Original Research

Pterygium Excision with Conjunctival Autograft Fixation with No Suture, No Glue: Our Simple Modified Surgical Technique

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ABSTRACT

Background: Pterygium is a fibrovascular development of aberrant conjunctival tissue that progresses to the limbus and eventually invades the cornea's superficial layers. This is a frequent ophthalmic condition This syndrome is most commonly encountered in dry, dusty settings.

Methods: This prospective study included a total of 43 patients with primary nasal pterygium, attending at Outpatient Clinic of Ophthalmology Department, at Dr PSR Regional Eye Hospital, Kurnool Medical College, Kurnool. This study was conducted between May 2022 to April 2023

Results: This study included consecutive surgeries using the technique of conjunctival autograft fixation with Bipolar electrocautery in 43 eyes of 43 patients for primary (n = 43 cases) pterygium and out of 43, three are double headed pterygium, eighteen of 43 patients (41.86 %) were female, and 25 (58.13%) were male. The mean age of patients was 67 years old, with a range of 32 to 69 years

The length of follow-up ranged from 6 to 8 weeks (1-2 months). There were no intraoperative or major postoperative complications. The average of postoperative ocular discomfort degree assessed on a scale from 1 to 10 was 4 (mild).

Conclusion: This study demonstrates that the suture less, glueless conjunctival autograft approach is safe, straightforward, quick to execute, requires less surgical time, and is highly successful for managing primary pterygium.

Keywords : Pterygium, autograft, electrocautery.

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INTRODUCTION

Pterygium is a wing-shaped fibrovascular lesion that grows from the conjunctiva onto the cornea inducing symptoms of ocular discomfort, poor cosmetic appearance, and refractive errors and/or corneal opacification with visual consequences¹. Chronic UV exposure plays a major role in pathogenesis. Surgical treatment of pterygium is directed at excision, prevention of recurrence, and restoration of ocular surface integrity. Currently, the most widely used technique involves excision of the pterygium followed by a conjunctival autograft, which lowered recurrence rates to 5.6 to 11.8%. Initially, the conjunctival graft was fixated to the pterygium excision site with vicryl or nylon sutures². Recent reports favour the use of fibrin glue over sutures to fixate the conjunctival graft in pterygium surgery for improving comfort, decreasing surgical time, and reducing complication rates³. A less expensive and alternative option to fibrin glue involves conjunctival autograft fixation induced by hemostasis of the patient's own serum and electrocauterization⁴. The present report describes our experience using a bipolar electrocauterization for conjunctival autograft fixation in pterygium surgery

OBJECTIVES

- 1. To assess **post operative discomfort** with bipolar cauterization
- 2. To asses **the operating time** of the pterygium surgery with conjunctival autograft using bipolar cauterization

MATERIALS & METHODS

A noncomparative, prospective, interventional case series of pterygium surgery with follow-up of 6 weeks.

Inclusion criteria: Participants will be adults (older than 18 years of age) of both sexes with primary nasal pterygium >4mm, which tend to increase, including

participants with reduced visual acuity, chronic inflammation, cosmetic reasons. If the participants had a bilateral pterygium, only one eye will be operated.

Exclusion criteria: Participants with connective tissue disease, participants with chronic use of topical drugs (antiglaucoma drops) will be excluded

Intervention: The protocol was approved by the Ethical Committee, with informed patient consent obtained before surgery. evaluation included visual acuity, intraocular pressure, and slit-lamp and fundus examinations. Pterygium were graded according to the classification proposed by Johnston et al. After pterygium excision, free conjunctival grafts from the superior bulbar conjunctiva of the same eye were harvested and fixated with the use of bipolar electrocautery.

Surgical procedure and postoperative management and evaluation :

All surgical procedures were performed under peribulbar anaesthesia.

In brief:

- 1. A wire speculum was used to open the lids (Figure 1(a))
- 2. A disposable blade was used to free the pterygium from the cornea and limbus (Figure1(c)).
- 3. Westcott scissors were used for complete removal of the conjunctival lesion and the subjacent Tenon's.
- 4. The size of the conjunctival graft required to cover the exposed scleral surface was measured

and a superior conjunctival graft was harvested. (Figure 1(d)).

- 5. The edges of the free graft and the recipient conjunctiva were everted and cauterized using regular bipolar electrocautery.
- 6. Coaptation began at the two points closest to the limbus and continued to adjacent points until every part of the graft and recipient conjunctiva was fused.

After surgery, antibiotic eye ointment is applied to the ocular surface and a pressure patch was applied. The patch was removed 1 day after the surgery, and steroid–antibiotic drops were administered 6 times daily, then tapered and discontinued over the following 4 weeks. Lubricant drops were also used 4 times daily for 1 month. Postoperative followup examinations were performed at approximately 1 week and every 15 days there after for about 2 months.

RESULTS

This study included consecutive surgeries using the technique of conjunctival autograft fixation with Bipolar electrocautery in 43 eyes of 43 patients for primary (n = 43 cases) pterygium and out of 43 three are double headed pterygium. Eighteen of 43 patients (41.86 %) were female, and 25 (58.13%) were male . The mean age of patients was 67 years old, with a range of 32 to 69 years (Table 1).

The length of follow-up ranged from 6 to 8 weeks (1-2 months). There were no intraoperative or major postoperative complications (Figure 2). The average of postoperative ocular discomfort degree assessed on a scale from 1 to 10 was 4 (mild).

Number of eyes (patients)	43
Laterality (right/left)	18:25
Double headed pterygiums	03
Male:Female	20:23
Age (years)	32 – 69 years
Follow-up period (months)	2 months
Primary/Recurrent pterygium	43:0
Table 1. Demographic data of patients	



(d) The graft is excised close to the limbus. (e) The free conjunctival graft is moved to the scleral bed (f) Electrocautery fixation of conjunctival autograft transplantation for pterygium Coaptation begins at the 2 points closest to the limbus Fixation with cautery continues to the adjacent points until every part of the graft and recipient conjunctiva is fused. (g) Final aspect of the surgery.



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DISCUSSION

This study included consecutive surgeries using the technique of conjunctival autograft fixation with bipolar electrocautery in 43 eyes of 43 patients, for primary pterygium. There were no intraoperative or major postoperative complications and the degree of postoperative ocular discomfort assessed on a scale from 1 to 10 was minimum. The gold-standard surgical treatment of pterygium includes its excision followed by a conjunctival autograft. In 1985, Kenyon et al.⁵ demonstrated a recurrence rate of 5.3% after conjunctival autografting in primary pterygium, with a mean follow-up of 24 months. Except for the loss of the conjunctival graft and formation of granuloma, few complications have been described with this method. In cases of recurrent pterygium, a combination of different techniques including intraoperative use of mitomycin C and amniotic membrane transplantation is sometimes necessary to reduce recurrence⁶. Traditionally, the conjunctival graft is attached to the conjunctiva and sclera by suturing, which is associated with postoperative discomfort and suture-related complications². More recently, fibrin glue has consolidated as an alternative to suturing the conjunctival graft in pterygium surgery⁷. This suture less technique decreases operating time, improves postoperative comfort, and avoids suture related problems. Pan et al. conducted a meta-analysis confirming the superiority of fibrin glue over sutures in pterygium surgery⁷. Besides, the authors found evidence that fibrin glue significantly reduces its recurrence rate. The cost, potential risk of biological contamination and anaphylaxis, together with the fact that fibrin glue needs to be stored in a refrigerator which is not always available, led some surgeons to use autologous serum as a substitute⁸. However, this technique also presents drawbacks: intraoperatively takes more time, and postoperatively presents a high rate of graft loss. Maiti et al. showed no significant difference in the pterygium recurrence rate between conjunctival autograft fixation with fibrin glue vs. autologous blood coagulum⁸, but graft stability was found to be better with the former. Xu et al.⁷ compared the efficacy and safety of conjunctival autografting fixated with an electrocautery pen versus nylon sutures in primary pterygium and evidenced a shorter operative time, less pain and irritation with the electrocauterization⁹. In our study, we used bipolar electrocautery, requiring less energy and time, and perhaps less fibrosis formation compared to the monopolar electrocautery pen. Mejia et al.¹⁰ compared four limbal-conjunctival autograft fixation techniques - conventional suture, commercial fibrin glue, autologous fibrin glue, and cautery - in primary pterygium surgery¹¹. The authors found that limbal conjunctival autograft fixation with cautery was the technique with the lowest postoperative discomfort rate, as well as the one not having a statistically significant increase in recurrence rate9. In our study, we included a relatively large number of patients who

underwent pterygium excision and conjunctival autograft fixated using the bipolar electrocautery with a minimum follow up time of 1- 2 months. The surgeries were all performed by the same surgeon which decreases the risk of technique variation. Other complications were insignificant and did not require intervention. However, it is important to acknowledge the intrinsic limitations of our study as prospective, non-comparative series of cases.

CONCLUSION

Pterygium surgery with conjunctival autograft fixation with bipolar electrocautery is straight forward, costeffective and presents a low rate of complications. Our observation together with the reported literature suggests that this technique may become the standard in areas presenting a high prevalence of pterygium where accessibility limits the use of fibrin glue or suture. Randomized studies are necessary to analyze the real effectiveness of this technique in the treatment of pterygium

The sutureless glueless conjunctival autograft procedure is safe, straightforward, and quick to conduct. It also takes less time during surgery. Effective for the treatment of primary pterygium. We discovered that the technique had no more problems related to sutures and glue of Other pterygium postsurgical excision techniques, with fewer discomfort, quick healing, and affordable . Additional controlled research are required to demonstrate the possible benefits and long-term repercussions of this procedure.

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