Original Article

Sutureless and glue free conjunctival auto grafting after pterygium excision

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Abstract

Background and objectives: Suture or glue has been used to secure the conjunctival auto graft after excision of the pterygium. Recently, auto grafting using patient's own blood as a bioadhesive to secure the graft in position has been described by several authors. Therefore, the present study was undertaken to determine the outcome of excision of pterygium and sutureless conjunctival auto graft using patients' own blood as a bioadhesive.

Methods: Patients with primary and recurrent pterygium attending the Department of Ophthalmology of Bangladesh Institute of Research, Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) hospital from March 2014 to July 2015 were included in the study. Pterygium was excised and conjunctival auto graft was applied. Grafts were secured to the pterygium excision area with auto blood fibrin clot. All patients were examined after 48 hr and followed for 1, 4 and 12 weeks for graft dislodgement, sub-conjunctival hemorrhage, graft recession, graft edema and recurrence of pterygium.

Results: A total of 35 primary and 2 recurrent pterygium cases were included in the study. The mean operation time was 15 ± 1 minutes. Out of 37 eyes 5 (13.5%) had subconjunctival hemorrhage and 2 (5.4%) had graft recession and edema after 48hrs of operation. At 3 months follow up, 2 cases (5.4%) of graft recession and no case of recurrence of pterygium was found.

Conclusion: Pterygium excision and conjunctival auto graft without sutures appears to be an effective treatment modality for primary and recurrent pterygium with no additional cost.

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Introduction

A pterygium is a winged shaped growth of fibrovascular conjunctiva onto the cornea. Its incidence varies across geographical locations and several hypotheses have been ascribed to its etiology [1]. Currently, it is believed that the pterygium is a growth disorder characterized by corneal conjunctivalization due to exposure to ultraviolet light and microtrauma. Ultraviolet light induced localized stem cell dysfunction is possibly related to the formation of pterygium [2].

The indications for surgery include reduced vision due to encroachment of visual axis and irregular astigmatism, chronic irritation, recurrent inflammation and restriction of ocular motility and cosmetics. Numerous surgical techniques including bare sclera excision, with and without the use of adjuncts like beta irradiation, thiotepa eye drops, intra or postoperative mitomycin C or anti neoplastic agents, amniotic membrane transplantation, conjunctival auto graft with or without limbal stem cells have been described [3]. In conjunctival auto grafting after pterygium excision, the conjunctival graft is usually sutured or glued to the bed to secure its position. In sutureless glue free auto grafting technique, the conjunctival graft is placed on to the bed where the oozing blood clots and forms a bioadhesive, which secures the graft in its position [4]. Auto graft with

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suturing is more cumbersome to perform and causes postoperative irritation and discomfort to the patient. The procedure also takes longer time to perform. On the other hand, if glue is used instead of suture, there are chances of hypersensitivity reaction and it is expensive. The new technique of sutureless auto grafting where blood clot is used as a bioadhesive is free from the above disadvantages.

To the best of our knowledge, this technique has not yet been applied in Bangladesh. Therefore, the present study was undertaken to evaluate the outcome of the technique of excision of pterygium and sutureless conjunctival auto graft using patients' own blood as a bioadhesive.

Materials methods

Selected patients with diagnosis of pterygium attending the Department of Ophthalmology of Bangladesh Institute of Research, Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) General hospital from March 2014 to July 2015 were included in the study. The study was approved by the Ethical Review Board of BADAS. Informed written consent was obtained from each participant.

Surgical technique

All surgical procedures were done under peribulbar anesthesia. Pterygium was excised without application of cautery to the scleral bed. Blood was allowed to ooze and form a clot on the bed. A caliper was used to measure the size of the conjunctival auto graft. One millimeter over sized graft compared to the pterygium bed was created from upper temporal conjunctiva. Tenon's capsule or limbal tissue was not included. The auto graft was then glided into place over the bare sclera in the correct anatomical orientation and conjunctival edges were apposed with non tooth forceps. Donor area was left as it is for re-epithelization. At the end of the surgery, eye speculum was carefully removed without distorting the graft. Eye was patched for 48 hours.

All patients were given 1% prednisolone acetate eye drops 4-6 times daily and moxifloxacin eye drops for 15 days. Lubricating eye drops for 6-8 weeks were prescribed. Patients were followed up at 48 hrs, 1, 4 and 12 weeks for graft dislodgement, sub-conjunctival hemorrhage, graft recession, graft edema and recurrence of pterygium.

Results

A total of 35 cases were included in the study. The mean age of the study population was 32 ± 2 years. The male and female distribution was 30 and 05 respectively. The detail profile of the study population is shown in Table-1. All the patients were examined after 24-36 hrs following operation for graft dislodgement, recession, edema sub-conjunctival hemorrhage. Out of 37 eyes only 5 (13.5%) had subconjunctival hemorrhage and 2 (5.4%) had graft recession and edema after 48 hrs of operation. Two cases (5.4%) of graft recession were noted at 3 month follow up. There was no recurrence of pterygium (Table-2). The mean operation time was 15 ± 1 minutes.

Table-1: *Profile of the study population*

Profile	Number
Total case	35
Total eyes	37
Primary pterygium	35
Recurrent pterygium	02

Note: Two cases had pterygium in both eyes.

Table-2: *Outcome of the pterygium excision with sutureless conjunctival auto grafting*

Outcome	**Number (%) n=37**
After 48 hrs	
Graft dislodgement	0 (0)
Sub-conjunctival hemorrhage	5 (13.5)
Graft recession	2 (5.4)
Graft edema	2 (5.4)
After 12 weeks	
Graft dislodgement	0
Sub-conjunctival hemorrhage	0
Graft recession	2
Graft edema	0
Pterygium recurrence	0

Discussion

Pterygium surgery should ideally have a low or no recurrence, minimal complications and be cosmetically acceptable. Several surgical techniques have evolved over the years with recurrence rates varying from 2 to 88% [4]. Surgical procedures like bare sclera technique introduced in 1960's, though easy to do, has been abandoned due to very high recurrence rate in the range of 26.8 to 88% [4]. Application of intra operative mitomycin C has a recurrence of 0-43% with devastating ocular complications like sclera melt, ocular perforation, etc [5]. During 1980's conjunctival auto graft has been introduced and currently is the standard procedure for pterygium surgery with low recurrence rates in the range of 0-9% [6]. Procedure involves thin conjunctival graft either with or without limbal tissue which is sutured to the graft area. It has good cosmetic result having no serious intraoperative complications. However, the procedure takes longer surgical time and there is suture related complications. During the present decade, fibrin glue application to fix the graft was developed with elimination of suture related complications and faster surgery [7]. But it has other drawback like increased cost, availability, anaphylactic reactions, bio degradability of glue within 3 hours of grafting and recurrence rate of 10-15% [8].

Recent introduction of auto graft technique using patient's own blood as bioadhesive substance on the excised bed of the pterygium has gained popularity. The technique has eliminated several disadvantages encountered with earlier methods. It has minimized the surgical time, trauma to the conjunctiva and recurrence rate. In our series, the operation time was only 14 to 16 minutes and there was no single case of pterygium recurrence after 3 months of surgery though we had 2 cases of graft recession. There was no other complication observed in our cases. The result was comparable to other studies with similar techniques [9]. The technique is cost effective and easy to perform with less discomfort to patient. However, our series had short follow up period of 3 months and did not have different types of atypical pterygia.

Sutureless and glue free conjunctival auto graft using blood clot as a bioadhesive is a useful alternative method for graft fixation in pterygium surgery. We found the new procedure of auto grafting free of any untoward complications.

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