IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 18, Issue 11 Ser.2 (November. 2019), PP 80-84
www.iosrjournals.org

Concomitant Use of Conjunctival Tissue Graft from Pterygium Itself in Primary Pterygium Surgery

[1.]DrM.V.D.LSathyanarayanana,M.S,
Department of ophthalmology Govt,Medical college Kadapa Andhra Pradesh,India
[2.]Dr.M.Sravani
[2]3rd year PG in Ophthalmology Govt.MedicalCollege Kadapa Andhra Pradesh,India
Corresponding Author: DrM.V.D.LSathyanarayanana

Aims & objectives:*To evaluate the outcome of concomitant use of conjunctival tissue graft from pterygium itself without use of glue or sutures in primary pterygium surgery.*

Materials & Methods:

Study was conducted on 25 patients whose age>30 yrs with thorough ocular examination and blood investigationsrequired for surgery.

After peribulbar anesthesia, thin layer of conjunctival graft was fashioned from pterygium tissue .This conjunctival layer from the pterygium itself was then separated completely from the underlying fibrovascular tissue and kept onto the corneal surface then fibrovascular tissue was excised. Thin conjunctival layer was then transferred to bare sclera bed with epithelial side up and without any rotation and adhered to the bare sclera bed using fibrin blood clot

Results*: The study showed the patient has minimal recurrence rate, no graft oedema.*

Keywords*:Conjunctiva, pterygium ,autograft , fibrin glue , glaucoma , pterygium recurrence.*

Date of Submission:24-10-2019 Date of Acceptance:09-11-2019

I. Introduction

Pterygium is believed to be a consequence of ultraviolet-induced damage with subsequent elastotic degeneration of conjunctival collagen. %. It is a wing-shaped ocular surface lesion traditionally described as an encroachment of bulbar conjunctiva onto the cornea. Historically, pterygium is considered degenerative lesions, exemplified by degradation of Bowman's layer and elastosis. Currently, however, pterygium is described as a proliferative disorder resembling an aberrant wound healing response. Histopathologically, pterygium is characterized by a hyperplastic, centripetally directed growth of altered limbal epithelial cells accompanied by Bowman's layer dissolution, epithelial-mesenchymal transition, and an activated fibroblastic stroma with inflammation, neo-vascularization, and matrix remodeling, mediated through the concerted actions of cytokines, growth factors, and matrix metalloproteinase.

Despite advances in understanding of its pathogenesis, pterygium remains an ophthalmic enigma. Intriguingly, pterygium has a predilection for the nasal limbus and affects only humans, possibly reflecting the unique ocular morphology of humans, compared with nonhuman primates and other animals.The limbal predilection may be explained by the phenomenon of peripheral light focusing, in which incidental light passes through the anterior chamber and is focused at the distal (nasal) limbus where limbal stem cells (LSCs) reside. A healthy corneal surface is maintained by self-renewing, lineage-specific stem cells (SCs) that reside in the limbus, a narrow annular transition zone that circumscribes the cornea. This regenerative capacity is regulated by exquisite programs that govern stem cell quiescence, proliferation, migration, and differentiation. Failure to maintain a normal microenvironment as a result of extrinsic (eg, UV radiation) or intrinsic (eg, cytokines) signals can result in the development of ocular disorders.

Ophthalmologists have traditionally regarded pterygium as benign lesions, because they grow slowly. Unless a pterygium is sufficiently large as to obscure the visual axis or causes astigmatism, decisions to treat are often based on a patient's cosmetic concerns. An argument against this view, however, is the local invasiveness and high rate of recurrence when pterygium is inappropriately managed. Current management strategies for pterygia involve surgical excision, followed by wound closure with grafts or by application of adjunctive therapy to the bare scleral bed.

In a tropical country like India, the prevalence of pterygium ranges from 9.5% to 13%. Conjunctival autograft (CAG) is the gold standard in the management of primary pterygium. However, in certain patients with primary pterygium having glaucoma filtering bleb superiorly, obtaining CAG is difficult. In glaucoma suspects where superior bulbar conjunctiva may be warranted for any future filtering surgery, CAG from

superior site would not be advisable.Also in patients with large double-head pterygium, many a times' superior bulbar CAG is not sufficient enough to cover both the bare scleral defects.

However, latest advancements and research suggests thatconjunctival tissue from the pterygium tissue itself without actual rotation appears to be a successful technique with lower recurrence rate for treating primary pterygium in eyes with glaucoma filtering bleb, glaucoma suspects, and in primary double-head pterygium. This aim of this study is to determine the recurrence and retraction of the Pterygium in this technique. If and so, what are those factors which are influencing the same.

Patients and Methods

The study was conducted on 25 persons who were diagnosed with primary pterygium. All these patients were treated surgically at our institute between 2017 and 2019. The surgical procedure performed on all patients is same .Data collected included patient's age, sex and ocular medical and surgical history, visual acuity before and after surgery and complications.The study was approved by institutional ethics committee. These 25 patients were made into four groups – 14 nasal pterygium cases were grouped as one, group II has 4 double headed pterygium patients, 3 Glaucoma suspects are placed in group III and 4 patients with temporal pterygium were grouped in group IV. This prospective study was conducted over the time period of 18 months.

Surgical Procedure

Glaucoma suspects/Nasal/Temporal

After giving peribulbar anaesthesiaa thin layer of conjunctival graft was fashioned from the pterygium tissue. This conjunctival layer from the pterygium itself was then separated completely from the underlying fibrovascular tissue and kept aside onto the corneal surface. The fibrovascular tissue of the pterygium was excised. Thin conjunctival layer was then transferred to the bare scleral bed with epithelial side up and without any rotation and adhered to the bare scleral bed using autologous blood clot .Eyes are patched with topical moxifloxacin eye ointment overnight.

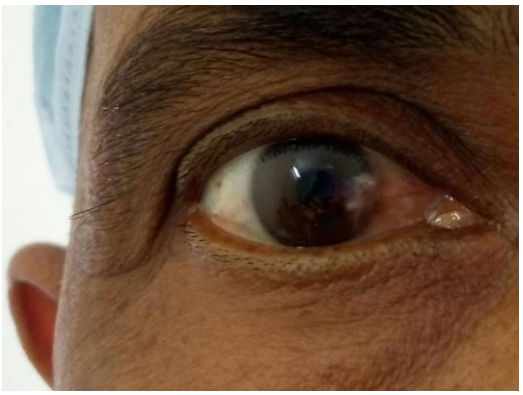


Fig a : *picture of the patient eye with Nasal Pterygium*

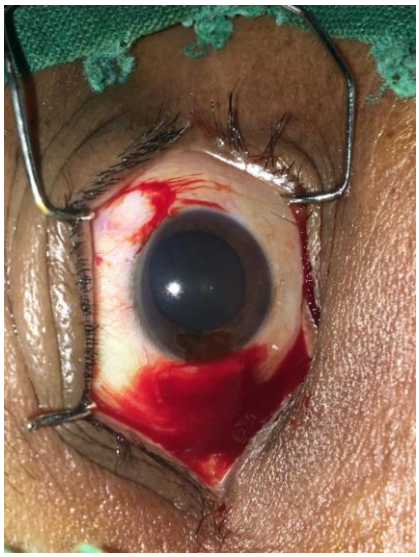


Fig b :*Intra Operative picture of the patient – CAG in process*

Fig C : *Post operative picture*

Double-head pterygium

After giving peribulbar anesthesia temporal pterygium was first excised to form a bare scleral defect. Thin conjunctival layer is separated from the underlying fibrovascular tissue of pterygium. Fibrin blood clot was then used to adhere this thin layer tissue obtained from temporal pterygium to temporal bare scleral bed without any rotation of graft. The underlying fibrovascular tissue of nasal side was then excised using conjunctival forceps. The corneal and limbal area on nasal side was scraped clean of residual tissue with crescent blade. Similarly nasal barescleral defect adhered with thin layer tissue obtained from nasal pterygium using autologous blood clot.

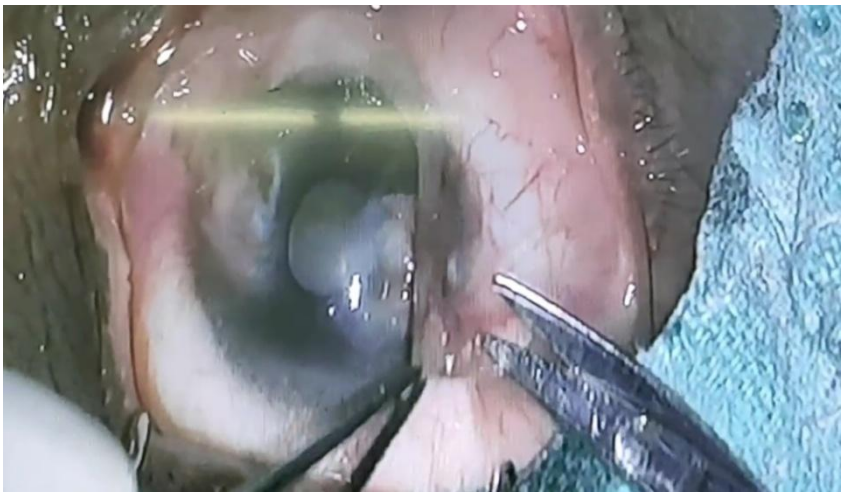


Fig d: *Intra Operative picture of the patient with double headed pterygium*

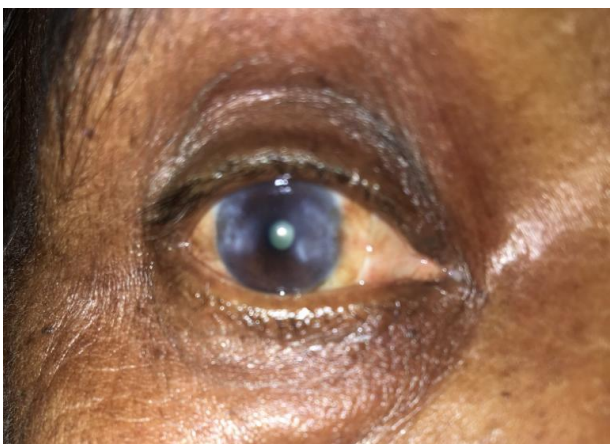


Fig e : *Post Operative picture of the patient*

Medication: Postoperatively 0.3%ciplox-D eye drops and tear substitute 0.5% carboxymethylcellulose was started six times daily for 1st week and then tapered gradually over four more weeks.

Follow ups:

Patients were examined on postoperative day 1 and later asked for follow-up after 1 week, 6 weeks, 6 months, 12months, 18 months and results interpreted.

Results

Total number of patients: 25

Post Operation follow-up – 1 week

Type of Pterygium	Number	Graftedema	Graftretraction	Graft displacement	Recurrence
Nasal	14	3	-	2	-
Double headed	4	2	-	-	-
Glaucoma Suspects	3	-	-	-	-
Temporal	4	-	-	1	-

Post Operation follow-up – 1 month

Type of Pterygium	Number	Graft edema	Graft retraction	Graft displacement	Recurrence
Nasal	14	1	-	2	-
Double headed	4	1	-	-	-
Glaucoma Suspects	3	-	-	-	-
Temporal	4	-	-	-	-

Post Operation follow-up – 6months

Type of Pterygium	Number	Graft edema	Graft retraction	Graft displacement	Recurrence
Nasal	14	-	-	1	-
Double headed	4	-	-	-	-
Glaucoma Suspects	3	-	-	-	-
Temporal	4	-	-	-	-

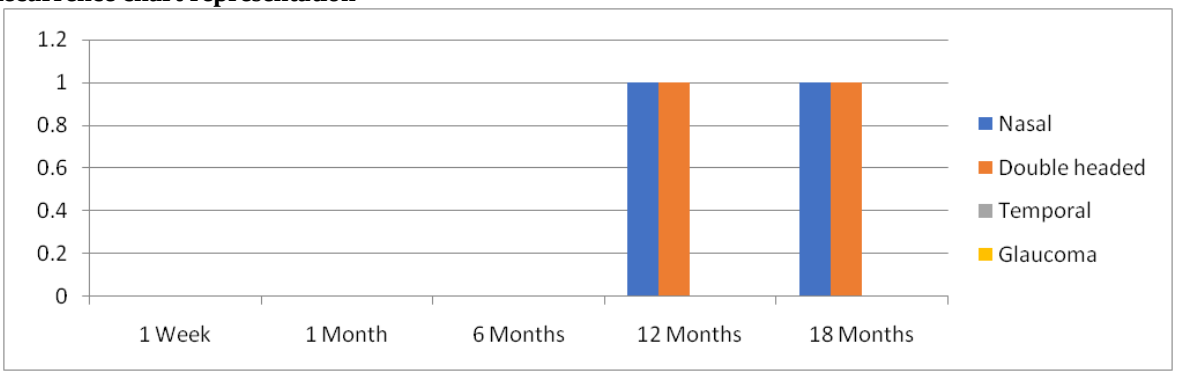
Post Operation follow-up – 12months

Type of Pterygium	Number	Graft edema	Graft retraction	Graft displacement	Recurrence
Nasal	14	-	1	-	1
Double headed	4	-	-	-	1
Glaucoma Suspects	3	-	-	-	-
Temporal	4	-	-	-	-

Post Operation follow-up – 18months

Type of Pterygium	Number	Graft edema	Graft retraction	Graft displacement	Recurrence
Nasal	14	-	2	-	1
Double headed	4	-	1	-	1
Glaucoma Suspects	3	-	-	-	-
Temporal	4	-	-	-	-

Recurrence chart representation



II. Discussion

Successful management of pterygium requires a clear understanding of its pathogenesis and recognition of clinical features that indicate risk of recurrence. Recurrence-free surgery for pterygium is a difficult management problem. A variety of therapies have been proposed for the treatment of pterygium. Although conventional conjunctival autografting is the gold standard in the management of primary pterygium, there are occasions when it is not possible to use superior bulbar conjunctiva as donor tissue. Various options available for the management of double-head pterygium are vertical split CAG without limbus–limbus orientation, vertical split CAG with limbus–limbus orientation, conjunctival rotational autograft with CAG, and amniotic membrane transplantation, but none of them has worldwide acceptance. All of these techniques have their own merits and demerits. Conventional bare sclera technique is not done routinely because of high recurrence rate. In the above technique, surgeons fashioned a thin layer of conjunctival graft from the pterygium surface itself and placed it on the bare scleral defect without any rotation. In general, the pterygium recurrence occurs within the first 6 months after surgery.However in the current study the recurrence was only observed after a year, the overall rate of recurrence was 7.5% (2 eyes out of 25) which was comparable to other published studies. This could be explained, as obtaining a thin conjunctival layer graft from the pterygium tissue is technically more challenging, and also, this conjunctival sheet is more fragile and prone to fracture with slightest manipulation. It is difficult to obtain an oversized graft from the pterygium. The graft is either of the same size as the defect or slightly smaller than the defect. This can lead to increased tension on the graft which can lead to retraction of the graft and loss of graft with subsequent increased risk of recurrence. In glaucoma suspect eyes with nasal pterygium, it may not be possible to oversize this conjunctival sheet graft and place it on the same bare scleral defect. Adequate coverage of bare scleral defect was the main aim. Furthermore, graft retraction could be due to inclusion of subepithelial tissue in the graft and can be minimized by meticulous dissection of subepithelial tissue.Ophthalmologists showed good results with this procedure, but with 180° rotation of the graft thinking that the success rate will increase by rotating the graft in such a way that the diseased epithelium at the limbal end is shifted away to prevent recurrence; however, there is no scientific proof to confirm this. This formed the basis of our technique, where we found that rotation of conjunctival sheet had no significance as far as the overall outcome was concerned.

However, very recently, a study showing long-term results concluded that limbus–limbus orientation need not be necessarily maintained to avoidrecurrence, and the graft should be adequate enough to cover bare scleral defect irrespective of its orientation

Graft edema was observed in 10% (5 eyes out of 25) and was the most common outcome of our study. This could be due to excessive handling of the graft. Graft edema subsided without any intervention at the end of 1–2 weeks postoperatively.

III. Conclusion

The procedure of use of conjunctival tissue from the pterygium itself is safe and effective with lower recurrence rate and can be recommended for patients with primary pterygium having superior filtering bleb,glaucoma suspects, where in the superior bulbar conjunctiva is either not available or may need future filtering procedure and in patients with double headed pterygium where superior bulbar conjunctiva is not adequate enough to cover both bare sclera defects.

References

[1]. Kwok LS, Coroneo MT. A model for pterygium formation. Cornea 1994;13:219-24.
[2]. Spencer WH. Ophthalmic Pathology: An Atlas and Textbook. 3rd ed., Vol. 1. Philadelphia:W.B.Saunders;1985.p.174-6.
[3]. Asokan R, Venkatasubbu RS, Velumuri L, Lingam V, George R. Prevalence and associated factors for pterygium and pinguecula in a South Indian population.Ophthalmic PhysiolOpt2012;32:39-44.
[4]. Kenyon KR, Wagoner MD,Hettinger ME. Conjunctival autograft transplantation for advanced and recurrent pterygium. Ophthalmology 1985;92:1461-70.
[5]. Jap A, Chan C, Lim L, Tan DT. Conjunctival rotation autograft for pterygium. An alternative to conjunctival autografting. Ophthalmology 1999;106:67-71.
[6]. de Wit D, Athanasiadis I, Sharma A, Moore J. Sutureless and glue-free conjunctival autograft in pterygium surgery: A case series. Eye (Lond) 2010;24:1474-7.
[7]. Singh G, Wilson MR, Foster CS. Long-term follow-up study of mitomycin eye drops as adjunctive treatment of pterygia and its comparison with conjunctival autograft transplantation.Cornea1990;9:331-4.
[8]. Kodavoor SK, Ramamurthy D, Tiwari NN, Ramamurthy S. Double-head pterygium excision with modified vertically split-conjunctival autograft: Six-year long-term retrospective analysis. Indian J Ophthalmol2017;65:700-4. Maheshwari S. Split-conjunctival grafts for double-head pterygium. Indian J Ophthalmol2005;53:53-5.
[9]. Wu WK, Wong VW, Chi SC, Lam DS. Surgical management of double-head pterygium by using a novel technique: Conjunctival rotational autograft combined with conjunctival autograft. Cornea 2007;26:1056-9.