

Pterygium Excision with Conjunctival Blood Autograft

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Abstract

Aim: To analyse the outcome of Pterygium excision with conjunctival auto graft with no glue, no sutures technique using autologous blood as tissue adhesive. *Objective:* To analyse a simple, cost effective, less painful and less time consuming technique of conjunctival autograft with autologous blood. *Materials and methods:* A total of 30 patients with primary pterygium in the age group of 30-60 years were included in the study. All patients underwent pterygium excision followed by conjunctival autografting. Autoblood fibrin clot was used as tissue adhesive to secure the conjunctival autograft. Follow up was done after 1 weeks, 4 weeks and 8 weeks postoperatively. Results were good with no recurrence and few complications in all 30 cases. *Results:* 28 out of 30 patients had good primary outcome with no complications (success rate 93.33%). There was no recurrence. Suture related complications can be completely avoided by this technique. *Conclusion:* Autologous blood fibrin clot instead of sutures, during pterygium excision may provide new easy and cost-effective method for securing conjunctival Autograft with complete avoidance of suture related complications and low or nil recurrence .

Keywords: Pterygium Surgery; Conjunctival Auto Graft; Auto Blood Fibrin Clot; Limbal Auto Graft; Fibrin Glue.

Introduction

The word pterygium is derived from the ancient Greek word (pteryx) -wing and (gion) -fin. Pterygium is characterized by a triangular portion of the bulbar conjunctiva encroaching onto the cornea. It is a growth disorder characterized by conjunctivalisation of the cornea due to localized ultraviolet radiation stimulated damage to the limbal stem cells [1]. Destructive pterygial fibroblasts are also responsible for corneal invasion.

A leading theory proposes that there is increased risk of pterygium among people in equatorial regions, due to the damaging effects of ultraviolet radiation, specifically UV-B radiations. The working hypothesis is that these radiations cause mutations in the p53 tumor suppressor gene, leading to abnormal proliferation of limbal epithelium [2].

Method

All the cases had informed written consent and hospital ethical committee approval to study.

Total of 30 cases of primary advancing pterygium were included in the study. Cases of secondary pterygium and pseudopterygium were excluded.

Surgical technique

All cases underwent surgery under peribulbar anesthesia under all aseptic precautions. Pterygium was excised with reverse stripping of the pterygium head. No cautery was used on the bed after excision. The blood was allowed to ooze and form clot in bed. Calipers used to measure size of conjunctival auto graft. Graft size taken was around 0.5 to 1mm more than the measured size of conjunctival autograft, from upper temporal bulbar conjunctiva, without tenon's capsule. Limbal tissue was taken in the auto graft by passing the knife 0.5 to 1 mm in the limbus to include limbal stem cells. Graft procured was placed over the bare sclera in the correct anatomical orientation and conjunctival edges were opposed with non toothed forceps. A waiting period of 10 mins was allowed. At the end of surgery, eye speculum was removed carefully so

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as not to distort the graft. Eye was patched for 12-14 hours. Patients were asked to use post operatively 1% prednisolone acetate eye drops 8 times a day tapering down each week for 8 weeks. Moxifloxacin eye drops for 7 days and Lubricating eye ointment at night for 6-8 weeks. Donor area was left to epithelialize

Patients were followed up at 1st week, 4th weeks and 8th weeks.

Results

All the patients had good primary outcome with success rate of 93.33%. There was graft retraction in one patient for whom secondary sutures were put. There was one graft loss. Suture related complications like post operative pain, foreign body sensation in eye, watering from eye can be completely avoided with this procedure.



Fig. 1: Preoperative.



Fig. 2: Excision and fibrin clot.



Fig. 3: Graft placement.



Fig. 4: Post operative 1st week

Table 1: Demographic chart

Number of patients	30
Male	19
female	11
Age group	30 to 60 yrs
Average surgical time	12 to 15 mins
Follow up	1 st , 4 th and 8th weeks

Table 2: Results

Primary outcome		
Graft retraction		1
Recurrence		nil
Graft loss		1
Secondary outcome		
Post op pain	minimum	
Suture related complications	Nil	
Cosmetically	Good	
Minor complications		
Sub conjunctival hemorrhage		0
Cyst formation		0

Discussion

The prevalence rate of primary pterygium varies from 0.7 to 3% in various populations around the world. In India, as it falls in the pterygium belt, prevalence is in the range of 0.3 to 29%. Pterygium is more often seen in men than in women as males are exposed to dust and environmental irritants more than women. Usually seen within the interpalpebral fissure and most often on the nasal side. The nasal affinity of the pterygium is attributed to the following factors:-

1. Sparse subconjunctival tissue in the temporal region.
2. Temporal side is exposed to a lesser extent to UV radiation due to greater amount of bowing of outer 2/3 of the upper lids.

Histologically, there is senile elastosis (basophilic degeneration) of subepithelial tissue in the substantiapropria with abnormal collagen fibers. There is dissolution of Bowman's membrane, followed by invasion of the superficial cornea.

There can be presence of stockers line (linear epithelial iron deposition) and Fuchs islets (clusters of pterygial epithelial cells) along the advancing edge of pterygium.

Patient presents with foreign body sensation, discomfort, congestion (redness), irritation and grittiness as the advancing edge of pterygium interferes with precorneal tear film, blurring of vision either because of induced astigmatism or obscuring visual axis.

There can be recurrent episodes of inflammation. If the lesions are extensive and recurrent, it can lead to subconjunctival fibrosis and restricted ocular movements

The indications for surgery include -

- Diminision of vision due to encroachment of visual axis.
- Irregular astigmatism.
- Chronic irritation, recurrent inflammation.
- Restriction of ocular motility.
- Unsightly appearance.
- Neoplastic changes rarely.

There is fairly high risk of recurrence which may be more unsightly. To prevent recurrence conjunctival auto grafting either by use of fibrin glue or sutures is being used.

In this study the possibility of using autologous blood fibrin clot derived from blood oozing out during pterygium excision, to secure the conjunctival autograft was studied.

Pterygium surgery should ideally have a low or no recurrence, minimal complications and be cosmetically acceptable. The evolution of several surgical techniques over the years with recurrence rates varying from 2 to 88% indicates that we are yet to find the ideal procedure.

Surgical procedures are evolved from bare sclera technique in 1960's which is easy to do but have very high recurrence rate [4]. Use of intra operative mitomycin C has a recurrence of 0-43% [3] with devastating ocular complications like sclera melt etc. The simplest technique of bare sclera excision alone proved unsatisfactory because of the high recurrence rates (30-70%) [4,5]. Adjunctive treatment after bare sclera excision with β irradiation reduced recurrence rates to as low as 0.5%-16 [6] but was associated with significant complications such as scleral necrosis. The use of mitomycin C was also associated with complications such as secondary glaucoma, corneal oedema, iritis and corneal perforation, endophthalmitis, and cataract [7-9].

In 1985, Kenyon et al. [10] published a report describing conjunctival autografting as a promising technique in the treatment of pterygium. They documented a recurrence rate of 5.3% in the primary pterygium group. Since then, a number of papers on the success of conjunctival grafting have been published, with varying success rates.

SE Ti et al. [11] reported on recurrence rates in a single surgeon, randomised controlled trial comparing conjunctival autografting with bare sclera excision. In that study, the 1 year recurrence rate for conjunctival autografting in primary cases was 2% (one recurrence in 61 eyes), while no recurrences were noted in the recurrent pterygium cases. This was in marked contrast with cases undergoing bare sclera excision in which the recurrence rates for primary and recurrent groups were 61% and 82% respectively.

Advantages of conjunctival autografting were good cosmetic results, no serious intraoperative complications, thin graft either with or without limbal tissue was sutured to the graft area. Drawbacks were longer surgical time and suture related complications. During the present decade fibrin glue application to fix the graft was developed with elimination of suture related complications [12] and faster surgery but it has its own drawbacks like increased cost, not easily available, risk of anaphylactic reactions, viral disease transmission and bio degradable within 3 hours.

Use of patient's own autologous blood [13] was based on clotting mechanism of blood coagulation, (but should be used before fibrinolysis occurs) was developed with all the drawbacks eliminated.

Autologous blood availability is not a problem because we can puncture vessels to ooze if quantity of clot is inadequate. This technique has the advantage of easy availability, faster rehabilitation of patient and avoidance of all suture related complications like foreign body sensation in eye or watering of eyes postoperatively can be avoided.

Future studies of larger sample size, follow up period along with graft size are needed to establish reliability of this technique in various situations like bigger grafts etc.

Conclusions

Autologous fibrin in patient's own blood is a useful alternative method for graft fixation in pterygium surgery, which is cost effective, easy to perform, less time consuming with lesser complications.

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