

A COMPARATIVE STUDY OF CONJUNCTIVAL AUTOGRAFT IN PRIMARY AND RECURRENT PTERYGIUM IN SOUTHERN PART OF ODISHA

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ABSTRACT

BACKGROUND

Pterygium is a wing-shaped growth of fibrovascular conjunctiva on to the cornea. Pterygium surgery is fairly common in our country.

The aim of the study is to determine the outcome of conjunctival autograph in primary and recurrent pterygium.

MATERIALS AND METHODS

This study is a prospective study conducted in Department of Ophthalmology, M.K.C.G. Medical College and Hospital, Berhampur, over a period of two years (October 2015 to September 2017) by performing conjunctival autografting in 94 patients (100 eyes, i.e. 100 cases), out of which, 28 were recurrent type and the remaining 72 were primary progressive pterygia. Outcome measures include visual acuity, intraoperative complications, recurrence of pterygium as per as group and interval of surgical procedure and recurrence.

RESULTS

Majority of primary and recurrent pterygium age group 31-40 years 39 (39%) followed by 41-50 years 23 (23%). Maximum number of recurrent pterygium found in 20-40 years (21.21%). Males 68 (68%) were more in number than females 32 (32%). At last follow up, 50 (50%) eye had an improvement best corrected visual acuity. In 47 (47%) eyes, visual acuity was unchanged. Recurrence from the primary pterygium group at an average interval of 11 months and 1 (3.5%) developed recurrence after 7 months of surgery from the recurrent pterygium group.

CONCLUSION

Autogenous conjunctival grafting is a safe, simple procedure. It does not involve loss of tissue and is effective in preventing recurrence.

KEYWORDS

Conjunctival Autograft, Primary Pterygium, Recurrent Pterygium.

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BACKGROUND

Pterygium, the wing-shaped fleshy growth on corneal limbus has been known to physicians for thousands of years. Sushruta (1000 BC) has recorded pterygium removal. The term pterygium meaning wing (pteyrx- wing) was introduced by Walton in 1875. Despite being recognised for many years, very little is known about its pathogenesis.

Incidence of pterygium varies across geographical locations. Several hypothesis has been described to its aetiology. There is another condition called pseudopterygium. It should be differentiated from two pterygium. Pseudopterygium is an inflammatory adherence of the conjunctiva to the cornea in response to chemical, thermal, traumatic injury and can occur at any point around the limbus. Preoperatively, a careful history and physical examination are mandatory to allow the diagnosis of a pseudopterygium. On the other hand, the true pterygium is a degenerative process of subconjunctival tissue encouraging towards the cornea. It maybe unilateral or bilateral and involve both nasal or temporal part of cornea. It affects mostly the nasal part of conjunctiva than the temporal part and rarely seen on both sides. The macroscopic part of pterygium is head, neck, body and cap. The head is the active part of pterygium, which brings about

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changes in the cornea anterior to it forming the cap and activates the subconjunctival connective tissue behind it forming the body. The body of the pterygium is the part limbal to the head, which assumes the characteristic wing shape. It lies mainly over the sclera. Neck is the constricted portion of the pterygium, which is present at the limbus. The cap is the apex of the pterygium anterior to the head. A true pterygium is found chiefly in the sunny hot dusty regions of the world mostly between the latitude 37° N and S of equator.¹

Clinical classification of pterygium are primary, progressive, atrophic (stationary) and recurrent. When the pterygium is fleshy, vascular actively growing towards the centre of cornea it is termed as progressive pterygium. When it is thin, membranous, doesn't progress, it is termed as atrophic or regressive pterygium. Recurrence of pterygium was defined as the presence of fibrovascular encroachment extending beyond the surgical limbus at any time after operation, which is evaluated by each follow up visit.

It has been accepted for some time now that environmental factors are responsible for development of pterygium. More recently, it has been clear that UV light exposure is most important environmental influence.¹ Higher incidence of pterygium is seen in tropical regions among outdoor workers like farmers, city dwellers, fishermen and exposure to irritants (dust, sand, wind). India comes under the pterygium belt as described by Cameron (1965) along with other topical countries.² Recent research points to evidence implicating stem cell failure, a genetic component, antiapoptotic mechanism, cytokines, growth factors, extracellular matrix remodeling, immunological mechanisms and viral infections in the pathogenesis of disease.

Indication for treatment of pterygium include proximity to the visual axis resulting in diminution of vision, significant astigmatism leading to visual debility, restriction of ocular movements and cosmetic concerns. Surgical excision remains principal mode of treatment for pterygium. Various techniques have been tried like simple excision, bare sclera method, transplantation of head of pterygium, mucous membrane or conjunctival autograft with or without limbal stem cells have been described.³

Despite these innovative procedures, recurrence continues to be a complication. Pterygium surgery is fairly common in our country. Difference in study methodology, patient characteristics, nature of pterygium, geographical area, definition of recurrence and duration of follow up are some of the factors responsible for widely varying rates of recurrence.⁴ This study is undertaken to determine outcome of conjunctival autograft in primary and recurrent pterygium.

MATERIALS AND METHODS

This study is prospective study conducted in the Department of Ophthalmology, M.K.C.G. Medical College and Hospital, Berhampur, during the period of two years - (October 2015 - September 2017). Conjunctival autografting was performed in 94 patients (100 eyes, i.e. 100 cases), out of which, 28 were recurrent type and remaining 72 were

primary progressive pterygia. All patients were in the age group of 20-70 years.

Inclusion Criteria

1. Primary pterygium (progressive type).
2. Recurrent pterygium.

Exclusion Criteria

1. Patient not given any consent.
2. Patient with atrophic pterygium.
3. Patients having dry eye syndrome.
4. Patient with other ocular surface pathology.
5. Cases with restriction of motility due to symblepharon.
6. Patients with pseudopterygium.

The pterygium cases routinely investigation like blood - BT, CT, DC, TLC, FBS and urine R/M prior to conjunctival autograft operation. All patients were administered broad-spectrum antibiotics, eye drops and NSAIDs drugs 4-6 times a day for 2 days. All pterygium surgeries are performed under operating microscope with peribulbar local anaesthesia. Local anaesthesia consists of 5 mL of 2% lignocaine HCL and 0.5% bupivacaine with 150 units per mL of hyaluronidase. At the beginning of operation, the head of the pterygium is excised superficially involved cornea to limbus with No. 15 Bard-Parker blade. Westcott scissors were used to complete the dissection of conjunctiva. In primary pterygia, a cotton bud was used for blunt dissection to elevate the body of pterygium off the sclera. In recurrent pterygia, a combination of blunt and sharp dissection was used to remove the adherent fibrovascular tissue from the scleral surface. The pterygium body including the adjacent tenon's capsule was excised avoiding damage to medial rectus muscle. Residual fibrous tissue on the cornea was removed by sharp dissection with No. 15 BP blade. The size of the conjunctival graft is determined by measuring the recipient bed and the donor area with Castroviejo calipers 1 cc BSS was injected subconjunctivally and bulbar conjunctiva was excised leaving the underlying tenon's capsule intact. The conjunctival graft was excised using Vannas scissors. The graft was rotated to the area where pterygium had been removed. The limbal portion of the graft was first secured to the limbus and adjacent conjunctiva with 10-0 nylon sutures. The conjunctival portion was then enclosed anchored to adjacent conjunctiva with interrupted sutures of 10-0 nylon. All patients were patched for 24 hrs. Postoperative care like topical betamethasone every two hours for the first week and then tapered over next 5-6 weeks. To control of pain and inflammation oral NSAIDs and systemic antibiotic tablets like ciprofloxacin 500 mg b.i.d. were given for 5 days.

The patients were asked to come first week, 1 month, 3 months, 6 months and 1 year after discharge from ward for follow up.

RESULTS

In our study of 90 patients, 64 (68.1%) were males and 30 (31.9%) were females. Majority of patients were in the age group between 31-40 years (33 out of 94 patients, 35.1%)

followed by age group 41-50 years 23 (24.5%), 51-60 years 18 (19.1%), >60 years 10 (10.7%) and by age group 20-30 years 10 (10.6%).

Age	Number of Male	% of Male	Number of Female	% of Female	Total Number	Total %
20-30	7	7.4%	3	3.2%	10	10.6%
31-40	24	25.6%	9	9.6%	33	35.1%
41-50	13	13.8%	10	10.6%	23	24.5%
51-60	12	12.7%	6	6.4%	18	19.1%
>60	8	8.5%	2	2.1%	10	10.7%
Total	64	68.1%	30	31.9%	94	100%

Table 1. Age and Sex Wise Distribution of Study Population

It was observed that maximum number of recurrent pterygia were found in age group 20-40 (21 cases out of 28 cases).

In this study, 68 cases were found in males 68% and 32 cases were females (32%). Recurrent pterygia 24 cases male (i.e. 24%) and 4 cases in females (4%).

Age in Years	Total % of Cases	Primary Pterygium Cases %	Recurrent Pterygium Case %
20-30	10 (10%)	8 (8%)	2 (2%)
31-40	39 (39%)	20 (20%)	19 (19%)
41-50	23 (23%)	18 (18%)	5 (5%)
51-60	18 (18%)	16 (16%)	2 (2%)
>60	10 (10%)	10 (10%)	0
Total	100 (100%)	72 (72%)	28 (28%)

Table 2. Age Incidence in the Relation to Type of Pterygium

Occupation	Number of Cases		
	Total (%)	Primary Pterygium	Recurrent Pterygium
Outdoor	84 (84%)	56	28
Indoor	16 (16%)	16	0
Total	100 (100%)	72	28

Table 4. Incidence of Pterygium According to Occupation

Sex	Total (%) of Cases	Primary Pterygium Case (%)	Recurrent Pterygium Case (%)
Male	68 (68%)	44 (44%)	24 (24%)
Female	32 (32%)	28 (28%)	4 (4%)
Total	100 (100%)	72 (72%)	28 (%)

Table 3. Sex Incidence

In our study, incidence of pterygium whether primary or recurrent was found to be more in outdoor workers by occupation 84 (84%) followed by those who were indoor workers 16 (16%).



Figure 1. Bilateral Nasal Pterygium Primary Progressive Pterygium (Nasal)



Figure 2. Primary Progressive Pterygium (Temporal)

Eyes Involved	Number of Cases
Unilateral	88
Bilateral	12
Total	100

Table 5. Pterygium Laterality

Out of 100 cases, 88 (88%) of cases had unilateral affection, whereas 12 (12%) patients had bilateral infection.

Pterygium Location	Number of Cases	Percentage
Nasal	65	65%
Temporal	30	30%
Both	5	5%
Total	100	100%

Table 6. Pterygium Location

Incidence of nasal pterygium 65 (65%) and temporal 30 (30%), 5 cases (5%) had bilateral infection. The interval between primary procedure and recurrence was 4.5 + 1.5 months in 22 recurrent pterygia who had undergone bare sclera excision.

Age Group	Total No. of Cases	No. of Recurrence	No. of Non-Recurrence
≤40	49	6	43
≥40	51	0	51

Table 7. Recurrence of Pterygia as Per Age Distribution

The number of recurrence was 6 in ≤40 years and no recurrence in age group ≥40 years. Hence, recurrence of pterygium is more common in patient younger than 40 years.

Recurrence was noted in 6 eyes at an interval period of 9 months between surgery and recurrence, out of which, 5 (6.9%) developed recurrence for the primary pterygium group at an average interval of 11 months and 1 (3.5%) developed recurrence after 7 months of surgery from recurrent pterygium group (Table 8).



Figure 3. Recurrence of Pterygium after 9 Months



Figure 4. Preoperative Pterygium



Postoperative Pterygium (1st day)

Pterygium Type	Number of Cases with Recurrence	Average Interval between Surgery and Recurrence
Primary pterygium	5	11 months
Recurrent pterygium	1	7 months

Table 8. Interval between Surgical Procedure and Recurrence

At last follow up, 50 (50%) eyes had an improved visual acuity ranging from 1 to 5 Snellen's line. In 47 (47%) eyes, the best corrected visual acuity was unchanged, while it was reduced in 3% eyes, Table 9.

Number of Cases	Changes in BCVA (2 or more Snellen's Lines) with Surgery		
	Improved	Unchanged	Worse
100	50 (50%)	47 (47%)	3 (3%)

Table 9. Effect of Surgical Technique on the BCVA

DISCUSSION

In this study, highest number of pterygium (both primary and recurrent) occur in age group of 20-40 cases (21 cases out of 28 cases). This corroborates with the finding of RM Youngson (1972) who found a preponderance of recurrent cases in those aged 50 or less.⁵ Pterygium is more often seen in men than in women. In present study, we found 68 (68%) males and 32 (32%) females, which is similar to observation of J.H. Hilger 1960,⁶ Rao Srinivas, Kijo 1998, Fenades, M. Sangwan⁴ vs. 2005 and Dr. Jaspreet Sukhija, Dr. Arun K. Jain, 2007.

In this study, outdoor workers (84%) are suffering more pterygium than indoor workers. This fact supports Mac Reynolds,⁷ Hilgers⁶ and Keknezov.⁸ Since, southern part of Odisha being that part of state where most of the livelihood comes from agriculture, costal area people are going to sea for catching fishes and exposed to strong wind, sands dust and ultraviolet rays, which is the primary factor causing pterygium, which is well supported by above author. Recurrence occurred 5 cases out of 72 (6.95%) patients from primary pterygium group and one patient (3.5%) from recurrent group, which is similar to study of Kenyon⁹ in 1985, 6% with Vastin, Dr. Amitav Das, et al. AIOC proceeding 2001 (5.88%) in recurrent pterygium. Recurrence of pterygium is more common in patients with younger than 40 years of age.⁹ The risk factors for recurrence include geographical location, age⁹ and morphology¹⁰ of pterygium. In our study, at last follow up, 50 (50%) eyes had an improvement in best corrected visual acuity, 47 (47%) eyes visual acuity was unchanged, while it was reduced in 3% of eyes, which is similar to the study of Kenyon KR, Wagoner MD, et al.⁹

CONCLUSION

Autogenous conjunctival grafting is a safe simple procedure. It does not involve loss of tissue and is effective in preventing recurrence. Limbal conjunctival autografting is safe, effective and it does not require costly infrastructure or very highly-skilled technology for management of pterygium.

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