



COMPARISON OF SUTURELESS GLUE FREE CONJUNCTIVAL AUTOGRAFT WITH SUTURED AND GLUED GRAFTS IN PRIMARY PTERYGIUM SURGERY

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ABSTRACT

BACKGROUND: Various techniques have been tried in past to improve outcome in pterygium surgery with diverse results. In this study we compared the outcome between sutureless glue free conjunctival autograft with sutured and glued grafts in Primary pterygium surgery.

METHODS: Patients in group "A" (n=30) received suture, patients in group "B" (n=30) received fibrin glue and patient in Group "C" (n=30) received suture less glueless material. Postoperative follow up was done for postoperatively pain, foreign body sensation, and change in vision, graft position and recurrence of pterygium.

RESULTS: Post operatively, majority of Group C patient has no change in vision however decline in 53.3% of group A patient ($p < 0.001$). Group A patients had severe pain while Group B and C experienced only mild pain ($p < 0.001$). All patients in group B and C had mild watering of eye and 96.6% of group A patient had severe watering of eyes on 1st day Post operatively ($p < 0.001$). On 1st post op day maximum patients in Group A and B experienced severe and moderate foreign body sensation respectively ($p < 0.001$). Graft was well apposed in all patients in Group A. 01 and 03 patients in group B and C experienced retracted graft respectively ($p < 0.16$). No patient had recurrence reported at 6 month.

CONCLUSION: Sutureless glueless surgery is an easy, effective method with shortest operating time and minimal discomfort to the patient in primary pterygium surgery. The complications encountered were of trivial nature and the recurrence rate was very low.

KEYWORDS : Conjunctival Autograft, Pterygium, Glue graft.

INTRODUCTION

Pterygium is a wing shaped, triangular, fibrovascular degenerative and proliferative condition causing trespass on the cornea, ruin the superficial layers of the stroma and Bowman's membrane. Various techniques have been tried in past from simple excision to use of adjunct therapies such as β irradiation, thiotepa, 5-FU, and mitomycin C3. The prime challenge of pterygium surgery is prevention of recurrence. Reports of recurrence rates varied from 60-82 % after simple excision of primary pterygium.[1] Conjunctival auto graft (CAG) with limbal stem cell transplantation has shown promising results with low recurrence rate. CAG can be secured to the sclera by sutures, fibrin glue or sutureless glue free autologous blood coagulum. Classically, CAG is attached to the sclera with the help of sutures. Recent reports support the use of fibrin glue above sutures which does not cause discomfort, less time consuming, reduced complication and recurrence rates. [2] In this paper, we report the outcomes of surgical time and the long-term outcomes of patient comfort and recurrence rate, with the use of autologous sutureless, glue free CAG with sutured grafts and glued grafts in primary pterygium surgery in a large group of patients.

MATERIALS AND METHODS

After Approval from the Institutional Ethics Committee, written informed consent, a total of 90 patients of age 20 to 50 years, of either sex, posted for primary Pterygium were enrolled for this prospective randomized controlled study. Patients with trichiasis, entropion and ectropion were excluded from the study. Patients with history of lacrimal apparatus active diseases, recurrent Pterygium and allergic conjunctivitis were also excluded from the study.

Preoperative assessment of all the patients and grading of Pterygium was done by a single examiner to avoid inter-observer bias. According to a computer-generated randomization chart, the patients were assigned to one of the three treatment groups. Patients in group "A" (n=30) received suture, patients in group "B"

received fibrin glue and patient in Group "C" received suture less glueless material. A crescent blade was used to excise the head of the Pterygium from the cornea and was then lifted with Limb's forceps and blunt dissection of the sub-conjunctiva tissue with Wescott scissors. The area of conjunctival defect was measured with a Castroviejo caliper and a free limbal CAG which was slightly larger in size than the defect, was obtained from the supero-temporal quadrant of the bulbar conjunctiva. Proper orientation was maintained, with the epithelium side up and limbal edge towards limbus. At this stage, depending on the group in which patients were allocated to, CAG was secured in place. Group A: 5-6 interrupted non absorbable (nylon 10.0) sutures were used to secure the graft. Sutures were removed after 1 -2 weeks unless otherwise indicated [Fig 1]. Group B: Fibrin glue (Tisseel fibrin sealant Baxter AG, Vienna, Austria) was used to attach the CAG in place [Fig 2]. The mixing of the component was done as per the manufacturer's directions. Two to three drops of fibrin glue solution was placed on the sclera bed and the CAG was immediately flipped over the area of conjunctiva defect. In Group C: A thin CAG, 0.5 mm larger than the bare sclera area was obtained from the patient's eye and firmly affixed to the bare area ensuring that excessive blood has been tamponade and the graft has completely covered the bare area of the sclera [Fig 3]. After waiting for a period of 3 to 5 minutes to fix the graft, the eye was patched using an Eye drop of Moxifloxacin. Subsequently, for all 3 groups, sub conjunctiva injection of Gentamicin and Dexamethasone was injected away from the graft site. Moxifloxacin ointment in (Group A and B) and Moxifloxacin eye drop in (Group C) was instilled and eye pad applied for 48 hours.

Postoperative follow up was done for 6 months, consisting of 5 visits at 1st day, 1st week, 1st month, 3rd month and 6th month from the date of surgery. Postoperatively pain and foreign body sensation subjectively assessed on a 3-point grading scale (1= mild, 2= moderate, 3= severe). Postoperative Change in vision recorded as grade 2-point (2= decreased, 1= improved/no change). Graft position assessed as 3-point of grading scale (1= apposed, 2=

retracted, 3= lost). Recurrence of Pterygium assesses as 2 grade scale (2=present, 1=absent).

Data was entered in SPSS software version 16. Categorical variables were summarized by frequency and percentage. Quantitative variables were summarized by mean +/- SD or median (range as appropriate). Pearson's Chi-square test was used for qualitative data comparisons between groups.



Fig 1. Graft sutured to the conjunctiva with 10-0.

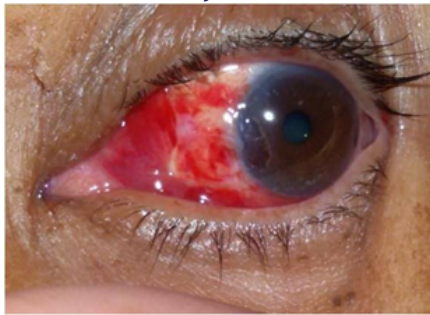


Fig2. Fibrin Glue used to attach the autograft in place.

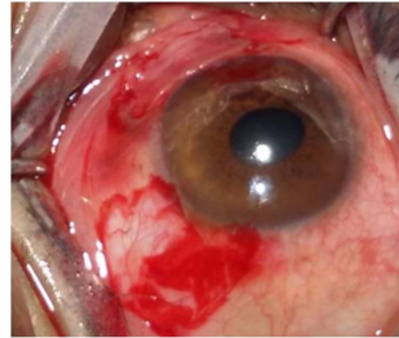


Figure 3. Conjunctival autograft with limbal stem cells placed to cover the defect.

RESULTS

Demographic parameters and clinical characteristics were comparable between the groups. Majority of patients were male above age of 40 yrs (Table 1). The mean surgical time was shortest when blood was used as an adhesive (p < 0.002) (Table 2). Post operatively, majority of Group C patient has no change in vision however decreased in 53.3% of patients in group A measured on the 1st post op day (p< 0.001). Group A patients had severe pain while Group B and C experienced only mild pain (p< 0.001) (Table 2). Post op 1 month, vision was either same or improved in all 3 group surgeries. All patients in group B and C had mild watering of eye and 96.6% of group A patient had severe watering of eyes on 1st day Post operatively (p<0.001) (Table 2). On 1st post op day maximum patients in Group A and B experienced severe and moderate foreign body sensation respectively, whereas only mild foreign body sensation was present in group C (p<0.001). Graft was well apposed in all patients in Group A. 01 and 03 patients in group B and C experienced retracted graft respectively (p< 0.16)(Table 2). No patient had recurrence reported at 6 month.

Table 1. Demographic profile and baseline clinical characteristics of patients in groups.

Baseline characteristics	Group A (n= 30)	Group B (n= 30)	Group C (n= 30)	P value
Age (years)	43.6±10.6	41.7±10.4	43.3±9.6	0.42
Gender (male/female)	19/11	16/14	18/12	0.72
Measurement of Pterygium(mm)	2.72	2.97	2.72	
Time of surgery(min)	17.87 ±1.87	10.63 ±2.19	8.87 ±1.68	0.002

Table 2. Postoperative Pain, Vision, lacrimation, graft apposition, foreign body sensation grades and recurrence of Pterygium at various time points in the groups. (POD-Postoperative day, FB- Foreign Body sensation).

Patient characteristic	Group A	Group B	Group C	P value
Vision change POD1	1	14	30	0.001
	2	16	0	
Vision change POD1 mths	1	30	30	0
	2	0	0	
Pain on POD 1	Mild Pain- (Grade 1)	00	30	0.001
	Moderate Pain – (Grade 2)	06	00	
	Severe pain – (grade 3)	24	00	
Pain on POD 1mth	Mild pain- (grade 1)	30	30	0
	Moderate pain – (grade 2)	00	00	
	Severe pain – (grade 3)	00	00	
Lacrimation on POD 1	Mild (grade 1)	00	30	0.001
	Moderate (grade 2)	01	00	
	Severe (grade 3)	29	00	
Lacrimation on POD 1 mths	Mild (grade 1)	30	30	0
	Moderate (grade 2)	00	00	
	Severe (grade 3)	00	00	
FB sensation on POD 1	Mild (grade 1)	00	05	0.001
	Moderate (grade 2)	04	25	
	Severe (grade 3)	26	00	
FB sensation on POD 1 mths	Mild (grade 1)	30	30	0
	Moderate (grade 2)	00	00	
	Severe (grade 3)	00	00	

Graft apposition on POD 1	Well Apposed (Grade 1)	30	29	27	0.16
	Retracted (Grade 2)	00	01	03	
	Lost (Grade 3)	00	00	00	
Graft apposition on POD 1 mths	Well Apposed (Grade 1)	30	30	30	
	Retracted (Grade 2)	00	00	00	
	Lost (Grade 3)	00	00	00	
Recurrence at 6 mths	No Recurrence	30	30	30	
	Recurrence	00	00	00	

DISCUSSION

In our study we found no recurrences in any patient whom were followed up for six months. Koranyi et al and Jiang et al reported recurrence rates as 8% and 5% in fibrin glue group and 20% and 10% in suture group at the end of the six months respectively. [3,4] A study done by Shaaban Elwan, found recurrence rate was 6% and 8% for sutured group and sutureless glueless patients being followed up for 24 months.[5] The reasons of large variability are unclear, but some factors which influence the results are conjunctival dissection technique, demographic differences, age of the patients and different definition of recurrence. However, there are certain perturb with the fibrin glue. Other than cost of fibrin glue, risk of transmission of human infection of parvovirus B19 and prions associated with fibrin glue [6]. Literature concluded that postoperative pain, foreign body sensation, and watering complaints were significantly less in glue group. [7] Post operative discomfort was minimal when the patient's own blood was used to affix the graft. The increase in pain and foreign symptoms in sutured grafts can be attributed to the cut ends of the suture touching the upper palpebral conjunctiva during blinking of eyes, which eventually resulted in reflex tearing causing increase in lacrimation. The symptoms of pain and lacrimation were mild in graft affixed with fibrin or patients own blood. The symptom of foreign body sensation were moderate in glue group can be attributed to the slight bulging of the graft with the solidified glue lying underneath. There was very mild foreign body sensation with the patient's own blood with almost no bulging of graft. Graft displacement was seen in 3 cases in sutureless glueless group on 1st post operative day which was easily managed under topical anaesthesia with the help of suture tying forceps and the light of the operating microscope following which it remained well opposed to the sclera over the follow up period of 3 months.

The decrease in vision recorded with the sutured group on the first post op day, can be attributed to the increase in lacrimation due to constant irritation caused by the sutures, which is known to obscure vision. Edema was reported in three cases in the sutureless glueless graft on the 1st post operative day which settled on its own without any intervention.

One of limitation of study is evaluating pain as each patient has different threshold for the same stimulus. Our group of patient depute to a particular geographical area is the limitation factor. Patient was followed up only for six months.

CONCLUSION

In summary, Sutureless glueless surgery is an effective and safe method for attaching conjunctival or conjunctivolimbus auto grafts during pterygium surgery. The use of glue free can ease the surgical procedures, shorten operating times and produce less postoperative symptoms and discomfort. The complications encountered in the present study were of trivial nature and the recurrence rate was very low.

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