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Original Research

Evaluation of Conjunctival Autograft Fixation with Autologous Blood Post-Pterygium Excision at a Tertiary Hospital in Shimla, Himachal Pradesh

Dr Arti Sareen¹, Dr Seema², Dr Vinay Gupta³, Dr Abhishek Sharma⁴

¹Assistant Professor, Department of Ophthalmology, IGMC, Shimla

²Senior Resident, Department of Ophthalmology, IGMC, Shimla

³Associate Professor, Department of Ophthalmology, IGMC, Shimla

⁴MBBS, Junior Resident, Department of Ophthalmology Indira Gandhi Medical College Shimla, Himachal Pradesh, INDIA

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Abstract

Purpose: This study aims to evaluate the efficacy of autologous blood in securing conjunctival autografts without the use of sutures or glue following pterygium excision. **Methods:** A prospective observational study was conducted in the Department of Ophthalmology at IGMC Shimla, including 49 patients (49 eyes) with nasal pterygium. Of these, 29 were female and 20 male. The primary indications for surgery included cosmetic concerns and foreign body sensation. All surgeries were performed under peribulbar anesthesia, with conjunctival grafts harvested from the inferior conjunctiva. The graft was placed on the exposed sclera and stabilized using autologous blood, without sutures or glue. Postoperative follow-ups were conducted at 2 and 6 weeks to assess for complications such as graft retraction, hemorrhage, or recurrence. **Results:** The average surgical time was 20 minutes. Postoperative complications were minimal, with only 1 case each of granuloma formation, graft retraction, and sub-graft hemorrhage. No significant gender-based differences were observed in complication rates. The use of autologous blood resulted in effective graft stabilization, minimal postoperative discomfort, and reduced recovery time. **Conclusion:** Autologous blood fixation offers a safe, cost-effective alternative to traditional suture or glue-based methods for conjunctival autografts in pterygium surgery, with low complication rates and enhanced patient comfort. It also presents a viable alternative to the use of more expensive adjuncts like amniotic membrane or mitomycin C.

Keywords: Pterygium, conjunctival autograft, autologous blood, sutureless, glue-free, ocular surgery.

Introduction

Pterygium is a prevalent ocular surface disorder primarily observed in tropical and subtropical regions, characterized by a triangular fibrovascular ingrowth of degenerative conjunctival tissue extending over the limbus onto the cornea.¹ This condition manifests as vascularized granulation tissue that invades the cornea, leading to the destruction of the superficial stromal layers and Bowman's membrane.² Histological analysis reveals elastotic degenerative changes in the subepithelial stromal collagen associated with this disorder.

Initially, pterygium may be asymptomatic, but as it progresses, it can disrupt the tear film and, in more advanced cases, induce visual disturbances through astigmatism or encroachment on the visual axis. Lesions exceeding 3.5 mm in corneal size are particularly prone to causing greater than 1 dioptre of astigmatism.³ Although the precise mechanisms underlying pterygium development are not fully elucidated, ultraviolet radiation is recognized as a significant risk factor, along with environmental influences such as dust exposure, demographic factors like age and gender, and lifestyle choices including smoking and alcohol consumption.

Management of pterygium typically involves surgical intervention, especially when it results in substantial ocular discomfort, aesthetic concerns, reduced visual acuity or difficulty in wearing contact lens. Surgical options include a variety of techniques, with conjunctival autograft and amniotic membrane grafting being prominent for their effectiveness. Despite the ease of excision, recurrence rates for pterygium surgery remain notably high. Recent advancements, such as the application of conjunctival autograft techniques and the use of adjunctive therapies like mitomycin C, have significantly reduced recurrence rates, making these approaches favourable in the management of pterygium.⁴ With this background the present study was undertaken to study the efficacy of autologous blood in sealing the conjunctival autograft without using sutures or glue.

Aims And Objectives

This study aims to evaluate the outcomes of pterygium excision using conjunctival autograft techniques using autologous blood within our institution, contributing to the ongoing discourse on effective treatment modalities for this common ocular condition.

Address for Correspondence: Dr Abhishek Sharma, MBBS, Junior Resident, Department of Ophthalmology Indira Gandhi Medical College Shimla, Himachal Pradesh, INDIA.

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Material And Methods

- **Study Design:** Prospective observational study
- **Study Setting:** Department of Ophthalmology, IGMCM Shimla
- **Sample Size:** 49 patients (49 eyes)
- **Patient Demographics:**
 - **Total Patients:** 49
 - **Gender Distribution:** 29 females, 20 males
 - **Eyes Operated:** 18 right eyes, 31 left eyes
 - **Pterygium Location:** All nasal
- **Patient Complaints:**
 - **Male Patients:**
 - 15 presented with foreign body sensation
 - 3 underwent surgery for cosmetic reasons
 - 2 complained of decreased visual acuity
 - **Female Patients:**
 - 10 presented with foreign body sensation
 - 19 underwent surgery for cosmetic reasons

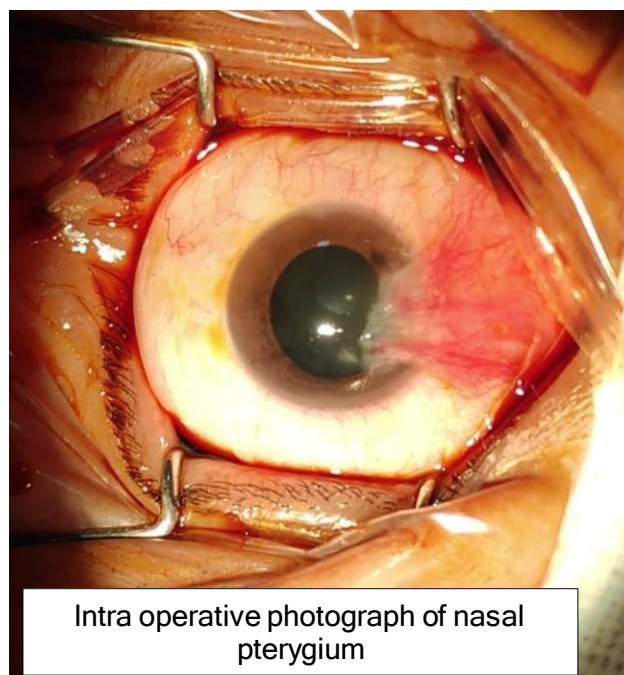
Surgical technique: All surgeries were performed by a single surgeon under peribulbar anaesthesia. Following sterile precautions, an eye speculum was applied. The neck of the pterygium was lifted, and the head was removed in a sweeping motion. The body of the pterygium was then separated from the underlying sclera and excised, ensuring the medial rectus muscle was not affected.

Any remaining conjunctival tissue on the cornea was scraped off with a crescent blade to smooth the surface. The size of the exposed sclera was measured with Castroviejo callipers.

To protect the cornea, viscoelastic substances were applied. A donor conjunctival graft was harvested from the inferior conjunctiva while avoiding buttonholes and the Tenon's capsule. The graft was placed on the exposed sclera, maintaining the correct orientation (limbus to limbus). The surgeon waited 3-4 minutes for haemostasis and graft stabilization, and no sutures were required.

The entire surgery took approximately 20 minutes. The eye was patched for 24 hours post-surgery. The patch was removed the following day, and the patient was evaluated for symptoms such as watering, pain, and foreign body sensation, as well as the graft's position and any complications. The patient was prescribed Moxifloxacin eye drops four times a day and Sodium hyaluronate 0.1% eye drops four times a day for 6 weeks.

Follow-up visits were conducted on 2 weeks and 6 weeks post-operatively. During each visit, assessments included sub-graft haemorrhage, graft oedema, graft retraction, graft dislodgement, and recurrence.



Intra operative photograph of nasal pterygium



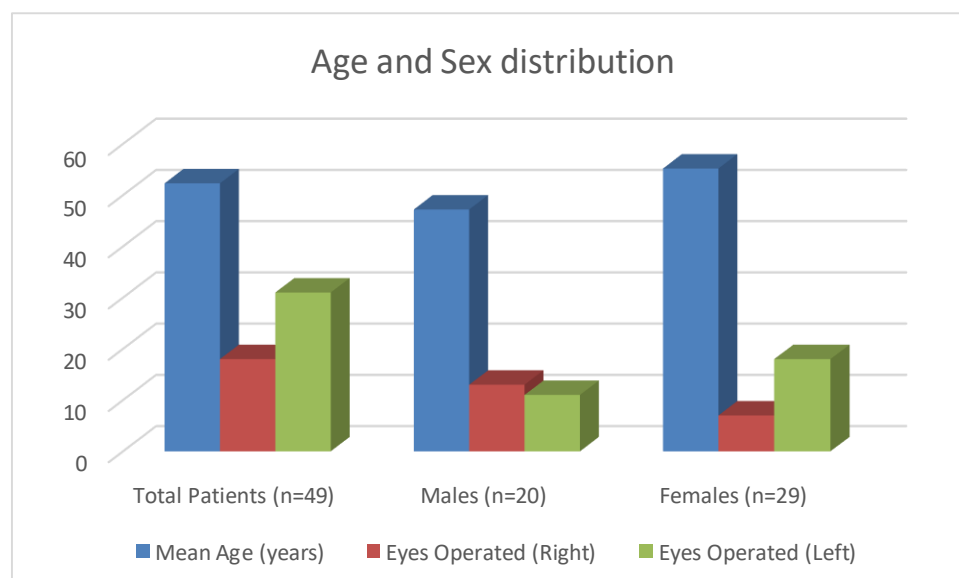
Intra operative photograph of excised pterygium from the corneal surface

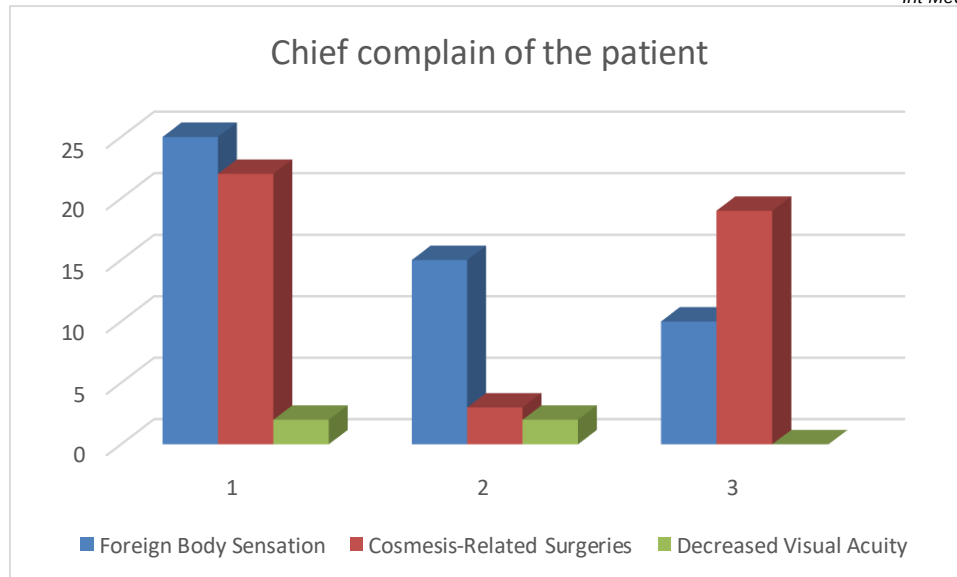


Post-operative photograph of the eye after 6 weeks of pterygium surgery

Results:**Table 1: Demographic and Clinical Characteristics**

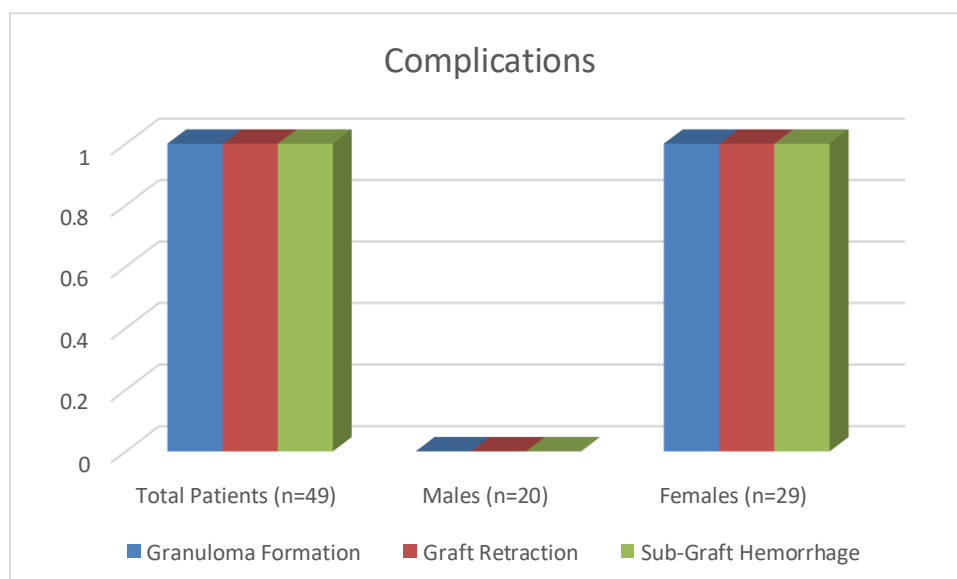
Characteristic	Total Patients (n=49)	Males (n=20)	Females (n=29)
Mean Age (years)	52.3	47.2	55.2
Eyes Operated (Right)	18	13	7
Eyes Operated (Left)	31	11	18
Nasal Pterygium	49	20	29
Foreign Body Sensation	25	15	10
Cosmesis-Related Surgeries	22	3	19
Decreased Visual Acuity	2	2	0





Complications Post-Surgery

Complication	Total Patients (n=30)	Males (n=11)	Females (n=19)
Granuloma Formation	1	0	1
Graft Retraction	1	0	1
Sub-Graft Hemorrhage	1	0	1



Post-operative granuloma formation in the eye operated for nasal pterygium



Sub-graft haemorrhage post pterygium surgery after 1 week.

Discussion

Pterygium (also known as surfer's eye) is an ocular surface disease characterized mainly by a wing-shaped growth of limbal and conjunctival tissue over the adjacent cornea.⁵ Medical treatment in modern times includes lubrication with artificial tear drops or decongestants to provide short-term comfort and a slight improvement in cosmetics. Topical NSAIDs, eye drop loteprednol, brings added comfort.⁶ Various surgical options include pterygium excision which may be left bare, use of mitomycin C 0.02% to prevent recurrence (though associated with complications like scleral necrosis, cataract and iritis) or covered with a conjunctival flap, conjunctival autograft (with a piece of limbal conjunctival tissue) or amniotic membrane with sutures, fibrin glue or autologous blood. Surgical excision with lamellar keratectomy or keratoplasty has also been tried.⁷

Kenyon et al. first described conjunctival auto-graft as a treatment for pterygium in 1985.⁸ This technique involves covering the scleral bed with a free graft taken from the adjacent conjunctiva after removing the pterygium. The graft can be fixed to the adjacent tissue with sutures or adhesive products.⁹

Conjunctival autograft technique requires experience, and the time of surgery is a bit more. Various studies showed that the duration of the operation could be shortened by using fibrin glue, and it was first described for pterygia surgery by Cohen in 1993.¹⁰ Tenon's tissue associated with the graft may act as a new reservoir for further proliferation of fibroblasts and inhibition of pterygium recurrence.⁹ Also complications caused by conjunctival autograft are rare and do not threaten vision.⁸ The main side effects of this method are discomfort and burning of the eye after the operation, granuloma formation, and rarely displacement or rejection of the transplant.⁹

However, this method avoids the unacceptable serious side effects of a single dose of mitomycin C, such as melting of the sclera and the destruction of corneal endothelial cells, and provides a lower recurrence rate and a better aesthetic result than AM transplantation.¹² Fibrin glue is an alternative synthetic glue (made from donor plasma) that is used for this purpose. Although fixation with fibrin glue requires a shorter operation time, it has a possible risk of infection, hypersensitivity reactions, potential risk of graft tissue loss, and higher costs.¹³ Koranyi and colleagues reported a 5.3% recurrence rate when fibrin glue was used, while suture-assisted technique resulted in a recurrence rate of 13.5%. In situ blood coagulum technique has also been proposed to reduce the risk of infection transmission and hypersensitivity reactions associated with fibrin products.¹⁴

The study of Yanyaliet al. showed that the recurrence rate was 57.8% when applied with bare sclera technique and 21% when applied with intraoperative mitomycin C.¹⁵

A meta-analysis of 20 studies in 2016 revealed that AMT is associated with a higher risk of recurrence 6 months after surgery, compared with conjunctival autografting, and the inferiority of AMT is present in both primary and recurrent pterygia. According to the current literature, recurrence of pterygium 3 and 6 months following surgery with AMT ranges from 4.76% to 26.9% and 2.6% to 42.3%, respectively.¹⁶

Successful results have been reported concerning the use of autologous blood fibrin in conjunctival grafting procedures and patient comfort during the postoperative period is better when compared with the surgery performed using the suture.¹¹ However, despite the need for more time and expertise, this method is associated with a lower recurrence rate compared to the bare sclera technique alone.⁹

In the present study we found that conjunctival graft using autologous blood has low patient discomfort, low recurrence and low complication rate.

Conclusion

The use of autologous blood for suture less glue less fixation of conjunctival autografts following pterygium excision appears to be a safe, effective and cheap technique with minimal complications. It offers a good alternative to traditional suture-based methods, particularly in reducing postoperative discomfort and healing time. It is also a good alternative to use of expensive amniotic membrane and Mitomycin C.

References

1. Allen BD, Short P, Crawford GJ. Pinguecula and Pterygia. *Surv Ophthalmol*. 1988;32:41-49.
2. Brad Bowling Kanski's Clinical Ophthalmology. A Systemic approach. Elsevier 2015. Eighth edition 162-164
3. Ardalan Aminlari, Ravi Singh, David Liang. *Ophthalmic Pearls Cornea American Academy of Ophthalmology*. 2010; Eye Net. 37-39.
4. Mohammed I. Treatment of pterygium. *Ann Afr Med*. 2011;10:197-203.
5. Chui J, Di Girolamo N, Wakefield D, et al. The pathogenesis of pterygium: current concepts and their therapeutic implications. *Ocul Surf* 2008; 6: 24-43.
6. Rong SS, Peng Y, Liang YB, Cao D, Jhanji V. Does cigarette smoking alter the risk of pterygium? A systematic review and meta-analysis. *Invest Ophthalmol Vis Sci*. 2014 Sep 04;55(10):6235-43.
7. Khurana AK, Khurana AK, Khurana BP. *Diseases of Conjunctiva*. Comprehensive Ophthalmology. 7th edition;2019.p.89-91.
8. Mohammed I. Treatment of pterygium. *Ann Afr Med*. 2011; 10(3): 197-203.
9. Shahraki T, Arabi A, and Feizi S. Pterygium: an update on pathophysiology, clinical features, and management. *Ther Adv Ophthalmol*. 2021; 13: 1-21.
10. Cohen RA, McDonald MB. Fixation of conjunctival autografts with an organic tissue adhesive. *Arch Ophthalmol*. 1993 Sep;111(9):1167-8.
11. Kenyon KR, Wagoner MD, Hettinger ME. Conjunctival autograft transplantation for advanced and recurrent pterygium. *Ophthalmology*. 1985 Nov;92(11):1461-70.

- Int Med* 2025;7(9): 38-43
12. Özdemir M. Conjunctival z-plasty for pterygium: comparison with conjunctival autografting. *Eur J Gen Med*. 2008; 5(2): 84-89.
 13. Fernandes M, Sangwan V, et al. Outcome of pterygium surgery: analysis over 14 years. *Eye (Lond)*. 2005; 19(11): 1182-1190.
 14. Koranyi G, Seregard S, Kopp ED. Cut and paste: a no suture, small incision approach to pterygium surgery. *Br J Ophthalmol* 2004; 88: 911-914.
 15. Yanyali AC, Talu H, Alp BN, Karabas L, Ay GM, Caglar Y. Intraoperative mitomycin C in the treatment of pterygium. *Cornea*. 2000 Jul;19(4):471-3.
 16. Clearfield E, Muthappan V, Wang X, et al. Conjunctival autograft for pterygium. *Cochrane Database Syst Rev* 2016; 2: CD011349.