



E-ISSN: 2663-8274
P-ISSN: 2663-8266
www.opthalmoljournal.com
IJMO 2022; 4(1): 10-13
Received: 07-11-2021
Accepted: 09-12-2021

Dr. Sayed Aejaaz Hussein
Sankara Eye Hospital,
Ludhiana, Punjab, India

Dr. Pritish Gupta
Baba Farid University,
Ludhiana, Punjab, India

Dr. Manoj Gupta
Sankara Eye Hospital,
Ludhiana, Punjab, India

Corresponding Author:
Dr. Sayed Aejaaz Hussein
Sankara Eye Hospital,
Ludhiana, Punjab, India

A study on stability of conjunctivo limbal autograft with autologous serum in pterygium excision surgery

Dr. Sayed Aejaaz Hussein, Dr. Pritish Gupta and Dr. Manoj Gupta

DOI: <https://doi.org/10.33545/26638266.2022.v4.i1a.105>

Abstract

Pterygium surgery has evolved a lot with newer techniques to help create better postoperative outcomes, to make the surgery time less consuming, to have fewer complications and to provide more better postoperative comfort to the patient. Our study is based on one of this new techniques of Conjunctivo Limbal Autograft with autologous serum which is comparatively less time consuming compared to its predecessors and is a sutureless and glueless technique. The aim of the study is to find the safety, efficacy and relation of stability of intraoperative grafts (graft fixation) with their postoperative outcomes. We found that intra operative stable grafts to provide good results postoperatively having major displacement of only 1.15%. thus making this technique a faster, stable and economical technique for the patients and the doctors.

Keywords: pterygium, conjunctivo limbal autograft, stable graft

Introduction

One of the common extra ocular procedures being performed in ophthalmic practice is the pterygium excision with graft placement.

Pterygium is the second most common conjunctival degeneration seen. It is a wing shaped fibrovascular tissue encroachment on the cornea. It is usually on the nasal side, but can be present temporally also. Most common incidence is in areas with excess ultraviolet radiation such as tropical areas, places closer to equator [1]. Dry climate and outdoor lifestyle are also found to be risk factors. Excision being the treatment of choice, Pterygium surgery is perhaps second most common surgery being performed by general ophthalmologists.

However, a simple excision is notorious for a recurrence. Bare sclera technique shows a high recurrence rate of 89% [2]. Hence the procedure has been undergoing a constant evolution with better options with more favorable outcomes being available today. Current methods to prevent or reduce rate of recurrence are amniotic membrane transplant, conjunctival transposition flap and conjunctival/ conjunctivo limbal autograft placement [3-5].

Conjunctival sutures, which is a commonly practiced method for graft fixation in pterygium surgery are not only time-consuming, but also may lead to local complications such as discomfort, pain, foreign body sensation, hemorrhage [6]. Other graft fixation techniques like, Plasma-derived products like fibrin glue may cause hypersensitivity reactions as well the risk of viral transmission which is theoretically possible. Here, in our study, we describe a simple method of achieving conjunctival autograft adherence during pterygium surgery avoiding potential complications associated with the use of fibrin glue or sutures.

In the present study, we have retrospectively studied the safety, efficiency and rate of recurrence of conjunctival auto graft secured with glue less and suture less technique of autologous blood assisted graft fixation in pterygium excision surgery.

Methods

This is a retrospective, interventional study performed at a tertiary eye center. Medical records of patients with pterygium were reviewed to study the effectiveness of autologous serum in graft fixation after pterygium excision with autologous conjunctivo limbal transplant. This study includes 520 eyes of patients with primary pterygium operated in the three years (2018-2020). Exclusion criteria included unwilling patients, recurrent pterygium and history of any known bleeding disorders. Patients' data included age, sex, past ocular, medical and surgical history, visual acuity before and after surgery, surgical method and time for graft adhesion, operation time, complications, intra operative stability of graft, postoperative medications, postoperative assesment, recurrence.

All the patients were operated by a single doctor with immense experience in pterygium surgery, to avoid surgical bias.

Local anesthesia is given as a peribulbar block with mixture of bupivacaine 0.5% and lidocaine 1%. Body of the pterygium is dissected 4mm away from limbus and reflected onto the cornea. The head of the pterygium is avulsed with toothed forceps and the corneal remnants are carefully excised with a beaver blade (number 15). Cautery was avoided to permit spontaneous hemostasis, as little oozing is useful in adherence of graft to the bed.

Conjunctiva is now carefully dissected from the underlying tenons, to prepare a conjunctivolimbal autograft, in the inferotemporal bulbar conjunctiva. Thinnest possible autograft was dissected. The graft was placed over the bare sclera. Graft is oriented well, with the limbal edge toward the limbus and epithelium side up. After positioning, about 2–3 mins were used to smooth out the graft and press it gently to the scleral bed, firmly attaching the graft. The scleral bed is viewed through the transparent conjunctiva, and to prevent displacement of the graft due to residual bleeding, direct compression of the small central hemorrhages using Mcpherson forceps or cotton buds was done until hemostasis was achieved. It gets attached to the bed due to coagulation of fibrin from the little oozing of blood under the flap. The tissue was left for about 5–6 min in place. The stabilization of the graft was tested with a macphersons forceps centrally and along free edge to ensure firm adherence to the sclera. Care was taken during speculum removal not disturb or displace the graft. The lids are closed, and pressure bandage was applied for 24 hrs. Subconjunctival injection was not used to avoid lifting of the graft.

Graft assessment at the end of the surgical intervention

The graft fixation was assessed at the end of the procedure as the absence of displacement of graft or rolling of its edges following opening and closing movements of the eyelids.

Postoperatively, steroid (dexamethasone) drops were initially given 4 to 6 times a day and tapered over 4 weeks while antibiotic (ofloxacin) drops were administered 4 times a day for 2 weeks.

Post operative follow up

Patients were reviewed post operatively on Day 1, 1 month and 6 months.

Evaluation at post operative day 1:

At the first visit they underwent visual acuity assessment and detailed slit lamp examination of the graft and any ocular complaints were noted, if present.

Evaluation of graft stability at post operative day 1:

- A graft in situ.
- A retraction of graft, i.e. a conjunctival defect of approximately 1mm.
- A minor displacement of the graft, extending over corneal surface.
- A major displacement with sometimes loss of graft.

Evaluation at following visits

Visual acuity was done in later visits only if any complications were present and rest of examination was same as the first visit.

- Pterygium recurrence was defined as any fibro vascular growth that has passed the limbus by more than 1 mm.

- Graft success was defined as an intact graft by the 4th week after surgery.
- Graft failure was defined as absence of the graft by the 4th week.

Results

A total of 520 eyes were studied of 520 patients. The mean age of the study group was 59 years, with a range of 18 to 87 years. 286 of the subjects were male (55%) and 234 were female (45%). The mean time for procedure was 12 minutes (ranging from 10 to 15 minutes).

The stage 2 pterygium made for about 43% of the patients in our study group (table 1).the intraoperative graft stability was as seen in table 2 with stable grafts being on the higher side. The unstable graft made for about 12% (figure 1)

The postop day 1 graft stability a=is as seen in table 3 showing 81.9% of graft to be in situ from which major displacement were only around 4.6% (figure 2).Intraoperative stable graft having secondary displacement postop day 1 was seen to be around 2.2%(Table 4)

Other graft findings on post operative day 1

Complications observed were graft edema in 58 cases (11.15%), major graft displacement in 24 case (4.61%), subgraft haemorrhage in 23 cases (4.42%). Other common encountered findings were subconjunctival haemorrhage, chemosis, congestion, discomfort.

At 6 months follow up, 2 cases reported recurrence of pterygium in the operated eye.

Discussion

Our study included 520 eyes of 520 patients, with a mean age of 59 years and a sex ratio of 1:2.

Of all the pterygia excised in this study, 52% were of stage 3, followed by 43% falling under stage 2 and 5% under stage 1. This distribution is similar to the study conducted by Zarrouki *et al.* [15] in Morocco, who had 50% stage 3 pterygium in their study.

The mean operative time in our study was 12 minutes ranging from 10 minutes to 15 minutes. The amount of time for which the graft was immersed in blood for better fixation in our study was 5 minutes which was similar to Shing *et al.* and Nganga and Ngabou *et al.*, which might have contributed in the higher rates of stable grafts in our study. While it was 3 to 4 minutes for Gitte and Curian *et al.* and 8 to 10 minutes for Dewit *et al.* and Dasgupta's review study [8-12].

The graft stability also depended on the shape and size of the graft procured. Tapered grafts whose ends peel off on saline irrigation or large and wide grafts which fold with eyelid movements were the most unstable ones. Well sized grafts with semi spherical edges occupying most of the bare sclera were most stable. Any post operative displacement expected was within 24 hours after surgery. Since beyond that, grafts are firmly adherent.

Intra operatively, the grafts were considered stable or unstable based on the mobility of the graft at the end of procedure with gentle eyelid movements and rolling of the graft edges. In our study, 88.08% (458 grafts) were stable and 11.9% (62 grafts) were unstable grafts.

In the study conducted by Charles *et al.* [14], the intra operative unstable grafts were found to be 16.88% compared to 11.9% in our study, which could probably be because of use of irrigation of the graft to check its stability intra operatively in their study as well difference in graft

fixation time.

On the first post-operative day, the graft displaced, if any was marked by:

- Graft retraction, seen in 45 eyes (8.7%). No extra measures were required for such grafts and wound healing occurred naturally.
- Minor displacement of graft onto cornea was seen in 25 patients (4.8%), for which the extended part of graft was resected under topical anesthesia [7].
- Major displacement, i.e. displacement exceeding 5 mm and might be associated with graft loss. In our study, 24 number of major displacements were found (4.6%), which was close to the result of the study conducted by Nganga and Ngabou *et al.*, who found 5.2% of major displacements. Our result also coincides well with the findings in the review of literature on the studies of this technique, conducted by Dasgupta, who noted a displacement rate between 0% and 12% [8].

In our study, 4.6% of patients presented with major displacement on post operative day 1 which is very low compared to study by Sarkar *et al.* and Charles *et al.*, who found 8% and 9.09% of major displacement [13], respectively. This variation may be explained by the systemic non compliance of the study of coagulation time and by the difference in graft fixation time.

Among 24 grafts that had major displacement postoperatively, 6 grafts (25%) were stable and rest 18 grafts (75%) were unstable intraoperatively.

Post operatively, of the 25 minor displacements seen, 21 (84%) were found to be in the group of unstable grafts compared to 4 (16%) in stable grafts.

Hence, it has been observed that, both major and minor displacements were more common in the unstable grafts. i.e., 62.9% (39 grafts) of unstable grafts intra operatively had some kind of secondary displacement compared to that of 2.18% in the stable grafts. This finding is similar to the one made by Charles *et al.* in their study, which had secondary displacements in 86.4% of unstable grafts compared to that of 7% of stable group [8].

If the unstable grafts were not considered in our study the major displacements would only be 1.15% instead of 4.6%, therefore the studied technique of graft fixation would be considered as a good option in stable grafts and the use of suture or biological glue would be better in unstable graft.

Table 1: Distribution of patients as per staging of pterygium

Staging of pterygium	No. of cases	Percentage
Stage 1	26	5%
Stage 2	224	43%
Stage 3	270	52%
Total	520	100%

Table 2: Intra operative evaluation of graft stability

Intraoperative evaluation	No. of cases	%
Stable graft	458	88.08
Unstable graft	62	11.92
Total	520	100

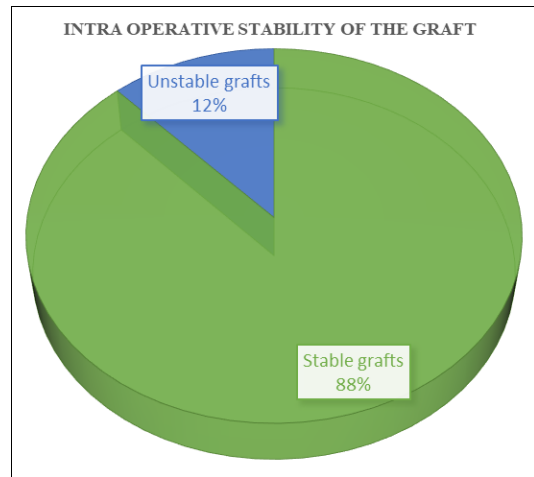


Fig 1: Intra operative stability of the graft

Table 3: Graft evaluation at post-op day 1

Graft assessment	No. of cases	Percentage
Graft in situ	426	81.9%
Graft retraction	45	8.7%
Minor displacement	25	4.8%
Major displacement	24	4.6%

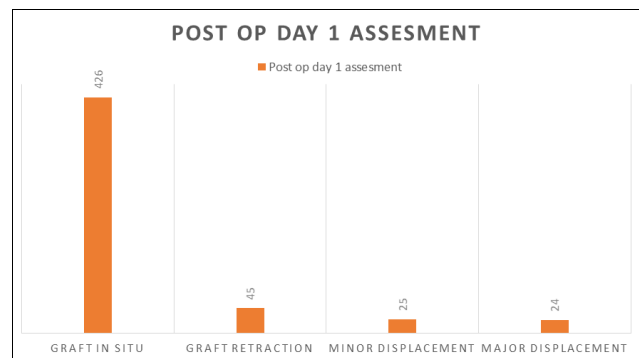


Fig 2: Post op day 1 assesment

Table 4: Relation between stability of graft and post operative outcome

Graft stability	Well positioned	Secondary displacement	Total
Unstable	23 (37.1%)	39 (62.9%)	62
Stable	448 (97.8%)	10 (2.2%)	458
Total	471	49	520

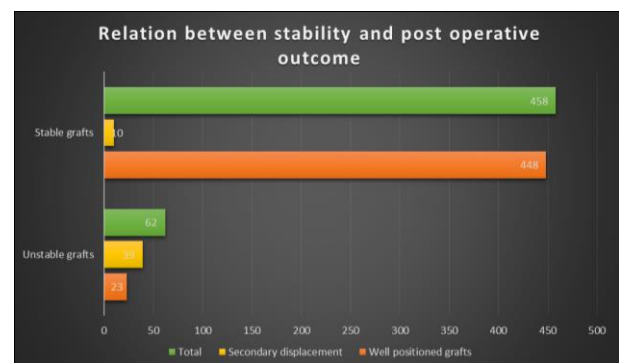


Fig 3: Relation between stability and post operative outcome

Conclusion

Hence, as observed from data obtained in our study, the conjunctivo limbal graft fixation with autologous serum showed minimal post-operative discomfort and minimal displacement in well sized, stable grafts. Apart from that, this technique is less time consuming, economical and effective. Hence it can be an ideal alternative to conventional suture/ glue related graft fixation techniques. This technique also allows modification or addition of sutures if the fixation is not satisfactory with autologous serum alone in unstable grafts or large grafts, making it an ideal initial approach.

Acknowledgments

The data was collected due to the support and efforts of the institute, its doctors and staff.

There is no conflict of interest.

References

1. Moran DJ, Hollows FC. Pterygium and ultraviolet radiation: a positive correlation. *Br J Ophthalmol.* 1984 May;68(5):343-6.
2. Hirst LW. The treatment of pterygium. *Surv Ophthalmol.* 2003;45:145-180.
3. Allan BD, Short P, Crawford GJ, Barrett GD, Constable IJ. Pterygium excision with conjunctival autografting: An effective and safe technique. *Br J Ophthalmol.* 1993;77:698-701.
4. Nuzzi R, Tridico F. How to minimize pterygium recurrence rates: clinical perspectives. *Clin Ophthalmol.* 2018 Nov 19;12:2347-2362. DOI: 10.2147/OPHTH.S186543. PMID: 30538417; PMCID: PMC6251440.
5. Bhatia J, Varghese M, Narayanadas B, Bhatia A. Cut-and-place technique of pterygium excision with autograft without using sutures or glue: Our experience. *Oman J Ophthalmol.* 2017 May-Aug;10(2):81-86. DOI: 10.4103/ojo.OJO_208_2015. PMID: 28757691; PMCID: PMC5516468
6. Kumar S, Singh R. Pterygium excision and conjunctival autograft: a comparative study of techniques. *Oman J Ophthalmol.* 2018;11(2):124-128.
7. Nganga Ngabou CGF, Makita C, Ndalla SS, Nkokolo F, Koulimaya RMA, *et al.* Chirurgie du ptérygion avec greffe de conjonctive fixée par du sang autologue. *J F Ophthalmol.* 2018;41:425-432.
8. Dasgupta S, Vats V, Mittal SK. Pterygium excision with suture free, glue free conjunctival autograft (SFGF-CAG): Experience of a tertiary care hospital of the Northern India. *Journal of Clinical Ophthalmology and Research.* 2016;4:143-148.
9. Kurian A, Reghunadhan I, Nair KGR. Autologous blood versus fibrin glue for conjunctival autograft adherence in Suture less pterygium surgery: a randomized controlled trial. *Br J Ophthalmol.* 2015;99:464-470.
10. DeWit D, Athanasiadis I, Sharma A, Moore J. Suture less and glue-free conjunctival autograft in pterygium surgery: a case series. *Eye.* 2010;24:1474-1477.
11. Singh PK, Singh S, Vyas C, Singh M. Conjunctival autografting without fibrin glue or sutures for pterygium surgery. *Cornea.* 2013;32:104-107.
12. Gitte TR, Karad HT, Kulkarni M, Mashayak A, Kulkarni G. Suture less and Glue-Free Conjunctival Autograft in Pterygium Surgery. *PJSR.* 2017;10:46-50.
13. Sarkar S. Pterygium Excision with Conjunctival Autograft without Suture without Glue. *IOSR-JDMS.* 2017;16:82-86.
14. Nganga Ngabou Charles Géraud Fredy. Efficacy of suture less and glue-free conjunctival autograft in pterygium surgery *New Front Ophthalmol.* 2019. DOI: 10.15761/NFO.1000230
15. Zarrouki M, Elyadari M, Jebbar Z, Azennoud S, Serghini L, *et al.* L'autogreffe conjunctivo-limbique dans la chirurgie du ptérygion: suture versus colle biologique à propos de 30 cas. *J Fr Ophtalmol.* 2017;40:293-295.