

Suture Free, Glue Free, Conjunctival Autograft After Pterygium Excision in a Hospital in Rural Bangalore North

Vijay Kumar TS¹, Chethan KS²

Abstract

Aim: To evaluate the surgical outcome of Suture free, Glue free, Conjunctival Autograft (SFGF-CAG) after Pterygium Excision. **Design:** Postoperative, Interventional, Hospital based study. **Materials and methods:** 45 eyes of 45 patients with primary Pterygium were graded and excision was performed by a single surgeon. To prevent recurrence, inferotemporal or inferior quadrant graft from the same eye and bare sclera was covered without the use of suture or fibrin glue, allowing natural autologous coagulation of the recipient bed to act as a bioadhesive. The eye was patched for 24 hours. Postoperatively patients were put on topical eyedrops moxifloxacin 0.5%, loteprednol etabonate. 50% and Carboxymethyl cellulose 1% for 6 weeks. The outcome was assessed in terms of recurrence, complications and operative time at each follow-up visit on days 1,7,15,30,150 and 180. **Results:** There were 27 females and 18 males. The mean age of all patients was 36.2 ± 11 years. Range 18–60 years. Cosmetic blemish was the main indicator for surgery. Recurrence occurred in 1 and graft-related complications in 1 eye (Graft dehiscence). Re-surgery was required in 1 eye as the other deferred surgery. No other complication was noted. Average time of surgery was 16 ± 2 mins. **Conclusion:** The recurrence, complication rate and operative time of SFGF CAG was seen to be comparable with the current techniques in practice.

Keywords: Complications; Pterygium; Recurrence; SFG-CAG.

How to cite this article:

Vijay Kumar TS, Chethan KS. Suture Free, Glue Free, Conjunctival Autograft After Pterygium Excision in a Hospital in Rural Bangalore North. Ophthalmol Allied Sci. 2020;6(1):21–24.

Introduction

Recurrent inflammation, cosmetic disfigurement, visual impairment, diplopia from motility restriction and difficulty to wear contact lenses are the main indications for pterygium excision surgery.

The most common complication of pterygium surgery is recurrence. Risk factors for recurrence are geographic location, gender, age, morphology and grade of pterygium. Most of recurrences takes place within 6 months of surgery and is due to upregulation of inflammatory process.

Conjunctival Rotational autograft, amniotic membrane graft (AMG), free conjunctival Autograft (CAG) or limbal CAG with surgical adjunct (fibrin glue, suture, intra- or postoperative 0.2% mitomycin C (MMC) with variable postoperative recurrence and success rate. Till recent years CAG with use of fibrin glue, sutures or MMC was considered procedure of choice. However the surgical adjuncts have risks and complications too. We were in search of a technique which has comparable recurrence and complication rate at the expense of avoiding surgical adjunct.¹

Author Affiliation: ¹Assistant Professor, ²Junior Resident, Department of Ophthalmology, Akash Institute of Medical Sciences and Research Centre, Devanahalli, Bengaluru, Karnataka 562110, India.

Corresponding Author: Vijay Kumar TS, Assistant Professor, Department of Ophthalmology, Akash Institute of Medical Sciences and Research Centre, Devanahalli, Bengaluru, Karnataka 562110, India.

E-mail: vijayakitts@gmail.com

Received on 13.01.2020, **Accepted on** 15.02.2020

The purpose of our study was to evaluate and analyze outcome of suture free, glue free technique, utilizing patients own natural serum bed for graft adherence without using surgical adjuncts such as suture, fibrin glue or MMC.

Materials and Methods

This prospective study comprised 45 eyes of 45 patients undergoing pterygium surgery at our rural care hospital in Bangalore North. Subjects included in the study were 18–60 years of age having primary pterygium, involving any eye. Approval from Medical Ethics Committee was obtained beforehand. Eye with any pathology which would hamper the wound healing like active inflammation, symblepharon, post-ocular surgery within last 6 months, trauma, systemic disease, pregnancy and bleeding disorders were excluded. Written informed consent was taken from patient.

Preop evaluation included refraction, slit lamp examination, base line IOP measurement, fundus examination and documentation of pterygium. If patient was on oral NSAID, it was stopped 1 week before surgery.

Grading of the pterygium was done as

- Gr I: Head up to limbus
- Gr II: Head between limbus and midway to pupillary margins
- Gr III: Head covering pupillary margin

All surgeries were done under microscope by a single surgeon (Dr. Vijay Kumar). The eye was anesthetized with topical Proparacaine 0.5% one drop every 10 min. repeated twice. All aseptic precautions were taken. Eyelid was then separated by a speculum and subconjunctival 0.5 mL lignocaine solution xylocaine 2% was injected. Gentle massage was given with cotton for few seconds. The neck of pterygium was lifted up with

the help of fine-toothed forceps while the head was gently avulsed from cornea using corneal scissors. The patient was asked to look temporally, gentle dissection was carried out in between conjunctiva and sclera with help of curved Vanna's scissors to resect at-least 4–5 mm of pterygium mass that included both superior and inferior border. Saline was used throughout surgery. Cotton tipped applicator was used to control excessive hemorrhage.

Size of bare sclera was measured with Castravejo calipers. Corneal care was taken with visco elastics. Patient was asked to fix gaze upwards and around 0.5 ml Xylo 2% was used to balloon up on inferotemporal or inferior conjunctival flap. Vanna's scissors were used to make a 0.5 mm oversized free conjunctival graft, completely avoiding inclusion of Tenon or button holing of it. The graft was laid over bare sclera having samelimbus to limbus orientation. We waited for 10 mins for hemostasis to occur. If lack of adequate amount of blood was noted, surgeon intentionally punctured episcleral vessel to create bleeding. The eye was then patched for 24 hours. Any intraoperative complication was noted and documented from video of the surgery. Next day the eye was assessed for symptoms, graft adherence or any complication under slit lamp.

Postoperatively patient was put on moxifloxacin 0.5 % four times daily for 2 weeks. Loteprednol etabonate 0.5% eyedrop 4 times a day for next 2 weeks and tapered over next 2 weeks. Carboxy methyl cellulose 1% 4 times daily for 6 weeks. There after the patients were followed up for 6 months at postop day 1,7,15,30,120 and 180. At each postop visit, slit lamp exam, tonometry and photo documentation was done and any recurrence, complications were recorded. Recurrence is defined as the reappearance of fibrovascular growth at site of previous pterygium excision. Complication as any adverse event related to surgery in the intra- and postoperative period, the graft itself and the drugs prescribed.



Fig. 1:

Results

A total of 45 eyes of 45 patients underwent primary pterygium excision followed by SFGF-CAG. The mean age of all patients was 36.2 ± 2 years. 18–60 years, there were 27 females and 18 males. Gr II was found to be the most common grade. (52%) 23 eyes, followed by Grade III (36%) Grade I (12%) (Table 1).

Most common indicator was cosmetic blemish, (70%) followed by recurrent inflammatory (25%) eye. Mean operative time was 18 ± 2 mins. Follow-up more than 6 months was seen in 100% patients. Postop recurrence seen in 1 patient 3–4 months. Who did not turn up for re-surgery. Partially dislocated graft (hence graft-related complication) was seen in 1 patient on first post op day who underwent re-surgery, whereby graft was repositioned and sutured in its site. Which resulted in uneventful recovery. No other complication related to graft, surgery drug was noted in our study.

Demographic and clinical data are presented in table 2.

Table 1: Age wise distribution of pterygium grade

Age (Range)	Grade			Total (%)
	G1	G2	G3	
18-30	3	10	1	14
31-40	0	9	1	10
41-50	1	4	14	20
51-60	0	0	11	

Table 2: Survey of results and observation

Variable	Total (%)
Male	18
Female	27
Age, range (years)	36.2 ± 2
Location	Nasal
Primary Pterygium	45
Grade I	4
Grade II	23
Grade III	17
Operation time mean \pm SD (2 min)	16 ± 2
Follow-up time (months) up to	6
Lost to follow-up	Nil
Recurrence	1
Complication (graft)	1
Complication (other)	Nil
Re-surgery	1
SD: Standard Deviation	

Discussion

The concern of avoiding recurrences and complications while recovering safely with minimal discomfort has encouraged surgeons to revise the conventional surgical methods of Pterygium. A recently reported meta analysis by Kaufman et al.⁴ indicated the superiority of CAG and LCAG or AMG as well as the sight-threatening complications of MMC. Though some studies have shown LCAG to have fewer recurrences, it seems to be more complex and time-consuming and may even result in stem cell deficiency of donor site. It is concluded in some studies that AMG has more recurrence than CAG. It adds extra cost to surgery and procurement of is cumbersome. There is added risk of contamination too.

CAG, AMG or LCAG requires either suture, fibrin glue or autologous blood as additional surgical adjunct to secure the graft in place. Suturing is more time-consuming, leads to higher post op discomfort, higher recurrence and complications such as prolonged healing, fibrosis and granulation formation. Fibrin glue has an advantage over suture but is not available in rural areas and adds to cost of surgery. They carry risk of prions and parvo virus. Anaphylaxis and death has been reported from its use. Intrinsic preparation of autologous blood is expensive and requires sophisticated lab. Always scanty data exists recent reports on SFGF-CAG by different Indian authors are very encouraging. Studies conducted in the United Kingdom by De Wit et al.² show no complication or recurrence at all.

The reason for recurrence in one patient in our study could be attributed to the inadvertent inclusion of the Tenons in the graft or because of aggravated tissue response related to younger age. The inclusion of Tenons in the graft, graft edema or sub graft hemorrhage has been linked to recurrence by many authors. Vigorous rubbing to post graft dehiscence in one patient who required re-surgery. No graft related complications such as graft edema, sub-graft hemorrhage, graft loss or necrosis, infection, cyst were observed. Graft dehiscence in host conjunctiva (5 mm) was noted because of graft shrinkage. This is well tolerated and need no surgery. The main disadvantage of SFGF-CAG is risk of graft loss in the immediate post op period. But once the graft is in place for 24 hours, it is going to stick around.

In our study other associated findings that need to be mentioned

1. Intraoperatively in all cases, use of

subconjunctival anesthesia helped achieve total analgesia without compromising motility. The technique of avulsion adopted, helped achieve smoother cornea in few seconds.

2. Postoperatively donor site healed without any complications.

Koranyi G et al.³ who invented the technique of cut and paste method for using fibrin glue accepted that this technique has very short learning curve and can be taught and explained easily, but the pterygium surgeon's quality and dissection of graft involves time, complications and recurrence rates. So it is of paramount importance to do meticulous pterygium excision, taking Tenons free graft, leaving sub graft area free of hemorrhage and waiting 10 mins at the end of surgery. We had our study limitations. Study population and follow-up time was smaller, nonrandomized non comparative recurrent cases were excluded.

Conclusion

Though there seems to be several factors related to

graft adherence, we found recurrence, complication rate and operative time of SFGF-CAG comparable with current techniques in practice. A randomized, multicenter trial with a larger cohort and larger follow-up is warranted to substantiate our findings.

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