

## Original Article

# Technique of Excision of Double Head Pterygium with Conjunctival Autograft from both Eyes

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### Abstract

**Background:** Pterygium is not just a degenerative disease, but may be a proliferative disorder of the ocular surface.

**Objective:** The aim of this study was to describe a technique of conjunctival autograft from both eyes for primary double head pterygium and evaluate its post operative result. **Methodology:** This retrospective study was conducted in the department of Ophthalmology at Monno Medical College, Manikganj, Bangladesh from July 2022 to December 2022 for duration of six months. After fulfill the selection criteria underwent conjunctival autograft from both eyes. Primary outcome measure was recurrence rate, graft retraction, Tenon's granuloma, dellen formation. **Results:** The highest patients belong to 35 to 45 years age group is about 18(60.0%) in this study. The number of male patients was 10 and that of female patient 20. There was no recurrence in this study. However, there were postoperative oedema (6.66%), sub-conjunctival haemorrhage (63.33%), graft retraction (20.0%), dellen (0.0%), Tenon's granuloma (10.0%). **Conclusion:** In conclusion conjunctival autograft from both eyes appears to be successful technique with 0 recurrence rate in treating double head pterygium.


**Key Words:** Primary pterygium; double head pterygium; conjunctival autograft

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### Introduction:

Pterygium is the commonest degenerative condition of conjunctiva. Pinguecula and conjunctival concretion are other two conjunctival degenerative states. Pterygium means a small wing, is a raised triangular fibrovascular growth that extends horizontally from the bulbar conjunctiva across the limbus onto the cornea.<sup>1</sup> It occurs in the palpebral fissure area more towards the nasal than the temporal, although either or both (double pterygium) may occur. Pterygium is associated with ultraviolet light exposure. It occurs at highest prevalence in tropical area near the equator and to a lesser degree in cooler climates.<sup>2,3</sup> Both blue and ultraviolet may be responsible for

development of pterygium which was demonstrated by Watermen.<sup>2</sup> Pterygium was graded according to the corneal involvement (grade 1: crossing limbus, grade 2: midway between limbus and pup, grade 3: reaching up to pupillary margin, grade 4: crossing pupillary margin). New theory of pathogenesis is possibility of damage to the limbal stem cell by ultraviolet light and by activation of matrix metalloproteinase.<sup>4,5</sup> The histopathology of pterygium is elastotic degeneration of conjunctival stroma.<sup>6</sup> And Bowman's membrane of the cornea is also destroyed. Double head pterygium which means both nasal and temporal pterygia in the same eye is rare. Conjunctival autograft is the gold standard in the management of

primary pterygium.<sup>7</sup> Excision of pterygium with adjuvants<sup>8</sup> e.g. Mitomycin C (MMC) is also a good choice for management of pterygium but MMC may cause corneal and scleral melting. Amniotic membrane transplant has been found effective but not easily available and not cost effective.

We reported an approach for treating pterygium by excision of it followed by suturing of conjunctival graft from both eyes. We also document long term effect of this technique on patient with primary double head pterygium.

## **Methodology**

**Study Setting and Population:** This retrospective study was conducted in the department of Ophthalmology at Monno Medical College, Manikganj, Bangladesh. This study was carried out during the period from July 2022 to December 2022 for duration of six months. Data were collected from Shaheed Monsur Ali Medical College Hospital, Uttara, Dhaka, Bangladesh and Ideal Eye Care Centre, Shyamoli, Dhaka, Bangladesh. All surgeries were performed by one surgeon. Data included patient's age, sex, ocular, medical and surgical history and visual acuity before and after surgery, surgical techniques and complications. Primary double head pterygium up to grade 3 was included in our study. Grade 4 and recurrent pterygium was excluded from this study.

**Surgical Procedure:** The 2% Xylocaine was used as local peribulbar anesthesia. Head of the nasal pterygium was detached from the corneal surface using Saint Martin forceps and crescent blade. Pterygium body and underlying fibrovascular tissue were excised with conjunctival scissor. The cornea and limbal area were cleaned by scraping the residual tissue with a crescent blade. Gentle wet field cautery was applied to achieve hemostasis. A similar technique was performed for the temporal pterygium. Superior bulbar conjunctiva of both eyes was selected as the donor site. Balanced salt solution was injected sub-conjunctively which was useful for dissection of conjunctiva from Tenon's capsule. A small incision was made at the fornix with conjunctival scissor. A thin conjunctival graft of adequate size was fashioned. Graft was placed on bare scleral defect. Conjunctival autograft was secured with interrupted 10-0 polyamide monofilament suture.

Autografts were sutured at the limbus with scleral anchoring suture superiorly and inferiorly and the remaining margin was attached to conjunctiva with 2 to 4 interrupted sutures. The eye was patched for 24 hours. Post operatively, Moxifloxacin and Dexamethasone combination eye drop and artificial tear eye drop 4 times a day were given for one month. Patients were examined on postoperative day 1 and later asked for follow up after 1 week, 6 weeks and 6 months. The data from each visit was analyzed and documented. Recurrence was defined as fibrovascular tissue in growth of 1.5 mm or more beyond limbus on to clear cornea with conjunctival dragging.<sup>9</sup>

**Statistical Analysis:** Statistical analyses was performed with SPSS software, versions 22.0 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.). Continuous data that were normally distributed were summarized in terms of the mean, standard deviation, median, minimum, maximum and number of observations. Categorical or discrete data were summarized in terms of frequency counts and percentages. When values are missing, the denominator was stated. Chi-square test was used for comparison of categorical variables. Every effort was made to obtain missing data. A two-sided P value of less than 0.05 was considered to indicate statistical significance.

**Ethical Clearance:** All procedures of the present study were carried out in accordance with the principles for human investigations (i.e., Helsinki Declaration) and also with the ethical guidelines of the Institutional research ethics. Formal ethics approval was granted by the IRB of Monno Medical College. Participants in the study were informed about the procedure and purpose of the study and confidentiality of information provided. All participants consented willingly to be a part of the study during the data collection periods. All data were collected anonymously and analyzed using the coding system.

## **Results**

A total number of 30 eyes of 30 patients were recruited after following inclusion and exclusion criteria. The minimum age was 35 years and maximum 65 years. The age group from 35 to 45 years, about 18(60.0 %) patients were predominant in this study (Table:1)

**Table 1: Distribution of Patients according to Age Group (n=30)**

Age Group	Frequency	Percent
35 to 45 Years	18	60.0
46 to 55 Years	8	26.66
56 to 65 Years	4	13.33
<b>Total</b>	<b>30</b>	<b>100.0</b>

Among them, female patients were more prominent than male which were 20(67.0%) cases and 10(33.0%) cases respectively (Figure I)

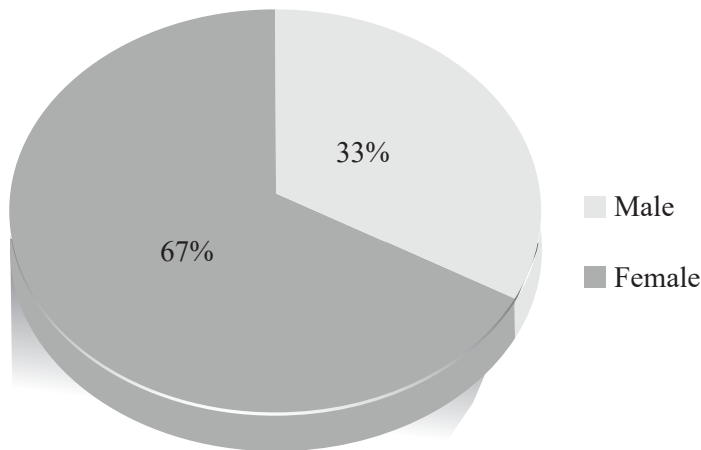


Figure I: Distribution of patients according to gender (n=30)

There was no recurrence in this study. However, most frequent postoperative outcome was sub-conjunctival haemorrhage which was 19(63.33%) followed by graft retraction, Tenon's granuloma and oedema which were 6(20.0%), 3(10.0%) and 2(6.66%) respectively (Table 2)

**Table 2: Percentage of Various Outcomes of this Study (n=30)**

Complications	Frequency	Percent
Oedema	2	6.66
Subconjunctival hemorrhage	19	63.33
Graft retraction	6	20.0
Dellen	0	0.0
Tenon's granuloma	3	10.0
Recurrence	0	0.0
<b>Total</b>	<b>30</b>	<b>100.0</b>

## Discussion

Primary surgical resection using a bare sclera technique with meticulous conjunctival dissection remains the initial approach for many surgeons. This technique is associated with very high recurrence rates. After excision, the resultant defect can either be left exposed or covered by adjacent tissue in primary closure or a pedicle graft or by transposition of pterygium head. In other way,

the defect can be covered by conjunctiva with or without limbal stem cell.

Without covering the defect adjunctive treatment such as Mitomycin C has been used. These adjunctive treatments have additional side effects<sup>10,11</sup> such as superficial punctate keratopathy, poor epithelial healing, late onset scleral ulceration, microbial infection, glaucoma and endophthalmitis. The current preferred method advocates covering the scleral defect with conjunctiva and limbal stem cell. Practitioners are reporting use of amniotic membrane for closure of the defect. Amniotic membrane is costly, needs preservation and is not easily available. Some studies have reported more recurrence rate with amniotic membrane.<sup>12</sup> Most recently, a new technique named "pterygium extended removal followed by an extended conjunctival transplant for double head pterygium" showed excellent cosmesis and no recurrence rate in 20 eyes at 1 year follow up.<sup>13</sup> In general, the recurrence of pterygium occurs within first 6 months of surgery.<sup>14</sup> In this study, the overall rate of recurrence was 0.0% which was comparable to other published studies. Published studies mentioned suture-related complications such as infection, prolonged operation time and postoperative discomfort which can sometimes require second surgery.<sup>15,16</sup> In a study by Solomon et al<sup>17</sup> with technique of pterygium excision with amniotic membrane graft, the recurrence rate was 9.0% (1 eye out of 11 eyes). Similarly, double-head pterygium excision using bare sclera technique with 0.02% MMC (5 minutes) was published by Avisar et al<sup>18</sup> which showed recurrence rate 0.0% (0 out of 10 eyes) in primary pterygium and 33.33% (1 eye out of 3 eyes) in recurrent double-head pterygium. Previous studies reported that limbal stem cell act as a barrier between conjunctiva and corneal epithelium and destruction of this barrier leads to growth of conjunctival tissue on to the cornea.<sup>19</sup> However, in this study, adequate size graft enough to cover the bare scleral defect had 0 recurrence rate comparable to other studies.

## Conclusion

This study was retrospective in nature. Therefore, it had some limitations. Other technique using fibrin glue instead of suture would reduce postoperative discomfort, irritation, lesser time than our suturing method. But there is chance of dislodgement of the graft. Conjunctival autograft, large enough to cover the bare scleral defect may be a successful technique with zero recurrence rate for the surgical option

of double-head pterygium. In this technique, patients post operative visual acuity was found good, patient had less astigmatism, graft remained in situ and cosmetically acceptable.

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