (35.71%) and left eye in 22 (31.43%) of the patients. Bilateral pterygium was seen in 23(32.86%) of the patients.

In the present study 67 (95.71%) of the patients had pterygium on the nasal aspect and 3 (4.29%) on the temporal aspect. The nasal aspect of pterygium has been attributed to the fact that tears carrying dust particles flow from the temporal to the nasal aspect and accumulate thus causing greater irritation. This is in accordance with studies done by Shaw.

In the present study, graft edema was observed in 5 (7.14%) and 2 (2.86%) patients in the conjunctival autograft group and amniotic membrane group respectively. This subsided within one week with topical antibiotics and topical steroids.

Graft edge recession was noticed in 3 (4.29%) patients in the conjunctival autograft group and 2 (2.86%) patients in the amniotic membrane group.

Loss of graft tissue occurred in 1 patient in the conjunctival autograft group and 2 patients in the amniotic membrane group.

Post operative infection did not occur in the conjunctival autograft group, whereas in the amniotic membrane group 1 patient developed post operative infection involving the cornea. Fungal pathogens were isolated. She received topical, systemic anti-fungal medications and was referred to a higher centre where she underwent therapeutic keratoplasty.

In the present study, recurrence rate in the conjunctival autograft group was 5.71% and in the amniotic membrane group was 11.43%. These rates were similar to those obtained in other studies done by Kenyon[9], Solomon et al[10] and Prabhasawat et al[11]. In a study by Memarzadeh F, Fahd AK, Shamie N and Chuck RS, amniotic membrane transplantation was done in 23 eyes and conjunctival autografting was done in 40 eyes[12]. The pterygium recurrence rates after AM graft and conjunctival autograft were 35 and 25%, respectively.

CONCLUSION

- Pterygium is more commonly seen in the third (32.86%) and fourth (35.71%) decades of life in both males and females.
- Pterygium was more common among females (54.29%).
- Incidence of pterygium was found to be more in those engaged in outdoor occupations ie.62.85% of the total.
- Unilateral pterygium (67.14%) was more common than bilateral pterygium (32.86%).
- Nasal pterygium had almost 96% occurrence.
- Graft edema was seen more in the conjunctival autograft group (7.14%) than the amniotic membrane group (2.86%).
- Graft edge recession was seen more among the conjunctival autograft group (4.29 %).
- Loss of graft tissue was observed to be greater in the amniotic membrane group (2.86%).

- One patient developed post operative infection in the amniotic membrane group. 78
- Recurrence rate in the conjunctival autograft group was 5.71%.
- Recurrence rate in the amniotic membrane group was 11.43%.
- Recurrence rates between the two groups did not show any statistical significance (p = 0.393).

Autologous conjunctival grafting is a safe and simple procedure which is also associated with a low recurrence rate. It also has a lower incidence of complications. The disadvantage with conjunctival autografts includes the need to use an operating microscope and the need for considerable surgical skill. This technique is of limited use in cases with double headed pterygium and in those cases with cicatricial disorders involving large areas of the conjunctiva. There is an associated risk that this procedure may affect the outcome of glaucoma filtration surgery if required in the future.

Amniotic membrane usage has shown encouraging results especially in clinical situations requiring extensive tissue repair, recurrent cases with scarring and in patients who need filtration surgery. It is also free of rejection.

Thus, from the results of our study, I conclude that both amniotic membrane graft and conjunctival autograft methods are equally effective treatment options for pterygium surgery, with comparable recurrence rates and cosmetic results and either may be selected based on the patient characteristics and the facilities available to the ophthalmologist.

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