

# Comparative study of using fibrin glue and sutures in pterygium excision with conjunctival autograft in tertiary care center

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## Abstract

**Background:** Pterygium is a fibrovascular, wing shaped encroachment of the conjunctiva on to the cornea. The prevalence rates of pterygia range from 0.7 to 31% among different populations and are also influenced by age, race and exposure to solar radiations. **Aim:** The aim of the study Comparison of fibrin glue and sutures for attaching conjunctival autograft after pterygium excision and to study the intraoperative and post operative complications after the procedure.

**Materials and Methods:** The present study during Dec 2008 to May 2010. The study included forty eyes of forty patients presented at our outpatient department with Primary Pterygium extending more than 1mm on to cornea. **Results:** 50 patients are included in this study 23 (46%) males and 27 (54%) were females. Majority (75%) of patients were labourers engaged in outdoor occupations. This could be a predisposing factor for development of pterygium. All patients included in this study were with primary pterygia. The pterygium was nasal in 45(90%) cases, and temporal in 5(10%) cases. In this study 46 eyes (92%) had pterygium of <3mm size, 4 eyes (8%) had a pterygium of 3-6mm size. All 50 cases were followed up to a minimum period of 6 months. **Conclusions:** Use of Fibrin glue in pterygium surgery with conjunctival auto grafting significantly reduces surgery time, improves post operative patient comfort. This technique is free from sight threatening complications, unlike topical chemotherapy or radiotherapy and has no manifest deleterious effect on visual acuity unlike lamellar grafting.

**Key Words:** fibrin glue, sutures in pterygium.

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## INTRODUCTION

Pterygium is a fibrovascular, wing shaped encroachment of the conjunctiva on to the cornea. It is common worldwide but is particularly prevalent in tropical and sub tropical areas. Since the days of Susruta, the world's first ophthalmic surgeon who recognized the pterygia,

disturbing both the patient because of their unsightly appearance and the surgeon also by their tendency to recur. The prevalence rates of pterygia range from 0.7 to 31% among different populations and are also influenced by age, race and exposure to solar radiations. The pterygium belt extends around the world between latitudes 35-degree north and 35 degree south of the equator. The excision of a pterygium with no added therapy (Bare sclera technique) was widely practiced because it was believed to be safe and simple. However with time it became apparent that the recurrence rate was unacceptably high ranging from 32% to 88%.<sup>1</sup> Several methods were implemented with the aim of improving the success rates, among them conjunctival auto graft was a one of the recent recommended techniques. This study concerns itself with a clinical study of pterygium excision with conjunctival auto graft in order to determine the

safety of the procedure in terms of complications and the success rate of the procedure in terms of recurrence

### MATERIALS AND METHODS

The present study titled “Comparison of fibrin glue and sutures for attaching conjunctival autograft after pterygium excision” was conducted at Sarojini Devi Eye Hospital, Hyderabad during Dec 2008 to May 2010. The study included forty eyes of forty patients presented at our outpatient department.

**Inclusion Criteria:** Primary Pterygium extending more than 1mm on to cornea.

#### Exclusion Criteria

1. Patients with pseudopterygium
2. Patients with co-existent conjunctival disease like previous alkali burns, Moorens ulcer etc... which predisposed to the formation of pseudopterygium.
3. Patients with atrophic pterygium
4. Patients more than 50 years.
5. Patient with recurrent pterygia

All patients included in the study underwent the following examination for Visual acuity testing, Refraction and best corrected vision, Slit lamp biomicroscopic examination was done for all patients and following points were noted are The location of the pterygium, Progressive or non progressive, Extent of the pterygium encroachment onto the cornea was estimated and classified according to understated classification.

**Table 1:**

Group A	Up to ¼ of the cornea
Group B	Up to 1/2 of the cornea
Group C	Up to pupillary border

Associated corneal disease, All patients were evaluated to rule out Diabetes mellitus, hypertension. All patients underwent IOP measurement and lacrimal passage syringing prior to surgery.



**Figure 1:** Morphology of Pterygium

A written informed consent explaining the complications and possibility of recurrence was obtained from all patients. Patients were started on

1. Ciprofloxacin eye drops 0.3% 6<sup>th</sup> hourly in the eye to be operated, one day prior to surgery.
2. Injection xylocaine 2% test dose was given subcutaneously to look for any signs of sensitivity.

All Patients underwent pterygium excision with conjunctival auto grafting in the following manner.

#### Surgical Procedure

1. Peribulbar anesthesia was given with 2% xylocaine and 0.5% bupivacaine.
2. The surgical field was painted with Betadine and draped with sterile drapes.
3. Universal eye speculum was used to separate the lids and expose the surgical field.
4. The head was grasped with a fine-toothed forceps and the head was dissected off from the cornea with a crescent blade up to the limbus.
5. The body of the pterygium was dissected and excised using Westcott’s scissors.
6. The excised area included a 1mm border beyond the edges of the excised head at the limbus.
7. The globe was turned inferiorly and lignocaine 2% was injected subconjunctivally in the supero-temporal quadrant to form a bleb and separate it from the Tenon’s Capsule.
8. Westcott’s scissors was used to cut a conjunctival flap of the exact size of the receiving scleral bed measured using Castroviejo’s calipers.
9. The exact limbal orientation of the conjunctival graft was maintained and shifted to the receiving bed.
10. The dissected area of the cornea was smoothed out by scraping with no. 15 BP blade.
11. The graft was sutured using 10/0 nylon interrupted sutures, with the bites incorporating the episclera in first group.
12. The graft was attached to episclera with Fibrin glue in second group.
13. Injection Gentamycin was given to the inferior fornix at the end of the procedure and the eye was closed and padded.

Post-operatively the patients were evaluated with respect to Condition of the graft (retraction, chemosis, hemorrhage, congestion) and Condition of the donor site Post-operatively the patients were started on

1. Topical antibiotic-steroid combination eye drops (Ciplox- D eye drops) times a day.
2. Tear substitutes (Moisol eye drops) 4 times a day.

The antibiotic drops were stopped after a period of 2 weeks and tapering doses of steroids, tear substitutes were continued for 1 month. Any retained sutures were removed after 1 month. Patients were then evaluated with respect to visual acuity, and presence or absence of recurrence and complications at 1 week, 1 month, 3 months, 6 months.

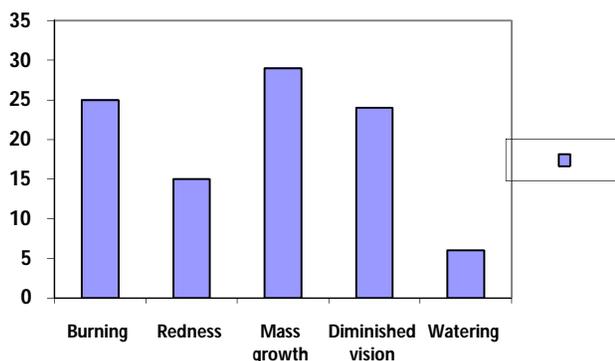
**Recurrence:** Was considered as encroachment of the cornea by vascularization more than 1.5mm along with presence of conjunctival drag. Vascularization without conjunctival drag was not considered as recurrence.

## RESULTS

**Table 1:** Demographic details in study

Sex	No of patients	Percentage
Male	23	46
Female	27	54
Total	50	100
<b>Age range(years)</b>		
10-20	0	0
20-30	7	14
30-40	11	22
40-50	32	64
Total	50	100
<b>Occupation</b>		
Outdoor	37	74%
Indoor	13	26%

Of the 50 patients included in the study 23 were males (46%) and 27 were females (54%). Majority of the patients were between the ages of 30 to 50 years. No patients were presented before 20 years of age. The average age of presentation in male was 43 and females 40 years. The average age of the study group was 37.5. Majority (74%) of patients were engaged in outdoor occupations



**Figure 1:** Presenting Complaints

The most frequent complaints at initial presentation were noticing mass growth on to the cornea in 58% of cases and burning sensation in 50% of the cases, other

complaints at presentation included diminished vision in 48% of cases, redness in 30%, increased watering in 12%. Out of 50 patients in the study 25 patients (50%) had a history of use of topical medications for the same complaints.

**Table 2:** Pterygium Location

Pterygium location	No of eyes	Percentage
Nasal	45	90
Temporal	5	10
<b>Total</b>	<b>50</b>	<b>100</b>

45 eyes (90%) showed the presence of nasal pterygium, 5 eyes (10%) had temporal pterygium without the presence of a nasal pterygium.

**Table 3:** Pterygium Length

Classification	No of eyes	Percentage
Group A (upto 1/4 the corneal diameter (<3mm).	46	92
Group B ( >1/4-1/2 the corneal diameter (3 to 6mm).	4	8

Majority of eyes (92%) presented with pterygium length falling in Group A, 4 eyes (8%) presented with pterygium length falling in Group B.

**Table 4:** Recurrence of Pterygium

Recurrence	No of cases	Percentage
Present	4	8
Absent	46	92
<b>Total</b>	<b>50</b>	<b>100</b>

4 of the 50 eyes included in the study showed recurrence. Of the 4 eyes: 3 eyes showed recurrence in 1<sup>st</sup> month and the other eye showed recurrence in 3<sup>rd</sup> month.

**Duration of Surgery:** Average time taken for conjunctival auto graft with 10-0 nylon was 30 to 45 min duration, with Fibrin glue it was 15 to 20 minutes.

**Table 5:** Complications

Complications	No of eyes	Percentage
Donor site haemorrhage	4	8
Sub conjunctival haemorrhage	30	60
Retraction	2	4
Gaint papillary conjunctivitis	2	4

4 eyes (8%) showed donor site haemorrhage 30 eyes (60%) showed conjunctival haemorrhage beneath the graft in the immediate post-operative period. Both these conditions resolved spontaneously without sequelae by the first follow up(1month). The donor site was found to be epithelialized by the first follow up. Graft host junction retraction was noted in 2 eyes (4%), exposed surface was reepithelialized. Gaint papillary conjunctivitis of upper lid was noticed in 2 patients due to exposed sutures. The condition relieved after suture removal.

## DISCUSSION

This prospective case series study was conducted at Sarojini devi eye hospital, Hyderabad between Dec-2008 and May-2010. 50 eyes of 50 patients were included in this study. All the patients had follow up for a minimum period of 6 months. Among 50 patients included in this study 23 (46%) males and 27 (54%) were females. The mean age of the study population was 37.5yrs and mean age in males 43yrs females 40yrs. In the study by G.koranyi *et al*<sup>2</sup> mean age of study population was 44yrs in suture group 48yrs in glue group. Dr. Rao, SK *et al.*<sup>3</sup> showed that 56.98% were above the age of 40 years. Majority (74%) of patients were engaged in out door occupations. This could be a predisposing factor for development of pterygium. All patients included in this study were with primary pterygia. The pterygium was nasal in 45(90%) cases, and temporal in 5 (10%) cases. In the study by Baig *et al*<sup>4</sup> 88% eyes had nasal pterygium. In the study by Maheswari *et al*<sup>5</sup> 90% had nasal pterygium. In our study recurrence rate is 8% in a study done by Oguz *et al.*<sup>6</sup>, the recurrence rate was as low as 9.52% by the method of pterygium excision with conjunctival autograft, which is similar to our study. Fahmi *et al.*<sup>7</sup>, reported recurrence rate of 13.3% with conjunctival autograft. About 14% recurrence was reported by Allan *et al.*<sup>8</sup>, 12% by Baig *et al.*<sup>4</sup> We observed that recurrence in four patients out of 50 patients. Our observation was consistent with the observation of Lewallen *et al.*<sup>9</sup>, Manning *et al.*<sup>10</sup> and Figueiredo *et al.*<sup>11</sup> who stated that most of the recurrences occurred in patients younger than 50 years in their study. A study by El Shafie *et al.*<sup>12</sup> described that the preoperative subconjunctival bevacizumab reduces the recurrence rate of pterygium surgery, as it reduces the vascular element of pterygium. Another study by Alhammami *et al.*<sup>13</sup> showed that subconjunctival bevacizumab is useful in patients with recurrent pterygium.<sup>14</sup> In this study 46 eyes(92%) had pterygium of <3mm size, 4 eyes (8%) had a pterygium of 3-6mm size. In the study by Rao SK *et al* mild pterygium in 24.5% moderate in 71.7%, and severe in 3.8% eyes. All 50 cases were followed up to a minimum period of 6 months. In present study 4 eyes (8%) showed donor site haemorrhage 30 eyes (60%) showed conjunctival haemorrhage beneath the graft in the immediate post-operative period. Graft host junction retraction was noted in 2 eyes (4%), exposed surface was reepithelialized. Gaint papillary conjunctivitis of upper lid was noticed in 2 patients due to exposed sutures. Compared to other studies zdamar<sup>15</sup> also encountered no recurrences during 6 months of follow-up and they attributed that success to limbal conjonctival autografting. Jiang observed recurrence rate 5% in fibrin group and 10% in suture group at one year. In pallel to these results, recurrence

rate at the end of 6 months of follow-up was found to be 6.8% in fibrin group and 13.7% in 8/0 virgin silk group in our study. This difference was found as statistically significant. In contrast to these results, Bahar<sup>16</sup> found recurrence rate as 11.9% in fibrin group and 7.7% in suture group. They suggested that the reason for this result was fibrin coat leading to increased collagen accumulation and scar formation. Uy<sup>17</sup> reported a subconjunctival hemorrhage under the graft, resolving in 3 weeks, in one of the patients of fibrin group. Same type of hemorrhage seen in one of our patients also resolved in 2 weeks. Bahar<sup>18</sup> observed corneal dellen in one of their cases of suture group and treated it with lubrication. In contrast, dellen was encountered in one of our patients of fibrin group and regressed in one week with lubrication.

## CONCLUSIONS

Our study demonstrates use of Fibrin glue in pterygium surgery with conjunctival auto grafting significantly reduces surgery time, improves post operative patient comfort. Recurrence rate is almost equal in both groups. This technique is free from sight threatening complications, unlike topical chemotherapy or radiotherapy and has no manifest deleterious effect on visual acuity unlike lamellar grafting.

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