Study of Sutureless and Glue Free Conjunctival Autograft

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Research Article

Abstract: To study outcome of sutureless and glue free conjunctival autograft in pterygium Surgery" **Objective:** 1. To study the different complications during and after Sutureless and Glue Free Conjunctival Autograft in Pterygium Surgery. 2. To study change in astigmatism after pterygium surgery by Sutureless and Glue Free Conjunctival Autograft.

Keywords: Conjuctival Autograft, Pterygium Surgery.

Introduction

In 1985, Kenyon et al proposed that a conjunctival autograft of the bare sclera could be used in treatment of recurrent and advanced pterygium. Recent reports favour the use of fibrin glue above sutures with improved comfort, decreased surgical time, reduced complication and recurrence rates have been reported. Suture-related complications include infection, granuloma formation, and chronic inflammation, whereas plasma-derived fibrin glue has the potential risk of prion disease transmission and anaphylaxis in susceptible individuals. Plasma-derived products such as fibrin glue may produce possible hypersensitivity reactions whereas the risk of viral transmission remains. We study sutureless and glue free [SGF] conjunctival auto graft of achieving conjunctival autograft adherence during pterygium surgery avoiding potential complications associated with the use of fibrin glue or sutures

Methodology

Surgical Technique

The body of the pterygium is dissected 4 mm from the limbus, down to bare sclera, and reflected over the cornea. The pterygium head and cap is avulsed using artery forceps followed by careful excision of corneal remnants. Only the thickened portions of the conjunctiva and the immediate adjacent and subjacent Tenon's capsule showing tortuous vasculature are excised. Care is taken to avoid conjunctival plica excision and extensive dissection of tenons is avoided. Where possible, haemostasis is allowed to occur spontaneously without the use of cautery. If no blood is available to provide autologous fibrin, small perforating veins and capillaries are purposely fractured (though seldom required) to encourage a thin layer of fresh blood to cover the bare sclera. The size of the defect (mm^2) is measured with Castoviejo callipers. Careful dissection between donor graft conjunctiva and Tenon's layer is used while fashioning the 1 mm oversized conjunctivo-limbal graft from the superotemporal bulbar conjunctiva. The limbal edge of the graft is carefully positioned at the host limbal tissue edge as previously described. No attempt is made to directly close the full extent of the excision wound, allowing natural graft positioning without tension. The scleral bed is viewed through the transparent conjunctiva and to ensure residual bleeding does not relift the graft, small central haemorrhages are tamponaded with direct compression using non-toothed forceps until haemostasis is achieved, usually within 8–10 min. Postoperatively, steroid drops were initially given four times a day and tapered over 6 weeks while lubricating drops were administered four times a day for 1–2 weeks.

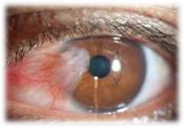


Figure 1: Before surgery

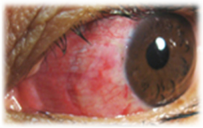


Figure2: 1 day after surgery

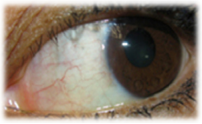


Figure 3: 1 month after surgery

Inclusion Criteria

1. Patient with primary pterygium (Nasal / Temporal / Double monocular)
2. Healthy Patients (No age, sex criteria)

Exclusion Criteria

1. Patients with previous history of pterygium surgery.
2. Any other ocular pathology

Proforma for the Study

Written consent of all patients included in the study will be taken after fully explaining the procedure and purpose of the study to the patients. A detailed proforma is devised containing all essential details for each individual. The patients will be asked about their name, age, sex, occupation and address. After obtaining the approval of the Institutional Ethics Committee and written consent from the patients, 20 patients will be included. A complete ophthalmic history will be taken which will include onset, duration and progress of pterygium Before surgery, a comprehensive clinical examination including

- Snellen visual acuity measurement
- Applanation tonometry
- slit-lamp examination
- keratometry
- Anterior segment photography
- Routine investigation

The patients will be examined on slit lamp on the 1 st postoperative day. The follow-up of the patients will be done after 1week, at 1 month and at 3month.On each follow-up patients complaints, patients satisfaction level, visual acuity, slit lamp examination, keratometry and anterior segment photography will be done. A record will be made of the intraoperative and postoperative complications and their management.

Study Design

A prospective interventional case series was carried out in 20 consecutive eyes with primary nasal pterygium requiring surgical excision. Pterygium excision with limbal conjunctival autografting without using glue or sutures was performed in all the patients followed by bandaging for 24 hours. The patients were followed up post operatively on 2nd day, 1 week, 6 weeks, 6 months and 12 months. They were examined for haemorrhage, wound gape, graft shrinkage, chemosis, graft dehiscence, recurrence or any other complication.

Results

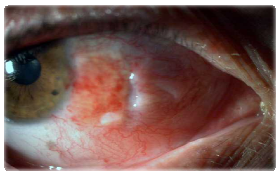
The mean age of the patients was 52.4 years (range 24-83), 60% of which were males. Total graft dehiscence occurred in 2 eyes (10%), graft retraction in 1 eyes (5%) and graft edema was noted in 2eyes (10%).None of the cases had any recurrence. No other complication was noted.

Table 1

No of Eyes	20
Location	Progresive nasal Pterygium
Mean operation time	16 min
Mean graft size	24mm²
Complications	Graft edema Retraction

Table 2: Complications

Graft edema	2 (10%)
Graft retraction	2 (10%)
Graft dehiscence	0
Recurrence	0



Graft retraction

Table 3: Pre operative and Post operative difference in astigmatism

Mean pre operative Astigmatism	2.8 D
Mean post operative Astigmatism	1.7 D
Mean difference in pre and post operative Astigmatism	1.1 D

Table 4: Comparison with other study

Study	Our Study	Mitra Set al.	De Wit D et al	Malik KP et al.
No. Of patient Duration	20 6 months	19 6 months	15 9.2 months	40 12 months
Surgical time	16min	11 min	14 min	-
Chemosis	2 (10%)	–	–	3 (7.5%)
Retraction	2 (10%)	2 (10.5%)	–	3 (7.5%)
Dehiscence	–	–	–	2 (5%)
Recurrence	–	–	–	1 (2.5%) at 6 months

Discussion

Current surgical methods to prevent pterygium recurrence include conjunctival autograft, limbal and limbal–conjunctival transplant, conjunctival flap and conjunctival rotation autograft surgery, amniotic membrane transplant, cultivated conjunctival transplant, lamellar keratoplasty, and the use of fibrin glue. All of these techniques involve the use of sutures or fibrin glue and are therefore vulnerable to associated complications. The presence of sutures may lead to prolonged wound healing and fibrosis. Subsequent complications such as pyogenic granuloma formation are easily treated; others such as symblepharon formation, forniceal contracture, ocular motility restriction, diplopia, scleral necrosis, and infection are much more difficult to manage and may be sight threatening. Although generally considered safe, fibrin glues are currently manufactured from human plasma and therefore carry the theoretical risk of transmissible disease. Virus removal and inactivation procedures are included in the manufacturing process although may be of limited value against nonenveloped

viruses such as hepatitis A virus and parvovirus B19. New devices, such as the CryoSeal FS System, that generate fibrin sealant from autologous blood may eliminate the current risks associated with pooled plasma. They are not currently in widespread use however and the time taken to procure the fibrin may be prohibitive in day case pterygium surgery. Fibrinogen compounds may also be susceptible to inactivation by iodine preparations such as those used for conjunctival disinfection before pterygium surgery. In this setting their superiority versus naturally occurring fibrin in the bare scleral wound site has not been directly compared. The opposition of the lids to the bulbar conjunctiva provides a natural biological dressing and confers a unique wound-healing environment. Apart from a physical barrier, the lids provide compression, a smooth frictionless surface, and a vascular bed with immune capability in close proximity to the injury site. Our study has several limitations. It consisted of a small study population and a relatively short follow-up period of 6 months. However, one article comparing four commonly used techniques for pterygium surgery reported mean time for appearance of any complication including recurrence was 4 months. Most importantly however, the operating time, post-operative symptoms, recurrence, and complication rate of the above-described technique (SGF) in our series appears to be equivalent to conventional suture and glue techniques of a similar follow-up duration. Specifically, the risk of graft retraction as described by Tan appears to be no greater without suturing or fibrin glue as long as meticulous dissection of the subepithelial graft tissue is respected. We postulate that as there is an even tension across the whole of the graft interface and no direct tension on the free graft edges, there is reduced stimulus for subconjunctival scar tissue to form. Although surgical time in our small series appears no greater than current published literature, the possibility of longer operation times compared to sutures or fibrin glue is possible. A prospective randomised controlled trial is required to investigate the long-term efficacy of this SGF grafting technique in reducing recurrences

Conclusion

- This simple technique for pterygium surgery is a safe, effective and economical option for the management of primary pterygium. It produces lesser postoperative pain and it requires shorter surgical time.
- No cases of graft dehiscence, recurrence of pterygium during the follow up period.
- It may prevent complications attributed to the use of foreign materials.

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