

## Pterygium excision with conjunctival autograft with autologous blood

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### Abstract

**Aim:** Current study focuses to analyse the advantage of the technique which uses the autologous blood for sutureless securing the conjunctival autograft post pterygium excision.

**Materials and Methods:** This is non-invasive study consists forty patients underwent primary pterygium surgery. After excision of pterygium, the patient's conjunctival autograft from supero-temporal quadrant and patient's autologous blood to attach the graft without sutures. 6 months of follow up data collected.

**Results:** In total 40 patients, male to female number observed as 11: 29. In those, grade I, II and III were observed in 7, 25, and 8 patients respectively. During surgery, there were no complications observed. Two patients with subconjunctival hemorrhage, two patients with graft retraction, one patient with graft loss and one patient with pterygium recurrence were recorded. 34 (85%) patients had good recovery and cosmesis was also observed excellent.

**Conclusion:** Non-invasive conjunctival autograft with patient's autologous blood using technique without sutures observed to be safe and the best outcome, and also consumes less time and cost effective.

**Keywords:** Pterygium excision, Autograft, Conjunctiva.

### Introduction

Pterygium is an ocular surface disorder observed commonly in tropical and sub-tropical regions. This degenerative condition in subconjunctival tissue will differ into vascularised granulation tissue. This will invade into the cornea by demolishing both superficial layers of stroma and also Bowman membrane. Histologically shows elastotic degenerative changes in vascularized subepithelial stromal collagen.<sup>1</sup> Pterygium in early stages is usually asymptomatic. Later, it will cause the irregularity of tear film, and very rarely it may lead to defective vision by induced astigmatism and/or the direct encroachment onto visual axis. Lesions which are greater than 3.5 mm cornea are expected to be associated with >1 diopter astigmatism.<sup>2</sup>

The pathogenesis of pterygia condition not fully understood. Ultraviolet exposure may be an important risk factor for the occurrence of pterygium. Others may include influence of race, dust/grit exposure, gender, smoking, and ethanol intake. All patients with early pterygium can be advised to use lubricants. Indications of Surgery includes Pterygium causing significant ocular irritation, impaired ocular cosmesis, reduced visual acuity from induced astigmatism, encroachment on to or over the visual axis and rarely diplopia due to interference with ocular movements.

Surgically, pterygium is easily excised, but the recurrence rate is high, ranging from 24 to 89%. Development of technique of conjunctival autograft and introduction of mitomycin C has greatly reduced recurrence upto 12%. Hence, the surgical procedure which reduces the recurrence with no/less complications without toxic drugs was the ideal for the management of pterygium. Current study, we used the

sutureless and glue free conjunctival autograft management to treat primary pterygium.

### Materials and Methods

This study conducted at department of ophthalmology, Narayana medical college and hospital, Nellore. 40 patients with primary pterygium were operated in this study. Pre-operative ophthalmic examinations were subjected to all patients.

After admission, pterygium grading recorded:

Grade I with pterygium head between the limbus and a point midway between limbus and pupillary margin.

Grade II with head between a point midway between limbus and pupillary margin.

Grade III with Pterygium that crosses pupillary margin.

**Inclusion Criteria:** Patients with primary pterygium

**Exclusion Criteria:** Recurrent pterygium, those with pre-existing glaucoma, previous ocular trauma, and history of blood coagulopathies.

**Surgical Procedure:** After obtaining, informed consent, all the surgeries carried out at ophthalmology theater by single ophthalmology surgeon under local anesthesia. The pterygium head dissected the underlying corneal epithelium by crescent blade in a clean plane. Pterygium body carefully dissected from sclera and excised using Westcott scissors. Cornea scrapped with crescent to make smooth surface. Haemostasis was achieved by tamponade and if needed, very minimal cautery was used. Conjunctival defect dimensions were measured using callipers. Superotemporal bulbar conjunctiva of the same eye slightly greater than the recipient place was marked. The dissection of the superotemporal region conjunctiva was carried out by leaving the underlying Tenon's behind. Small thin blood clot film allowed to

form onto the bare sclera. Autograft transferred to the bare sclera so that the limbal end receives limbal end of autograft. The edges hold with forceps upto 5 minutes to fix the graft. Post-operative medications were given 4-6 times a day and were followed to 4 weeks. Post-operative follow up carried out at day 1, day 7 and every month for total 6 months.

## Results

40 patients with age group from 30 to 50 years were admitted. In total, 29 (72.5%) were males and 11 (27.5%) were females. 22(55%) were right eyes and 18 (45%) were left eyes. 35 (87.5%) were nasal in position and 5 (12.5%) were temporal. 7 (17.5%) were grade I, 25 (62.5%) were grade II, 8(20%) were grade III.

No intra operative complications observed. After surgery, examination done under slit lamp. During follow-up, 2 (5%) patients with subconjunctival hemorrhage, 2 (5%) patients with graft retraction and 1 patient with graft loss were recorded. Recurrence of pterygium was recorded in 1 patient. Other 34 (85%) patients and their outcome was observed to good.

**Table 1: Characteristics of pterygium patients**

Age group	30 – 50 yrs
Male	29(72.5%)
Female	11(27.5%)
Right eye	22(55%)
Left eye	18(45%)
Nasal	35(87.5%)
Temporal	5(12.5%)

**Table 2: Grading of pterygium**

Grade I	7(17.5%)
Grade II	25(62.5%)
Grade III	8(20%)

**Table 3: Post-operative outcome**

Subconjunctival hemorrhage	2(5%)
Graft retraction	2(5%)
Graft loss	1(2.5%)
Pterygium recurrence	1(2.5%)
Good recoverys	34(85%)

## Discussion

Pterygium surgery aimed to remove pterygium to restore the conjunctival anatomy along with smooth and clear cornea and also to prevent its recurrence. Various surgical techniques to manage the pterygium have their limitations like high recurrence, which remains the challenge. Therefore pterygium surgery techniques evolved to avoid recurrence, less complications and as cosmetically acceptable. Various techniques employed are simple closure, conjunctival flaps, conjunctival grafts, amniotic membrane transplantation, lamellar keratoplasty. All of these techniques use either of sutures or fibrin glue. Suturing is time consuming,

various postoperative complications, granuloma formation, inflammation and foreign body sensation etc. Due to presence of sutures it may leads to prolonged healing and fibrosis.<sup>3,4</sup> Complications like symblepheron formation, forniceal contracture, scleral necrosis were very difficult to manage and also leads to threat to sight.<sup>4</sup>

Amniotic membrane has anti-inflammatory and antifibroblastic properties and is useful in cases of large or double pterygia. Luanratanakorn et al., demonstrated that amniotic membrane graft (AMG) has higher recurrence than free conjunctival autograft (CAG). AMG adds extra cost to surgery and its procurement is cumbersome.<sup>5</sup> The risk of contamination is another problem as strict sterilization protocol to be maintained during its processing.<sup>6</sup>

Fibrin glue usage is faster and simpler, considered as safe with less post-operative complications. Commercial Fibrin glue, although have the advantage of avoiding suture related complications, is not easily available everywhere, and it involves cost. Fibrin glue will produce hypersensitivity reactions and/or anaphylaxis in susceptible persons which may leads to transmission of viral infections.<sup>7</sup> Fibrinogen compounds are susceptible to inactivation by iodine preparations which used during conjunctival disinfection before pterygium surgery.<sup>8</sup>

In pterygium surgery, an approach which uses the autologous blood graft fixation technique has evolved to be suture and glue free graft. Because, using autologous blood is a natural, no cost, no associated risks and also overcome postoperative complications/irritations to the great extent.<sup>9</sup> by this technique, ppatient expose less post-operative symptoms like pain, FB sensation, photophobia, and it leads to overall patient satisfaction. In our studym none of the patients developed any serious complications.

The opposition of lids to bulbar conjunctiva will provide natural biological dressing and confers unique wound healing environment.<sup>7</sup> de Wit et al, demonstrated that there was tension across whole graft interface and no direct tension on the free graft edges during surgery with sutures, leads to reduced stimulus for further subconjunctival scar tissue formation.<sup>7</sup>

The limitation of this technique may be the risk of graft lost during immediate post-operative period. This graft loss is commonly observed in first 24 to 48 hours. This could be due to inadequate pterygium tissue excision and/or leaving too much tenons tissue on the graft.<sup>3</sup> Our study surgery technique uses 14-16 monutes duration. In our study n there was only one case of pterygium recurrence recorded during 4 months post-surgery that could be attributed to the inadvertent inclusion of ten on in the graft. There were 2 cases of graft dehiscence which may be due to graft shrinkage or ocular movement.

Autologous blood uses in pterygium excision surgery is economical alternative to fibrin glue or

sutures. Current technique not only shortens the surgical time but also delivers good outcome. All admitted patients highly satisfied due to they had less postoperative discomfort and had early recovery. This relatively newer technique is easier to learn and perform, but needs precaution in patient selection, meticulous pterygium tissue excision, taking tenon free slightly oversized graft, and waiting period of at least 5-7 min at the end of surgery which gives overall success. Sutureless and glue free conjunctival autograft blood clot used as a bioadhesive is the alternative technique in graft fixation in pterygium excision surgery.

### Conclusion

Pterygium excision surgery technique using conjunctival autograft along with autologous blood to manage the primary pterygium had safety and excellent surgical approach. Risks associated with fibrin glue and use of sutures related problems will be excluded with this technique. This procedure had excellent surgical outcome without/or less complications or recurrence. This is cost effective, less time, easy to execute, easy to train for surgeons and also patient's safety and also good cosmetic output.

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