

## Comparison of Autologous Fibrin Versus Sutures in Conjunctival Limbal Autografting Following Pterygium Excision

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Received: 12-09-2023 Revised: 30-09-2023 / Accepted: 15-10-2023

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Conflict of interest: Nil

### Abstract

**Background:** Pterygium is a frequently occurring ocular surface lesion with characteristic wing shaped fleshy growth, encroaching from conjunctiva upon the cornea. Surgical excision of pterygium is the most widely accepted modality of treatment. Among the various techniques limbal conjunctival autograft is the best method because of low recurrence and high safety.

**Aim:** To compare the efficacy and safety of Autologous fibrin and Sutures in pterygium excision.

**Materials and Methods:** The study included 60 patients and were divided into two groups. 30 patients (group 1) underwent pterygium excision with conjunctival autografting using autologous fibrin and the other 30 patients (group 2) underwent pterygium excision with conjunctival autografting using 10-0 nylon sutures. The operating time was noted for both the groups. The post operative symptoms, signs, complications and recurrence was assessed.

**Results:** The mean operating time for group 1 was 22.1 minutes and group 2 was 43.33 minutes. The post operative symptoms, complications was significantly less in the autologous fibrin group when compared to sutures. The recurrence rate was similar in both the groups.

**Conclusion:** Autologous fibrin use was found to be safe, effective and economical procedure.

**Keywords:** Pterygium; Conjunctival autografting; Sutures; Autologous fibrin.

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### Introduction

The word pterygium is derived from greek word pterygos meaning “wing” and was described by Hippocrates, Galen and others [1,2]. The term pterygium was introduced to the English language in 1875 by Walton [3]. Pterygium is a degenerative condition of the subconjunctival tissue which proliferates as a vascularised granulation tissue to invade the cornea, destroying the Bowman’s membrane and superficial layers of the stroma and the whole being covered by conjunctival epithelium [4]. It appears as a triangular encroachment of the conjunctiva upon the cornea. The prevalence of pterygium is high in tropical belt of the world, especially in India where hot, sunny and dusty weather favours the growth [1,5]. UV rays is the most important risk factor [6,7].

A small pterygium usually has no symptoms. But the large pterygia can be indications for pterygium excision, such as decreased visual acuity resulting from visual axis involvement, irregular astigmatism, tear film break up, restriction of ocular movements, eye irritation and discomfort, inability to wear contact lenses, difficulty in performing refractive surgery and cosmetic concern [8].

Surgical removal remains the mainstay of treatment with the basic procedure of being complete excision leaving a bare area of sclera [9]. The recurrence rate of traditional bare sclera technique ranges from 24%-89% [10]. So, the use of adjuvant treatment is only justified to tackle this problem. Among the various modalities of adjuvant treatment in use are beta irradiation, intraoperative application of mitomycin-c with conjunctival autograft and amniotic membrane graft. Conjunctival autografting has been a method to reduce recurrence following pterygium excision.

Conjunctival autografting with sutures has the disadvantage of longer operating time and complications such as granuloma formation, suture abscess, giant papillary conjunctivitis and significant patient discomfort after surgery [11]. Recently conjunctival autografting with autologous fibrin have been used to minimize operating time and discomfort associated with sutures [11]. Now the attention is towards making the method more patient as well as surgeon friendly. In this direction autologous fibrin has recently emerged as major breakthrough for attaching the graft. In this study

we compare the efficacy and safety of Autologous fibrin and Sutures in pterygium excision.

**Materials and Methods**

This prospective study included 60 patients attending Department of Ophthalmology at Viswabharathi Medical College, Kurnool from January 2022 to January 2023 with primary nasal pterygium requiring surgical excision. Patients were divided into two groups by simple randomization.

- a) Group 1-30 patients - Autologous fibrin (AF)
- b) Group 2- 30 patients -10-0 nylon sutures (S)

**Inclusion Criteria**

Patient aged above 18 years and with primary progressive nasal pterygium.

**Exclusion Criteria**

Patients on anticoagulants, with pre-existing glaucoma, immune system disease like Sjogren syndrome, Steven-Johnson syndrome, TEN, previous ocular surgery or trauma. Preoperative ophthalmic evaluation: Uncorrected and best corrected visual acuity, keratometry, slitlamp examination, and fundoscopy. Investigations like the haemogram, blood sugar was done. Informed consent was taken. Surgical technique: All cases were given peribulbar block. Eye was painted and draped with betadine and then lid speculum was applied. The head of pterygium was completely excised from the cornea by crescent blade and body of pterygium excised with conjunctival scissors. Bleeders were not cauterised at all or only minimal cautery, if any, was preferred. Abnormal scar tissue from cornea was polished . Limbo conjunctival defect was measured with the help of callipers and 1mm oversized free limbo conjunctival graft was

harvested from the supero-temporal bulbar conjunctival quadrant of the same eye. Careful dissection was done to remove all tenon tissue. Subsequently graft was moved to nasal area and placed over the bare sclera with stromal side down and limbus to limbus orientation.

In group 1, autologous fibrin was used to secure the graft. The surgeon allows a thin film of blood clot to form over the bare area. After the graft was aligned, it was placed over the blood film in the bare area, and the edges were held with forceps for three to five minutes to give adequate time for graft fixation to occur.

In group 2, graft was secured with 4-6 sutures using 10-0 nylon. All the sutures were buried underneath.

Follow up was done on day 1, day 3, day 10, day 30, day 90, day 180 postoperatively.

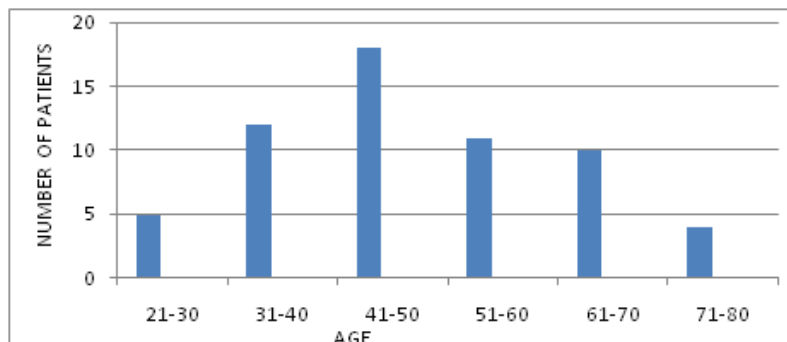
Various parameters like the operating time, post-operative symptoms and signs like pain, foreign body sensation, lacrimation, subconjunctival haemorrhage, graft gaping / retraction and recurrences were noted in both the groups.

Chi-square test was used to compare two groups in terms of operating time, post-operative symptoms & signs, complications as well as recurrence rates.

**Results**

The mean age of patients in group 1 was 50.6 yrs with a range of 29 – 75 yrs and in group 2 was 49.7 yrs with a range of 26- 80 yrs.

Majority of the patients were in the age group of 41- 50 yrs. Out of 60 patients, 15 (25%) patients were male and 45 (75%) patients were female. The age and sex distribution are shown in graph 1 and table 1 respectively.



**Figure 1: Graph Showing Age Distribution**

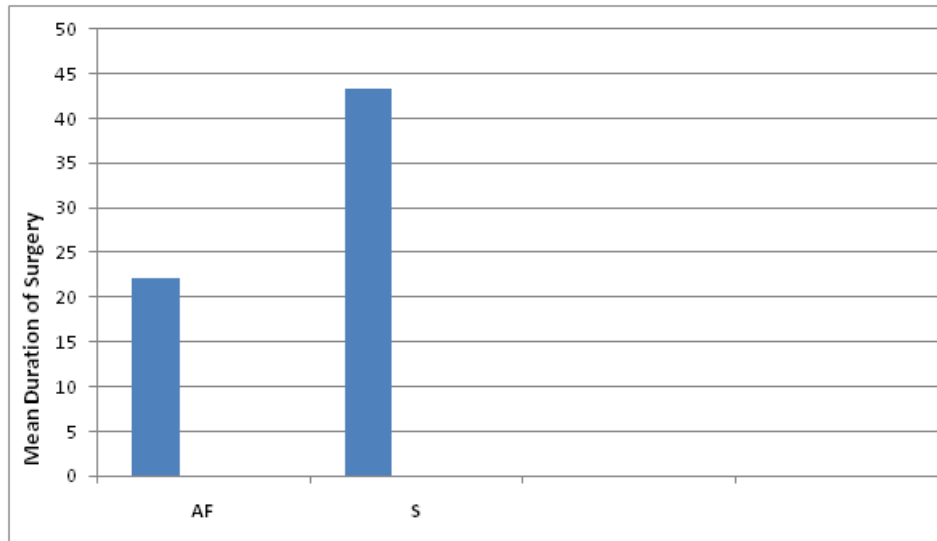
**Table 1: Sex Distribution**

Sex	Number of patients	Percentage (%)
Male	15	25
Female	45	75
Total	60	100

The mean operating time in group 1 was significantly shorter and was found to be 22.1 minutes (range 17-27 minutes) and in group 2 was found to be 43.33 minutes (range 37-49 minutes) which was shown in table 2 and graph 2.

**Table 2: Mean Duration of Surgery**

Technique	Mean duration of surgery (in minutes)
Group 1-AF	22.1
Group 2 –S	43.33



**Figure 2: Graph Showing Mean Duration of Surgery**

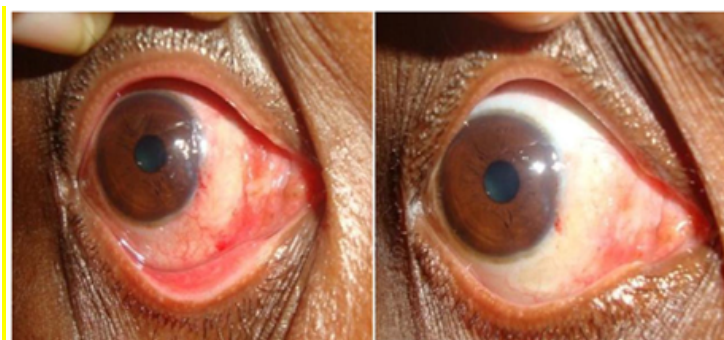
The post operative symptoms and signs like pain, foreign body sensation, lacrimation, subconjunctival haemorrhage were minimal in group 1 when compared to group 2 and were significantly less on postoperative day 1, day 3 and not significant on day 10, 1 month. There was no

statistically difference in graft gaping between two groups on postoperative day 1, day 3, day 10 and 1 month (P =1) with 1 patient each in both the groups. Recurrence was seen in 1 patient in group 1 and 2 patients in the group 2 at the end of 3<sup>rd</sup> month and 6<sup>th</sup> month which was not significant.

**Table 3: Recurrence on Postoperative 1 Month, 3 Months & 6 Months**

Recurrence	1 Month	3 Months	6 Months
Group 1	0	1	1
Group 2	0	2	2

At 3<sup>rd</sup> month and 6<sup>th</sup> month follow-up, none of the patients in either group had any pain, foreign body sensation, lacrimation, subconjunctival haemorrhage, graft gaping. There was 1 patient in suture group who showed suture granuloma at 3<sup>rd</sup> month follow-up and was excised. Autologous fibrin use was not associated with any complications.



**A) Postoperative Day 1      B) Postoperative Day 3**  
**Figure 3: Autologous Fibrin Case Follow-Up**

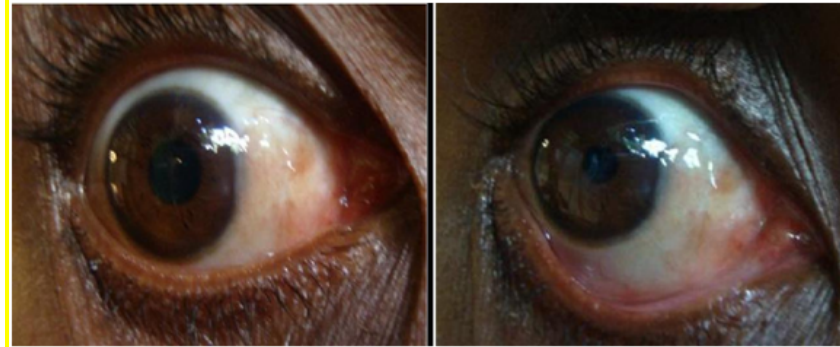
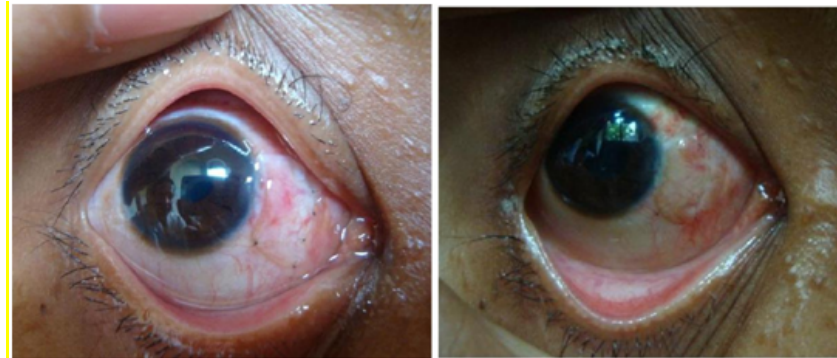


Figure 4:



A) Postoperative Day 1

B) Postoperative Day 3

Figure 5: Suture Case Follow-Up

### Discussion

Various surgical techniques have been devised in an attempt to achieve complete pterygium excision and to reduce the recurrence rates. Amongst the various techniques, pterygium excision combined with conjunctival autografting including limbal stem cells has been associated with lowest recurrences rates.

In the present study, majority of the patients were in the age group of 41-50 years. Seid and sejiga et al, conducted a study which was showing highest prevalence of 61.76% cases noticed in age group 41-50 years [12]. Bruced's Allan et al, conducted cross sectional study, noticed highest number of patients attending for surgery at mean age of 49 years [13]. The mean operating time in autologous fibrin group was found to be 22.1 minutes (range - 17-27 minutes) and in suture group it was found to be 43.33 minutes (range- 37-49 minutes). In studies conducted by Choudhury S et al and Alamdari et al, the average operating time for the autologous fibrin group was significantly shorter ( $P < 0.001$ ) than sutures [14,15]. The post-operative symptoms and signs like pain, foreign body sensation, lacrimation, subconjunctival haemorrhage were less in group 1 when compared to group 2. In the studies done by Ashok Sharma et al, Natung T et al and Sangole AM et al showed that there was lesser postoperative discomfort in autologous fibrin [16,17,18].

Graft gaping was similar in both the groups. Grafts were as secured as with sutures in the present study. Shaaban A.M et al, reported in a study that early graft retraction with exposure of scleral bed occurred in 6 eyes in autologous fibrin group and in 6 eyes in sutures group within the first postoperative week due to conjunctival edema and chemosis<sup>19</sup>. In a study conducted by Choudhury S et al, graft retraction was more common in autologous fibrin group than suture group; however, the difference was not statistically significant ( $Z = 0.61$ ) [14]. In our study, there was no patient with recurrence in both the groups on day 30, and there was 1 patient with recurrence in autologous fibrin group and 2 patients in suture group on 3rd month, 6th month which is not significant. In a study conducted by Ashok Sharma et al, the recurrence was seen in 1 patient (4%) in suture group and no patient had recurrence in autologous fibrin group which was not significant [16]. In a study conducted by Sangole AM et al, it was seen that there was no recurrence in both groups till day 90, and there were 2 patients in suture group and no recurrence in autologous fibrin on day 180 which was not significant<sup>18</sup>. Alamdari, D.H et al, reported that there was no recurrence seen in autologous fibrin and 5 patients (8.3%) had recurrence in suture group which was not significant [15].

## Conclusion

In our study we found that autologous fibrin use was associated with significantly shorter duration of surgery, lesser postoperative symptoms, signs, complications and cost effective compared to suturing. Grafts attached with autologous fibrin were as stable as those attached with sutures. However, the recurrence rates were found to be similar in the two groups. Autologous fibrin use was also found to be safe, effective and economical procedure.

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