

## To Compare Three Techniques of Conjunctival Fixation (Suture Versus Fibrin Glue versus Autologous in Situ Blood Coagulum) Over Bare Sclera Following Pterygium Excision

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### Research Article

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### Abstract

To compare three techniques of conjunctival fixation (suture versus fibrin glue versus autologous in situ blood coagulum) over bare sclera following pterygium excision. Ninety eyes of 90 patients with primary pterygium were randomly divided into three groups: group I (30 eyes) underwent autografting and fixation with 8-0 vicryl sutures, group II (30 eyes) with fibrin glue and group III (30 eyes) with autologous in situ blood coagulum. The patients were reviewed on 2nd day, day 10 and day 30, and at every 3 months till 12 months after surgery. Rate of recurrence was similar ( $p = 0.515$ ) across the three groups. Time taken for surgery for Group 1 was more as compared to group 2 ( $p < 0.001$ ) and with group 3 ( $p < 0.001$ ) comprising of the quickest surgery timings. Postoperative patient discomfort (foreign body sensation, epiphora, pain and irritation) was more in suture-assisted autografting as compared to the other two groups.

**Keywords:** Complications; Pterygium; Recurrence; Conjunctival autograft; Autologous in situ blood coagulum

**Abbreviations:** AMG: Amniotic Membrane Graft; CAG: Conjunctival autograft; LCAG: Limbal CAG; MMC: Mitomycin

### Introduction

A pterygium is a degenerative condition of the sub-conjunctival tissue which proliferates as vascularized granulation tissue to invade the cornea destroying the superficial layers of stroma and Bowman's membrane, the

whole being covered by conjunctival membrane. It varies from small, atrophic quiescent asymptomatic lesions to large, aggressive, rapidly growing fibrovascular lesions that cause impairment of vision by covering the pupillary area of the cornea and also by altering the curvature of the cornea due to fibrosis, causing astigmatism. It may also invade the cornea leading to corneal opacity.

Cosmetic disfigurement, recurrent inflammation, visual impairment, diplopia from motility restriction, and difficult to wear contact lens are the main indications of

surgery (i.e., pterygium excision) [1]. The results of pterygium surgery are often compromised by postoperative recurrence, which is the leading cause of surgical failure in a significant number of cases. Risk factors for the recurrence are geographic location, age, gender, morphology and grade of pterygium, and the type of surgical technique [2,3]. Most of the recurrence takes place within first 6 months postoperatively, and it has been attributed to the up regulation of the inflammatory process [4].

Conventional surgical procedure(s) practiced nowadays to prevent recurrence, alone or in combination, are conjunctival flap, conjunctival rotational autograft, amniotic membrane graft (AMG), or free conjunctival autograft (CAG) or limbal CAG (LCAG) with surgical adjunct (e.g., suture, commercial fibrin glue, intra- or post-operative 0.02% mitomycin C [MMC]), with variable postoperative recurrence and/or success rate(s)[5].

Till recent years, CAG surgery with the use of fibrin glue, sutures, or MMC was generally regarded as the procedure of choice where surgery is indicated for the treatment of primary and recurrent pterygium, primarily because of its comparable recurrence rate, efficacy, and long-term safety in contrast to other procedures [6,7]. However, using these surgical adjunct has surgical risks and complications too [5,6,8].

For treatment of this condition various treatment modalities are available but surgery still remains gold standard. During the past decade, debate over the best approach to pterygium surgery was centered on sutures and fibrin glue to affix the conjunctival graft but recent introduction of patient's own blood (autologous blood) for fixation of conjunctival flap has proven to be better over the previous two approaches. Although, none of the approaches have been tested in the rural settings.

## Materials and Methods

Ninety eyes of 90 patients with primary pterygium were randomly divided into three groups (non randomized control trial): group I (30 eyes) underwent autografting and fixation with 8-0 vicryl sutures, group II (30 eyes) with fibrin glue and group III (30 eyes) with autologous in situ blood coagulum. Sample size of 90 reached on the basis of average number of pterygium surgeries done over last six months and keeping 30 patients in each group for the result to be statistically significant.

The following points were tabulated as under name, age, sex, address, occupation, history, general examination, local examination. Informed consent was taken from the patient before performing the surgery.

The patients were randomly divided into three groups. The patients were reviewed on 2nd day, day 10 and day 30, and at every 3 months till 12 months after surgery. Duration of surgery, recurrence rate and postoperative patient discomfort (foreign body sensation, epiphora, pain and irritation) were noted on 2<sup>nd</sup> day, 10<sup>th</sup> day and 30<sup>th</sup> day and at every 3 months till 12 months after surgery.

## Results

Ninety eyes of 90 patients with primary pterygium were randomly divided into three groups: group I (30 eyes) underwent autografting and fixation with 8-0 vicryl sutures, group II (30 eyes) with fibrin glue and group III (30 eyes) with autologous in situ blood coagulum. The patients were reviewed on 2nd day, day 10 and day 30, and at every 3 months till 12 months after surgery. Rate of recurrence was similar ( $p = 0.515$ ) across the three groups. Time taken for surgery for Group 1 was more as compared to group 2 ( $p < 0.001$ ) and with group 3 ( $p < 0.001$ ) comprising of the quickest surgery timings. t-test and chi square test were done. Postoperative patient discomfort (foreign body sensation, epiphora, pain and irritation) was more in suture-assisted autografting as compared to the other two groups.

Discussion Pterygia are characterized by elastotic degeneration of collagen and fibrovascular proliferation, with an overlying covering of epithelium. Histopathology of the abnormal collagen in the area of elastotic degeneration shows basophilia with hematoxylin and eosin stain. Pterygium is commonly seen in patients above 20 years with highest prevalence in more than 40 years of age. The incidence of pterygium was 4% in the age group of less than 30 years and reaches maximum of 32% in the age of 30-39 years and then it gradually declines. Male gender and high sun exposure are strong and independent factors related to development of pterygium. Majority of patients were in our study were outdoor workers like farmers, labourers etc. The incidence was found to be maximum among farmers (40%) followed by labourers (20%). Globally, prevalence rates vary depending on the latitudes. Nasal presentation being more common is seen due to transmission of UV light from temporal side of cornea through the stroma on to the nasal aspect of eye, perhaps explaining why these

lesions are more common nasally [3,4]. Various treatment modalities are available but conjunctival autografts using sutures remains the gold standard. These grafts are stable with acceptable cosmetic results. Studies were done using fibrin, including lamellar corneal grafting and the closure of corneal perforations as it is a faster and simpler with less postoperative pain and discomfort [5]. The newest approach is auto blood graft fixation, a technique also known as suture and glue-free autologous graft. Autologous blood is natural, has no extra cost or associated risks, and can overcome the postoperative irritations to a great extent. S for autologous blood graft fixation [9].

### Conclusion

Autologous conjunctival graft with sutures was found to have poorer outcome in terms of surgical time when compared with a new approach of autologous blood. The patient discomfort was maximum in the suture group. The recurrence rates were comparable in all 3 groups.

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