# Conjunctival Autograft Transplantation for Primary Pterygium

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**Abstract**

**Purpose :** To evaluate the success rate of conjunctival autograft transplantation for primary pterygium.

**Material and Method :** The results of 56 patients with primary pterygia who underwent conjunctival autograft transplantation were retrospectively reviewed. The success rate was evaluated in terms of recurrence percentage of pterygia onto the cornea.

**Results :** Of the 56 patients, 20 were men and 36 women. The mean follow-up was 16.3 ± 8.2 months. Three (5%) eyes had recurrent pterygium within 1 year. No serious sight-threatening complications were associated with this study.

**Conclusion :** Conjunctival autograft transplantation can achieve very low recurrence rates for primary pterygium and may be considered a safe procedure.

**Key word :** Primary Pterygium, Conjunctival Autograft Transplantation

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**J Med Assoc Thai 2003; 86: 111-115**

A pterygium is a triangular-shaped growth arising from the conjunctiva onto the cornea[1]. The etiology of pterygium seems to be associated with geographic latitude, with moderate to high prevalence occurring at 35 degrees above and below the equator, suggesting prolonged exposure to sunlight or ultraviolet light as a causal factor, However, other factors such as dust, wind and genetic pre-disposition are possibly causatives too[2-4]. A number of surgical modalities have been described as methods for pterygium treatment, including simple (bare sclera) excision[5], bare sclera excision with adjunctive therapy

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such as beta irradiation[6] or mitomycin C[7], and pterygium excision plus conjunctival autograft placement[1, 8-11].

Conjuctival autograft transplantation for pterygium has been demonstrated as generally safe and effective[8-10]. This procedure has been uncovered as the surgery of choice by many surgeons if the use of adjunctive beta irradiation or antimetabolites is not considered[12].

In this prospective study, the authors present their surgical technique of conjunctival autograft transplantation for primary pterygium and evaluate the success rates of this procedure in 56 eyes of 56 patients with follow-up as long as 5 years.

## MATERIAL AND METHOD

A series of 56 patients, seen at the Department of Ophthalmology, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand from June 1996 through June 2001, underwent surgery for the removal of primary pterygia. The pterygia were graded as either large or small[10]. The "large" pterygia were defined as those that extended more than 2 mm onto the cornea and others were classed as "small". Indications for their removal included excessive foreign body sensation, recurrent inflammation, cosmetic complaints, and decreased vision secondary to advanced pterygium. Informed consent was obtained for all procedures. Patients with recurrent pterygia and a history of collagen vascular disease or dry eye syndrome were excluded. Patients with less than 6 months follow-up were not included.

The surgical technique of conjunctival autograft transplantation for pterygium excision involved transferring a free graft of superior bulbar conjunctiva to cover the sclera exposed by pterygium excision (Fig. 1). All surgery was performed by one surgeon (WC), with local anesthesia and an operating microscope. No retrobulbar or eyelid block was used.

### Surgical procedure

1. Benoxinate hydrochloride 0.4 per cent was applied to induce anesthesia of the cornea and conjunctiva 10 minutes prior to surgery.

2. A Barraquer lid speculum was used to provide maximal exposure.

3. The pterygium was injected with lidocaine 1 per cent/1:100,000 adrenaline mixture.

4. Beginning at the head of the pterygium, a disposable surgical blade was used to superficially excise involved cornea to the limbus. Westcott scissors were used to excise the pterygium from surrounding conjunctiva.

5. Minimal cautery was used to control bleeding.

6. The patient was asked to look down in order to expose the superior conjunctiva. Lidocaine 1 per cent without adrenaline was injected subconjunctivally to separate conjunctiva and the tenon's capsule adjacent to the limbus in the 12 o'clock position.

7. Westcott scissors were used to excise a free conjunctival graft in the exact size of the scleral bed.

8. The free graft was placed in the correct orientation onto the scleral bed and was sutured with 7 to 9 interrupted 8-0 polyglactin[9].

9. Antibiotics and steroid ointments were applied and the eye was patched for 24 hours.

On post-operative day 1, the patch was removed and an eyedrop regimen was started, which consisted of a broad-spectrum antibiotic four times

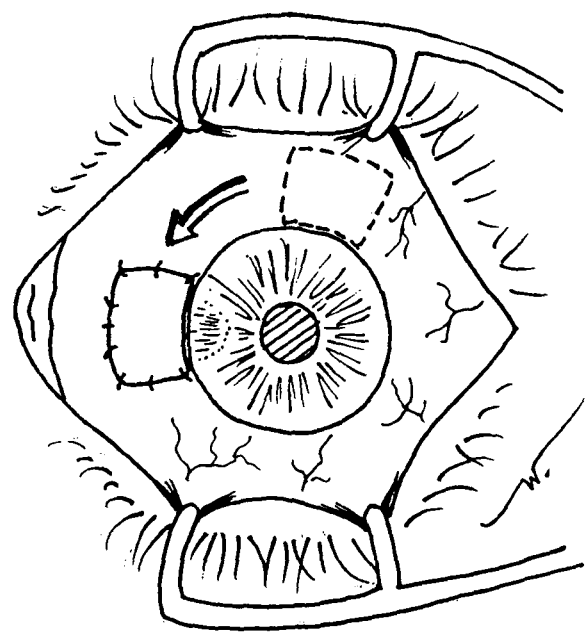

**Fig. 1. Diagram illustrating conjunctival autograft transplantation. A free conjunctival graft from superior bulbar conjunctiva was sutured over the bare scleral bed of an excised medial pterygium.**

daily for 4 weeks, and prednisolone acetate 1 per cent four times daily, tapering over 8 weeks. Sutures were allowed to absorb spontaneously without being removed. There were no restrictions on patient activity.

Follow-up visits were scheduled for postoperative days 1, 7, and 30, and then months 3, 6, and 12. Any fibrovascular tissue past the corneoscleral limbus onto the clear cornea in the area of the previous pterygium excision constituted recurrence.

Descriptive statistical analysis was used to analyze the data.

## RESULTS

Fifty six patients were enrolled in the study Of the 56 patients, 20 were men and 36 women. Fifty-four (96%) were Thai, one (2%) was Indian, and one was (2%) American. The mean age was 40.2 ± 11.5 years (range, 24 to 60 years). Fifty-four pterygia were nasal, and two temporal. Thirty (54%) pterygia were classified as large, and 26 (46%) small (Table 1).

The mean follow-up was 16.3 ± 8.2 months. Fifty-three (95%) eyes had no recurrence (Fig. 2). Three (5%) eyes that were classified as large had recurrent pterygium within 1 year. There was one steroid responder who did not progress to glaucoma. One had conjunctival buttonhole during free graft preparation that required resuturing with 8-0 polyglactin. One developed graft hemorrhage, which did not require surgical intervention.

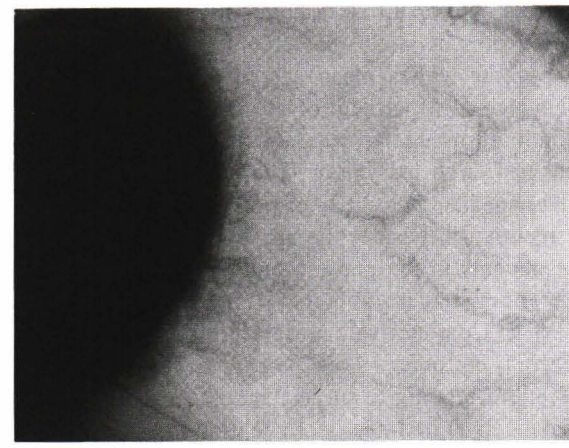

**Fig. 2. Five years after conjunctival autograft transplantation, the conjunctival graft showed an excellent cosmetic result without evidence of recurrence.**

**Table 1. Characteristics of patients and pterygium.**

| | Patients | | Pterygium |
|---|---|---|---|
| Gender | | Location | |
| Male | 20 | Nasal | 54 |
| Female | 36 | Temporal | 2 |
| Race | | Size | |
| Thai | 54 | Large | 30 |
| Indian | 1 | Small | 26 |
| American | 1 | | |

## DISCUSSION

Many surgical techniques have been employed to treat pterygium. Because increased conjunctival inflammation and corneal involvement may present in recurrent pterygia, it is important to try to ascertain what the best method is for removing these fibrovascular growths. Several studies have been published with various results[8,13-20]. The simplest method for bare sclera excision has been reported to have recurrence rates from 29 per cent to 88 per cent[8,13]. Bare sclera procedures augmented by adjunctive treatment such as beta-irradiation or mitomycin C are effective in reducing recurrence (1.5% to 13%)[13-17], but may result in sight-threatening complications such as scleral necrosis, secondary glaucoma, iritis, and corneal perforation[18-20].

In 1977, Thoft described the procedure of conjunctival autograft transplantation[21]. The use of free conjunctival autograft to cover a bare scléral defect after pterygium excision was first reported by Gomez-Marquez[22], who utilized superior bulbar conjunctiva from the contralateral eye. However, it was Kenyon et al[9], who in 1985 proposed the current conjunctival autograft transplantation technique for advanced and recurrent pterygium, which is now considered to be the gold standard procedure. They operated on 57 eyes with pterygia and documented a recurrence rate of 5.3 per cent in the primary pterygium group. Since then, a number of publications on the success of conjunctival grafting have been reported[1,8,9,11,12]. Lewallen[10] published a report of a randomized trial of the conjunctival autografting technique for pterygium excision. She documented a lower recurrence rate (21%) in grafted cases compared with controls analyzed by the bare sclera technique (37%), but this difference was not statistically significant. All her patients were black people who had always lived in the Caribbean. The mean age of

patients with recurrences in her study was 29 years. In the present study, the recurrence rate occurred in patients with a mean age of 40.2 years, which amounted to 5 per cent of all patients within a 12-month follow-up. All patients who developed recurrent had large pterygium. The authors believe that environmental factor may also play an important role in recurrence, besides the age factor. Moreover, all the patients in the present study, who had primary pterygium, may result in a low rate of recurrence.

Conjunctival autograft transplantation is generally considered a safe procedure. However, complications relating to surgery may occur, both intra-operatively or in the early or late post-operative period (22). No serious complications were documented in this retrospective series. There was one steroid responder who did not progress to glaucoma. One had a conjunctival buttonhole during free graft preparation that required resuturing with 8-0 polyglactin, and one developed graft hemorrhage, in which spontaneous resolution had occurred

In summary, the authors have shown that conjunctival autograft transplantation can achieve very low recurrence rates. A possible reason for this success may be due to case selection. No serious sight-threatening complications were associated.

## ACKNOWLEDGEMENT

The authors wish to acknowledge Kittika Kanjanaratanakorn, MSc (Statistics) for kindly assisting in the statistical analysis.

The authors did not receive external financial support for the study or had a proprietary or financial interest in any product investigated.

(Received for publication on September 18, 2002)

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# การปลูกถ่ายเยื่อบุตาขาวของผู้ป่วยสำหรับต้อเนื้อชนิดปฐมภูมิ

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**จุดมุ่งหมาย** : เพื่อประเมินความสำเร็จของการผ่าตัดปลูกถ่ายเยื่อบุตาขาวของผู้ป่วยในโรคต้อเนื้อชนิดปฐมภูมิ

**วิธีการ** : ได้ทำการศึกษาย้อนหลังของการรักษาจากการปลูกถ่ายเยื่อบุตาขาวของผู้ป่วยในโรคต้อเนื้อชนิดปฐมภูมิในผู้ป่วยจำนวน 56 ราย ความสำเร็จของการรักษาได้จากร้อยละของการเป็นกลับซ้ำของต้อเนื้อบนกระจกตา

**ผลการศึกษา** : ผู้ป่วยทั้งหมดจำนวน 56 คนเป็นชาย 20 คนหญิง 36 คน ค่าเฉลี่ยของระยะเวลาในการติดตามการรักษาคือ 16.3 $\pm$ 8.2 เดือน มีผู้ป่วย 3 รายที่เป็นต้อเนื้อกลับซ้ำคิดเป็น 5% ไม่มีผลแทรกซ้อนที่รุนแรงจนทำให้สูญเสียการมองเห็นในการศึกษานี้

**สรุป** : การเป็นกลับซ้ำของต้อเนื้อจากการผ่าตัดปลูกถ่ายเยื่อบุตาขาวของผู้ป่วยในโรคต้อเนื้อชนิดปฐมภูมิมีต่ำมาก และอาจพิจารณาได้ว่าเป็นวิธีการที่ปลอดภัย

**คำสำคัญ** : ต้อเนื้อชนิดปฐมภูมิ, การปลูกถ่ายเยื่อบุตาขาวของผู้ป่วย

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**จดหมายเหตุทางแพทย์ ฯ 2546; 86: 111–115**

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