

**COMPARISON BETWEEN SUTURED AND SUTURELESS GLUE FREE  
CONJUNCTIVAL AUTOGRAFT IN PRIMARY PTERYGIUM****Dr. Hosam Osman Mansour**

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**ABSTRACT**

**Purpose:** To compare the outcome of two techniques used in the management of primary pterygium. **Methods:** A retrospective comparative study from medical records of patients suffering from primary pterygium treated by excision with either sutured or sutureless glue free conjunctival autograft. **Results:** 39 eyes of 39 patients suffering from cosmetically annoying primary pterygium were reviewed. Patients were classified into two groups. The first group included 18 patients where sutures were used. 11 patients were males, 7 patients were females. The age range was from 24 to 68 years, mean  $48.73 \pm SD$ . The second group included 21 patients in whom sutureless and glue free pterygium surgery was done. 9 patients were males, and 12 patients were females. The age range was from 22 to 76 years, mean  $49.19 \pm SD$ . In the first group recurrence was observed in 3 patients (16.66%), two cases (11.1%) developed scleral necrosis, and four cases (24.18%) developed granuloma. Operative time ranged from 21 to 26 minutes. In the second group recurrence was observed in one patient (4.76%), no cases of scleral necrosis or granuloma were observed. Operative time ranged from 11 to 15 minutes. **Conclusion:** The technique of sutureless and glue free conjunctival autograft in pterygium surgery is an easy technique that avoids the use of adjuvant materials such as MMC, procedures such as diathermy and foreign materials like sutures with potential adverse effect. One more advantage of the suture less glue free technique is the shorter operative time.

**KEYWORDS:** Primary pterygium, sutureless, glue, conjunctival autograft.**INTRODUCTION**

Pterygium is a pinkish triangular wedge-shaped growth of conjunctival tissue. It proliferates as a vascularized granulomatous tissue to invade the corneal surface, in addition to the obvious cosmetic concerns, it can induce corneal astigmatism. The induced corneal astigmatism may cause significant visual impairment and may require surgery. It is influenced by age and solar radiation.<sup>[1]</sup> Although it can be easily excised, it has a high rate of recurrence ranging from 24% to 89%.<sup>[2]</sup>

Numerous adjunctive measures have been described to reduce the recurrence rates after its excision. These may be broadly classified as medical methods, beta irradiation and surgical methods. Limbal-conjunctival autograft is currently the most popular surgical procedure as it has been suggested that including the limbal stem cells act as a barrier to the conjunctival cells migrating onto the corneal surface. The most common method of autograft fixation is suturing, with drawbacks of prolonged operating time, postoperative discomfort, suture abscesses, buttonholes, and granuloma formation which usually requires a second operation for removal. Replacing sutures with tissue adhesives may shorten the operating time, improve postoperative comfort, and

avoid suture related complications. However, the major concern of the commercial fibrin glue is the cost and the potential risk of transmitted infection.<sup>[3]</sup> Scanty data exists evaluating the success of sutureless and glue free limbal conjunctival autograft for the management of primary pterygium. The results of these studies were very encouraging as they suggested that suture less and glue free limbal conjunctival autografting following pterygium excision is a simple, safe, effective, without many complications and economical option for the management of primary pterygium.<sup>[4]</sup>

Suture-related complications include infection, prolonged operating time, postoperative discomfort, suture abscesses, buttonholes, and pyogenic granuloma which usually require a second surgery for removal and chronic inflammation<sup>[5,6]</sup> Plasma-derived fibrin glue has the potential risk of prion disease transmission and anaphylaxis in susceptible individuals.<sup>[7]</sup>

**MATERIAL AND METHODS**

39 eyes of 39 patients suffering from cosmetically annoying primary pterygium were reviewed. Patients were classified into two groups. First group included 18 eyes treated with sutured conjunctival autograft. The

second group included 21 eyes treated with sutureless glue free conjunctival autograft.

#### **Exclusion criteria**

Recurrent pterygium, and ocular surface diseases interfering with graft viability.

#### **Preoperative examination**

All patients underwent complete ocular examinations including visual acuity, refraction, slit lamp biomicroscopy, measurement of intraocular pressure, extraocular muscle movements and dilated funduscopy. Anterior segment photography was performed for documentation of pterygium size and morphology. Informed written consent was obtained from all patients.

#### **Surgical technique**

All patients underwent pterygium excision with conjunctival autograft that was sutured in the first group and was sutureless and glue free in the second group.

#### **Anesthesia**

Pterygium excision was performed under topical and subconjunctival anesthesia in the first group and peribulbar anesthesia in the second group.

#### **Procedure**

Eye lid speculum was inserted. Pterygium excision started at the base of the pterygium removing the diseased conjunctiva and adjacent Tenon's capsule using a blunt Wescott scissor leaving a bare sclera. Bi polar diathermy was applied to the bare sclera bed in the first group only. Pterygium removal from the cornea was done using a crescent knife in the first group. In the second group retrograde detachment of the pterygium from the underlying cornea (through creating a plane of cleavage) leaving a smooth cornea was done (no crescent knife was used). The bare scleral area was measured with a caliper. The conjunctival autograft was harvested from the superior temporal quadrant of bulbar conjunctiva. To separate the conjunctiva from Tenon's capsule 1 cc of BSS was injected; a marker was used to mark the limbal corners of the conjunctival graft. A small opening was created and careful blunt dissection with Wescott scissors was performed until the entire graft was free from Tenon's reaching the limbus to include limbal stem cells. Subsequently, the edges of the graft were cut by scissors. Two non-toothed forceps were used to slide the graft to the bare sclera, the epithelial side was down and the limbal edge toward the limbus. The graft was then rotated upside down.

#### **Graft fixation**

In the first group the graft was fixed using 7/0 vicryle sutures. The eye was bandaged for 24 hours.

In the second group hemostasis was allowed to occur spontaneously without use of cautery to provide autologous fibrin to glue the conjunctival autograft. The graft was squeezed using a strabismus hook from the

center toward the periphery to make the bed dry. Stabilization of the graft was tested to ensure firm adherence to the sclera before removal of the speculum.

## **RESULTS**

39 eyes of 39 patients of primary pterygium were included. Patients were classified into two groups. The first group included 18 patients. 11 patients were males, 7 patients were females. The age range was from 24 to 68 years, mean 48.73 + SD.

The second group included 21 patients. 9 patients were males, and 12 patients were females. The age range was from 22 to 76 years, mean 49.19 + SD.

**Table 1: Patients' demographic data.**

	<b>First group</b>	<b>Second group</b>
Male	11	9
Female	17	12
Age range	24 - 68 years, mean 48.73 + SD.	22-76 years mean 49.19 + SD.

#### **Recurrent pterygium**

In the first group recurrence was observed in 3 patients (16.66%). Recurrence was observed in the first 6 weeks post-operative. In the second group recurrence was observed in one patient (4.76%), this was observed at the 4<sup>th</sup> week.

#### **Scleral necrosis**

In the first group two cases (11.1%) developed scleral necrosis discovered in the first two weeks post operatively. No cases were recorded in the second group.

#### **Granuloma formation**

In the first group four cases (24.18%) developed granuloma, while no cases were observed in the second group.

#### **Operative time**

In the first group operative time ranged from 21 to 26 minutes, while in the second group the operative time ranged from 11 to 15 minutes.



Fig. (1a and 1b): Operative picture of primary pterygium from the first group, before and after excision and graft fixation with 7/0 vicryl sutures.



Fig. 2: Shows marking and dissection of the graft in the sutureless group.

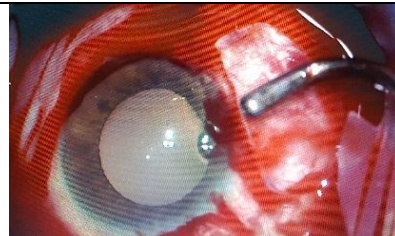


Fig. 3: Shows graft drying and squeezing using strabismus hook from the sutureless group.



Fig. 4 Shows final picture after graft fixation in the sutureless group.

Table 2: Summary of the outcome in the two groups.

	First group	Second group
Recurrence rate	3 eyes (16.66%)	1 eye (4.76%)
Scleral necrosis	2 eyes (11.1%)	Not recorded
Granuloma formation	4 eyes (24.18%)	Not recorded
Operative time range	22-28 minutes	13-16 minutes

## DISCUSSION

The most common method of autograft fixation in pterygium surgery is suturing, with the drawbacks of prolonged operating time, postoperative discomfort, suture abscesses, buttonholes, and granuloma formation.

In this work 39 eyes of 39 Egyptian patients were reviewed after they had primary pterygium excision. The surgical procedure of graft fixation was evaluated (sutureless glue free versus sutured).

### Recurrent pterygium

In the first group recurrence was observed in 3 patients (16.66%). Recurrence was observed in the first 6 weeks post-operative. In the second group recurrence was observed in one patient (4.76%), this was observed at the 4<sup>th</sup> week.

### Scleral necrosis

In the first group two cases (11.1%) developed scleral necrosis discovered in the first two weeks post-operatively. No cases were recorded in the second group. The absence of scleral necrosis in the second group could be attributed to the fact that in non-sutured cases diathermy was not used. The use of diathermy led to

scleral weakness due to vascular occlusion with subsequent ischemia.

### Granuloma formation

In the first group four cases (24.18%) developed granuloma, while no cases were observed in the second group. This difference could be explained by the fact that granuloma formation is a sequelae of suture materials. The difference is statistically significant.

### Operative time

In the first group operative time ranged from 22 to 28 minutes, while in the second group the operative time ranged from 13 to 16 minutes. The longer duration of surgery in the first group could be clearly explained by the time taken in graft suturing, which is absent in the second group.

*De Wit et al (1)* studied 15 eyes of sutureless pterygium technique, and concluded that the procedure is a simple technique for pterygium surgery and may prevent potential adverse reactions encountered with the use of foreign materials.

The results in this work support the previous conclusion as regard diathermy was not used with absent scleral necrosis, and that suture related complications (granuloma formation) were also absent in the second group.

*Ghali AA (8)* studied 78 eyes treated by simple excision and sutured conjunctival auto graft with adjuvant diathermy in all cases and Mitomycin C (MMC) in 43 cases. The results of the study showed that recurrence was reported in 7%, scleral necrosis in 7.769%, granuloma formation in 5.12% and stitch irritation in 66.6%. The study attributed the occurrence of scleral

necrosis to the use of diathermy and or MMC (ischemia inducing factors).

**Elwan SA (9)** compared two groups of patients treated for primary pterygium one group sutured and the other was sutureless after pterygium excision, the study concluded that the sutureless and glue free technique is easy, safe, and prevents the potential adverse complications of suture materials. The recurrence rate was 8% in the sutured group compared to 6% in the non-sutured group.

**Sharma et al (10)** studied the efficacy of non-sutured pterygium surgery and concluded that the technique is an effective and safe option for primary pterygium. The recurrence rate was 1.25%, and Tenon's granuloma was reported in 1.25% (1 case).

**Rathi et al (11)** studied 50 eyes in which pterygium excision was followed by sutureless glue free conjunctival graft, recurrence developed in 1 eye (2%), graft loss in 1 eye (2%) and chemosis in 2 eyes (4%). Compared to the non-sutured group in this work the recurrence in was 4.76%, and there were no cases of graft loss, this could be attributed to difference in the method of surgery. In this work peribulbar anesthesia was used so that ocular movement in the early postoperative period was prevented with more graft stability. In addition, the intra operative squeezing and drying by the strabismus hook helps graft stabilization.

## CONCLUSION

The technique of sutureless and glue free conjunctival autograft in pterygium surgery is an easy technique that avoids the use of adjuvant materials such as MMC, procedures such as diathermy and foreign materials like sutures with prevention of suture related complications. The use of peribulbar anaesthesia helps the graft stability.

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