

# A study of in-situ conjunctival tissue with autologous blood as primary procedure for pterygium excision

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## Abstract

**Background:** Pterygium is a common ocular surface disorder with surgery as the only management and recurrence, its greatest challenge. This has led to evolution of various surgical techniques aimed at preventing recurrence. **Aims and Objectives:** The aim of the study is to analyse the modified method of pterygium excision with conjunctival autograft from pterygium site itself using autologous blood clot. **Methods and Materials:** This is a technique of transplanting conjunctival tissue from the pterygium tissue itself and adhering it to the bare defect of the sclera with autologous blood. In this retrospective, noncomparative series of interventional cases, case records of 30 patients who underwent primary pterygium excision during July 2018 – July 2019 were considered. The followup was for 6-months. **Results:** The mean age of the patients being 45±12 years of total 30 patients with 17 male and 13 female, a majority of them (60%) being farmers/farm related workers. Out of 30 eyes, 2(6.7%) had graft loss, 1 (3.3%) had graft retraction and 3 (10%) had graft edema and no recurrence was observed. 80% of the patients had a good recovery and outcome. **Conclusion:** From this study, the use of conjunctival tissue from pterygium itself is an effective alternative technique for primary pterygium. This method is more economical, provides best outcome and satisfaction for the patients. Likewise, suture related and fibrin glue related problems have also been prevented.

**Key Words:** autologous blood, autograft, primary pterygium, suture free and glue free.

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## INTRODUCTION

Pterygium is defined as the fibrovascular wing shaped ocular growth encroaching into the cornea due to ultraviolet(UV-B) induced damage with subsequent elastotic degeneration of conjunctival collagen<sup>1</sup>. They are

located horizontally in the palpebral fissure on either temporal or nasal side of the cornea. Prevalence is most common in tropical areas near the equator and milder in cooler climate. More common in those who engage in outdoor work and situations with high light reflectivity such as sand and water that enhances pterygium development<sup>2</sup>. Pterygium was graded according to corneal involvement Grade 1: crossing limbus; Grade 2: midway between limbus and pupil; Grade 3: reaching up to pupillary margin; and Grade 4: crossing pupillary margin<sup>3</sup>. Small pterygium usually does not have symptoms, but large pterygium may be an indication for removing pterygium due to decreased visual acuity due to damage to the axis of vision by encroachment of pupillary region, irregular astigmatism, limitation of regular eye movement, irritation and discomfort in the eyes, difficulties during refractive surgery and aesthetic

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problems<sup>4</sup>. Surgical removal remains the main treatment, the main procedure is complete removal, leaving the exposed area of the sclera. The relapse rate of the technique of naked sclera ranges from 24% to 89%<sup>5</sup>; therefore, only the use of adjuvant treatment is warranted to solve this problem. Among the various methods are application of beta irradiation, intraoperative use of mitomycin-C and amniotic membrane transplant. Conjunctival autograft has an edge over other methods in reducing relapse after pterygium. We herein report the use of conjunctival tissue from pterygium itself to cover the bare scleral defect with autologous serum as bioadhesive.

### METHODS AND MATERIALS

Case records of 30 eyes of 30 patients were included in this study. Data from July 2018 to July 2019 were analysed retrospectively at a tertiary eye care hospital in Chengalpattu. Data collected included patient's age, sex, ocular medical and surgical history, surgical techniques and complications. In this study grade 2 and grade 3 pterygium were included. Grade 1 and grade 4 were excluded from the study. This study was approved by institutional ethics committee.

#### Surgical procedure:

After Peribulbar anaesthesia (2% lignocaine), taking all aseptic precautions, betadine cleaning, lid speculum applied. About 1 cc of normal saline was injected subconjunctivally into the pterygium tissue [Fig. 1a] and a thin layer of conjunctival graft was fashioned from the pterygium tissue [Fig. 1b]. This conjunctival layer from the pterygium itself was then separated completely from the underlying fibrovascular tissue [Fig. 1c]. After excision of the pterygium, blood was allowed to collect in the bare recipient scleral bed for 1–2 min. Thin conjunctival layer was applied over the bare recipient bed [Fig. 1d], spread and held in position for 5 min until firm setting of the autologous fibrin occurred, ensuring graft adhesion. Care was taken to ensure that excessive and prolonged bleeding did not displace the graft from the bed. Graft adherence was confirmed at the end of the procedure, antibiotic eye ointment applied and a pressure bandage was given for 24hrs and patient asked not to rub their eyes after removing the bandage. Routine postoperative therapy with topical antibiotics, topical steroids, lubricant eye drops given. Patients were followed up on 1<sup>st</sup> post-operative day, 1<sup>st</sup> week, 1<sup>st</sup> month, 3<sup>rd</sup> and 6<sup>th</sup> months. At each visit, assessment of graft adherence, displacement, retraction or recurrence done.

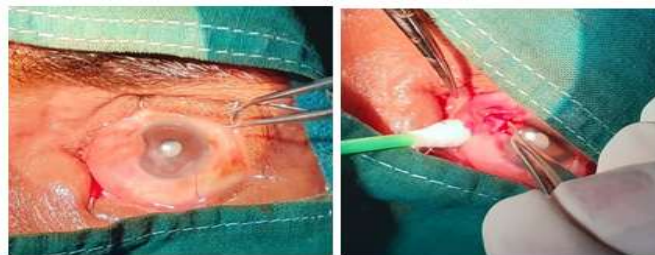


FIGURE: 1a; FIGURE: 1b

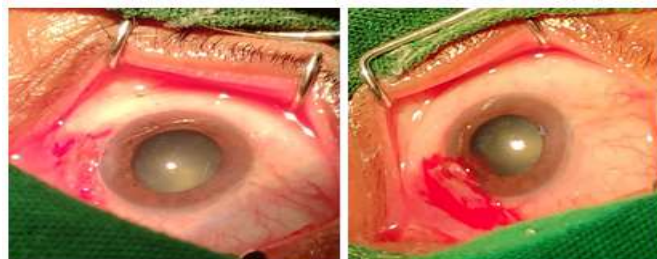


FIGURE: 1c; FIGURE: 1d

### RESULTS

On retrospective analysis of 30 eyes with primary nasal pterygium operated by technique of the use of conjunctival tissue from pterygium itself to the bare scleral defect with the autologous serum. The mean age of the patients being 45±12 years of total 30 patients with 17 male and 13 female, a majority of them (60%) being farmers/farm related workers. Out of 30 eyes, 2(6.7%) had graft loss, 1 (3.3%) had graft retraction and 3 (10%) had graft edema and no recurrence was observed. 80% of the patients had a good recovery and outcome. In our series, the operation time was around 15 minutes and there was no single case of pterygium recurrence after 3 months of surgery though we had 2 cases of graft loss.

Table 1: Demographic Profile

AGE	MALE	FEMALE
<30 YRS	1	1
30 -50 YRS	13	10
>50 YRS	3	2
<b>TOTAL(30)</b>	<b>17(56.7%)</b>	<b>13(43.3%)</b>

In this study, the post-operative complications encountered were shown in the table 2.

Table 2: Post-operative complications

Complications	Number of Patients(%)
Graft loss	2(6.7%)
Graft retraction	1(3.3%)
Graft edema	3(10%)
Recurrence	-

## DISCUSSION

A variety of surgical techniques have been proposed with recurrence prevention as the main aim. Till now for primary pterygium conjunctival autograft harvesting from superior bulbar conjunctiva or amniotic membrane grafting is considered as treatment for primary pterygium. We consider an alternative procedure of using conjunctival tissue from pterygium itself to cover the bare scleral defect with autologous blood. The major complications of pterygium is recurrence, graft retraction and suture related complications like irritation, watering, infection, which can sometimes require second surgery. With this operative procedure we aim to minimise the suture related complications and recurrence. More than half of our patients(60%) are from rural regions who are farmers/farm related workers as postulated by Duke-Elder WS in System of Ophthalmology<sup>3</sup>. Kodavoor SK *et al*<sup>6</sup> in their study, *Concomitant use of conjunctival tissue graft from the pterygium itself without rotation in pterygium surgery* used thin conjunctival layer from the same primary pterygium tissue as a graft to cover the bare scleral defect with fibrin glue. Jap *et al*<sup>7</sup> showed good results with this procedure, but with 180° rotation of the graft thinking that the success rate will increase by rotating the graft in such a way that the diseased epithelium at the limbal end is shifted away to prevent recurrence; however, there is no scientific proof to confirm this.

The main issue in using commercial fibrin glue, despite the viral inactivation techniques, the transmission of an infectious agent, such as parvovirus and prions is possible. Furthermore, anaphylactic reaction has been reported after the use of fibrin glue which was due to bovine protein aprotinin<sup>8</sup>. The use of patient's own autologous blood was based on the mechanism of blood coagulation, but should be used before fibrinolysis occurs as blood clots naturally.<sup>9</sup> Beesam K *et al*<sup>10</sup> in their study utilising *autologous blood as tissue adhesive for conjunctival autograft in primary nasal pterygium surgery* concluded that the use of autologous blood as a tissue adhesive for graft fixation is a useful alternative which is concurrent with our study. According to Sharma A *et al*<sup>11</sup>, the opposition of lids to the bulbar conjunctiva provides unique wound healing environment and provides a natural biological dressing on which this author also agrees. Graft oedema(10%) could be due to excessive handling of grafts and subsided within 2 weeks with postoperative steroids. This was consistent with the observations in the study by Kodavoor SK *et al*<sup>6</sup>. Graft retraction is due to inclusion of tenons in the graft and can be overcome by meticulous dissection of subepithelial graft tissue. The main disadvantage of blood clot conjunctival autograft is the risk of graft loss or graft

dehiscence in the first post-operative day. But once the graft adherence is good in within 24-48 hours of surgery the graft stay at it place thus minimizing the graft loss.<sup>9</sup> By using this technique we can preserve the superior bulbar conjunctiva if the patient may need glaucoma surgery in future. Pterygium recurrence occurs usually within 6 months. In our study there was no recurrence in the period of 6 months, for recurrence it needs further more evaluation. Kodavoor *et al*<sup>7</sup> in their study have also proposed that the procedure of use of conjunctival tissue from the pterygium itself is safe and effective with lower recurrence rate. There has been some studies on using autologous blood for conjunctival autograft fixation<sup>10,12,13</sup> and some on using conjunctival tissue graft from pterygium itself using fibrin glue<sup>6,7</sup>, but our study is unique in utilising conjunctival tissue graft from pterygium itself using autologous blood clot.

## CONCLUSION

The use of conjunctival tissue from pterygium itself to the bare scleral defect with autologous blood is an effective procedure for patients with primary pterygium. It is more economical, prevents the suture related complications and reduces the recurrence rate.

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