

**Original article:**

## Study of efficacy of fibrin glue versus sutures in Pterygium

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### Abstract:

**Introduction:** Fibrin glues have been used in an array of ophthalmic procedures such as conjunctival closure in strabismus, vitreoretinal and glaucoma surgery. Because of its biological and biodegradable properties, fibrin-based adhesives may be used to attach the conjunctival autograft without inducing inflammation.

**Material and methods:** This study was carried out at Department of Ophthalmology, H.S.K Hospital and Medical Research centre, Bagalkot a teaching hospital attached to S. Nijalingappa Medical college, Bagalkot. Patients with primary pterygium attending Ophthalmology Out Patient Department at S.Nijalingappa medical college and H.S.K Hospital and Medical Research Centre, Bagalkot. A total of 60 patients divided into two groups of 30 each were studied. Based on the block randomization, patients were divided into two groups of 30 each..

**Results:** In this present study on post operative day one, (76.6%) of patients in group 1, experienced moderate pain followed by (23.4%) patients experienced mild pain. In group 2 (86.6%) of patients experienced severe pain, (13.4%) patients had moderate pain on day one. This difference between pain reported by patients was statistically significant ( $p=0.00001$ ).

**Conclusion:** The present study showed better efficacy of fibrin glue in conjunctival autografting among the patients undergoing pterygium excision, in terms of pain, decreased post operative inflammation (at 1 week one month and 3-month duration of follow up) graft stability and discomfort during blinking compared to use of vicryl 8-0 suture.

**Keywords:** Pterygium , fibrin glue

### Introduction:

Fibrin glues have been used in an array of ophthalmic procedures such as conjunctival closure in strabismus, vitreoretinal and glaucoma surgery.<sup>1,2</sup> Because of its biological and biodegradable properties, fibrin-based adhesives may be used to attach the conjunctival autograft without inducing inflammation.<sup>3</sup> Tissue adhesives of different types had been used in previous studies to attach conjunctival grafts and compared with the use of sutures, were associated with a shorter operative time and reduced postoperative complaints.<sup>4,5</sup> To date, only few studies<sup>4,5</sup> have reported efficacy of fibrin glue for attaching conjunctival autograft in pterygium study in Indian context and the results are inconsistent. Hence the present study was undertaken to assess the efficacy of fibrin glue versus suture in patients undergoing conjunctival autografting and also to compare operative time and post operative complications.

### Material and methods:

This study was carried out at Department of Ophthalmology, H.S.K Hospital and Medical Research centre, Bagalkot a teaching hospital attached to S. Nijalingappa Medical college, Bagalkot. Patients with primary pterygium attending Ophthalmology Out Patient Department at S.Nijalingappa medical college and H.S.K Hospital and Medical Research Centre, Bagalkot

A total of 60 patients divided into two groups of 30 each were studied. Based on the block randomization, patients were divided into two groups of 30 each..

### Inclusion criteria:

- Only cases of uncomplicated primary pterygium and willingness to participate in the study are included.
- All age group – 20 years and above, both sexes will be involved in the study.

### Exclusion criteria:

- All the subjects on anti-coagulants diagnosed with primary pterygium are excluded from study.
- Patients with recurrence of pterygium after primary excision.
- Pseudopterygium.
- Dry eye. □
- Patients with known hypersensitivity to any component of fibrin glue are excluded from the study.
- Known case of Diabetes./HTN/HIV/HBsAg/IHD.

Prior to the commencement, the study was approved by the Ethical and Research Committee, S.Nijalingappa Medical college, Bagalkot.

After the enrolment, patients were interviewed for the demographic data such as age, sex, occupation. Patients were asked about the complaints and detailed history was taken regarding the presenting illness.

### Results:

**Table No. 1- Distribution of subjects according to Operated eye.**

Operated eye	Group1(Glue group)		Group 2(suture group)	
	Number	Percentage	Number	Percentage
Right eye	16	53.3%	17	56.7%
Left eye	14	46.7%	13	43.3%
Total	30	100%	30	100%
$X^2=0.067$		df=1	$p=0.79$ not significant	

In this study( 53.30%) in group 1, (56.70%) in group 2, had surgery in right eye and (46.70%) in group 1 and (43.30%) in group 2, underwent surgery in left eye. This was statistically not significant

**Table No. 2 - Distribution of study subjects according to Time required for surgery in Minutes**

Group	Time required for surgery(min) Mean± SD	t	P
Group 1 (Glue group)	24.20±3.68	13.2	0.0001 Highly significant.

In this study the mean operative time in group 1 was 24.20± 3.68 than compared with operative time in group 2, which was 36.07±3.2. The surgical time was lesser in group 1 than in group 2. However this difference in surgical intraoperative time was statistically highly significant

**Table No. 3- Assessment of pain from day one to three month of followup.**

Post operative follow up	Grade	Group1(Glue group)		Group 2(suture group)	
		Number	Percentage	Number	Percentage
Day 1	0	0	0%	0	0%
	1	7	23.4%	0	0%
	2	23	76.6%	4	13.4%
	3	0	0%	26	86.6%
	Total	30	100%	30	100%
X <sup>2</sup> =46.37 df=2 p=0.00001 highly significant					
1 Week	0	16	53.4%	4	13.4%
	1	13	43.3%	16	53.3%
	2	1	3.3%	10	33.3%
	3	0	0%	0	0%
	Total	30	100%	30	100%
X <sup>2</sup> =14.8 df=2 p=0.0005 highly significant					
1 month	0	30	100%	29	96.4%
	1	0	0%	1	3.3%
	2	0	0%	0	0%
	3	0	0%	0	0%
	Total	30	100%	30	100%
X <sup>2</sup> =1.01 df=1 p=0.31 not significant					
3 month	0	30	100%	30	100%
	1	0	0%	0	0%
	2	0	0%	0	0%
	3	0	0%	0	0%
	Total	30	100%	30	100%

In this present study on post operative day one, (76.6%) of patients in group 1, experienced moderate pain followed by (23.4%) patients experienced mild pain. In group 2 (86.6%) of patients experienced severe pain, (13.4%) patients had moderate pain on day one. This difference between pain reported by patients was statistically significant ( $p=0.00001$ ).

**Discussion:**

During follow-up period of 1 week in group 1, (53.4%) had reported to have no pain while in group 2 Only (13.4%) had no pain. This difference noted in this study during the follow up period at one week was statistically significant ( $p=0.0005$ ). Next follow up period at one month and third month patients had better- good compliance in both the groups. In group 1, the surgical time was significantly less (21 to 30 minutes) compared to group 2 which was 31 to 40 minutes. The mean surgical time in group 1 was significantly less compared to group 2, ( $24.20 \pm 3.68$  vs  $36.07 \pm 3.2$  minutes). Longer operating time is considered to be closely associated with enhanced postoperative reaction and increased risk of infection and thus, reduction of operating time has important implications. A meta-analysis<sup>6</sup> of seven trials analyzed the duration of operation. Without exception, all the Randomized Controlled Trials clearly revealed statistically significant longer operating time for suture than for fibrin glue. Another study<sup>97</sup> done in India reported significantly less mean surgical time in fibrin glue group ( $22.72 \pm 3.69$  minutes vs  $41.0 \pm 3.53$  minutes) compared to suture group. A similar Indian study<sup>101</sup> reported average surgical time as 21 minutes in the fibrin glue group as compared to 38 minutes in the suture group.

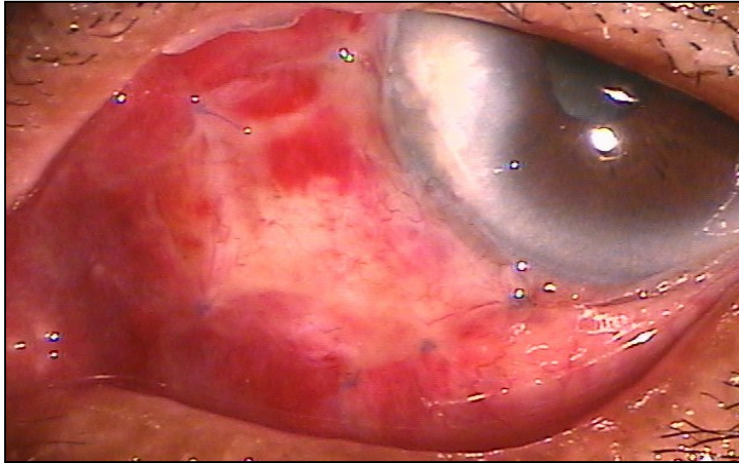
In our present study the mean operating time required for in glue group was less than suture group which showed statistically significant with  $p=0.0001$ .

In the present study on post operative day one, significantly lower pain was reported by patients in group 1 (mild pain 23.44; moderate 76.6%;) compared to group 2 wherein majority (moderate pain 13.4%; severe pain 86.6%) experienced more severe pain ( $p=0.00001$ ). which was highly significant. However, during the follow up at week one, the pain reported in patients was more in group 2 than compared with group 1, ( $p=0.0005$ ), on one month follow-up the pain reported by patients in group 2 was (3.3%) where one patient had developed granuloma at wound site near limbus rest of patients had no pain by one month and three month of follow up in both the groups. A similar study<sup>98</sup> noted that on a 10-point numerical rating scale, both the fibrin adhesive and suture group had low median pain scores. However, the pain scores immediately post surgery and at 1 week post surgery were significantly lower in the fibrin adhesive group ( $P > 0.05$ ). Another study from India<sup>7</sup> reported that, using fibrin glue instead of sutures when attaching the conjunctival autograft in pterygium excision causes significantly less pain. A study from Sweden<sup>2</sup> reported that the medians of the Visual Analogue Score values at each measurement occasion after adjusting for individual pain sensitivity found significantly lower pain levels in the glue group both on day 0, and at each point of time during the first postoperative week and concluded that the use of a fibrin tissue adhesive when securing the autologous conjunctival graft in pterygium surgery causes significantly less pain than using sutures.

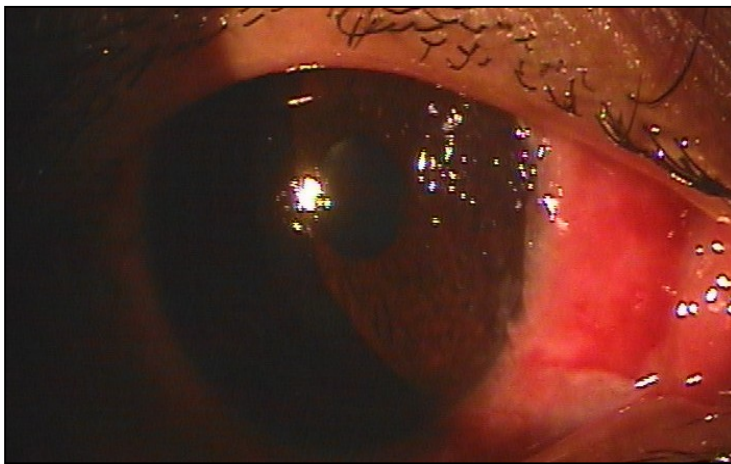
In the present study, the grade 2 sub conjunctival haemorrhage was observed in 50% patient in group 1 whereas in group 2 it was noted among (43.4%) patients at post operative day one, at follow up on one week (63.3%) had grade

1 sub conjunctival haemorrhage and (53.3%) had grade 2 which resolved spontaneously within one month in either groups ( $p>0.050$ ).

A study done in Canada<sup>78</sup> found no significant difference in the degree of sub-conjunctival hemorrhage between the two groups at any point during the follow-up period. Another study<sup>102</sup> noticed haemorrhage under the graft in one case of group 1 on the second postoperative day. A meta-analysis<sup>100</sup> recorded no complication in both groups in 2 studies.



Post operative sub conjunctival haemorrhage on day one following surgery (Suture group).



Post operative subconjunctival haemorrhage on day one following surgery (Glue group).

In our study post operative inflammation on day following surgery (70%) of patients had no inflammation in group 1, (30%) had grade 1 inflammation. In group 2 (73.4%) of patients were reported with grade 2 inflammation and (26.6%) of patients presented with grade 3 inflammation were in group 1 had comparatively lesser to minimal inflammation than compared with group 2. This difference was statistically significant with  $p=0.0001$ .

Ti and Tseng demonstrated that increased inflammation during the postoperative period increases the risk of pterygium recurrence.<sup>8</sup> Zuzuki et al showed that the use of silk and nylon sutures placed in the conjunctiva can cause inflammation, and migration of Langerhans' cells to the cornea.<sup>9</sup> In a large retrospective study, Koranyi et al

were able to demonstrate a statistically significant decreased recurrence rate with the use of FG when compared with the use of sutures.<sup>9</sup> They postulated that a possible reduction in the migration of fibroblast cells caused by the rapid adhesion of the graft with the FG may lead to decreased postoperative inflammation.

**Conclusion:**

The present study showed better efficacy of fibrin glue in conjunctival autografting among the patients undergoing pterygium excision, in terms of pain, decreased post operative inflammation (at 1week one month and 3-month duration of follow up) graft stability and discomfort during blinking compared to use of vicryl 8-0 suture.

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