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นิพนธ์ต้นฉบับ *Original article*

Recurrent Rate of Pterygium for Pterygium Excision Surgery and Conjunctival Autograft with Preoperative and Postoperative Treatment for Allergic Conjunctivitis in Young Age Group

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Abstract Pterygium excision surgery in young age is associated with high rate of recurrent. Ophthalmologists do not recommend pterygium surgical treatment due to postoperative recurrence. On the other hand, patients want surgical treatment due to beauty issues. Controlling the rate of recurrence is, therefore, a good outcome of the pterygium surgical treatment. The objective of this study was to access the one-year recurrent rate of pterygium after excision surgery with conjunctival autograft with preoperative and postoperative control for allergic conjunctivitis symptoms in young age group patients. It was conducted from January 2016 to December 2019. The prospective descriptive study included data from history taking and physical examination among male and female patients in young age group 15-35 years old who presented with primary pterygium and allergic conjunctivitis symptoms. All patients had only primary pterygium. The patients received topical eye drop to control allergic conjunctival reaction before and after the surgery. As for the results, there were 40 eyes in 40 patients with primary pterygium, with age ranged between 17-35 years old (mean age 29.40±4.70 years). Five patients excluded from the study due to follow-up loss. The most common symptoms of allergic conjunctivitis in this study were foreign body sensation (100.00%), burning sensation (82.85%), and itchy eyes (82.85%). The most common complications in this study were chemosis graft swelling (28.57%) and sub-Tenon granuloma formation (14.28%). Only 5.71% of surgical patients recurred pterygium within 1 year. This study showed a low recurrent rate of pterygium after pterygium excision surgery and conjunctival autograft by preoperative and postoperative controlling of allergic conjunctivitis symptoms with topical eye drop in young age group patients.

***Keywords*:** **young age; allergic conjunctivitis symptoms; pterygium excision; pterygium excision and autograft; pterygium recurrent rate**

Introduction

Pterygium is an abnormal growth of epithelial and fibrovascular tissue invading the cornea across the limbus. It can impair the vision (due to advance invading central of cornea or induced astigmatism) and lower self-confidence. However the precise pathogenesis of this disease is still unclear.[1-5] The pathogenic factors associated with the development of pterygium formation include ultraviolet (UV) radiation[1-6], viral infection (mainly herpes simplex virus, cytomegalovirus, and human papillomavirus[7-9], epigenetic aberrations, transition from epithelial to mesenchymal tissue[10], inflammatory and anti-apoptotic mechanism[11-14]; and hereditary predisposition may be fundamental for pterygium.[15] In observing personal practice, all pterygium patients had some degree of allergic reaction and allergic symptoms of conjunctival tissue (allergic conjunctivitis). Allergic conjunctivitis may be the main cause of pterygium formation in some of them.

The main medical criterion for pterygium surgical treatment is the reduced visual acuity of the patient, frequent inflammation and discomfort. But the main requirement of patient is beauty problem. Most of them are teenagers and young age group who need pterygium surgical treatment to eliminate their problems.

The treatment of choice for pterygium is surgical removal. The surgical techniques include bare sclera excision, conjunctival autograft, conjunctival transposition flap, and amniotic membrane graft.[16,17] The postoperative recurrent is the main problem of treatment outcomes.[18] Ophthalmologists do not recommend pterygium surgical treatment due to postoperative recurrent. In young age group, 59.6% of pterygium patients recur within 1 month, and 76.3% within 3 months after surgical treatment.[18] This is the main reason why this study focus on young age group patients. The factors that predict recurrent are not fully understood at this time.[19] Some study propose that degree of vascularity is major cause of recurrent after pterygium surgical treatment.[20] Several adjuvant treatments have been proposed to reduce the incidence of postoperative pterygium recurrent, including different anti-metabolites, antiangiogenetic factors, radiations, as well as other novel material and administration methods.[17] Another study did not reduce the rate of pterygium recurrence.[17]

The purpose of this study to assess one-year recurrent rate of pterygium after primary pterygium excision surgery with conjunctival autograft technique and preoperative and postoperative control for allergic conjunctivitis symptoms in young age group patients. If we can reduce recurrence rate after pterygium excisional surgery, ophthalmologists around the world would be able to treat pterygium early in young age group patient.

Methods

The observational prospective descriptive study was conducted during January 2016 to December 2019 in Muaklek Hospital. Saraburi province, Thailand. The study selected new male and female patients in young age group (15-35 years old) who presented with primary pterygium on one eye or both eyes. The inclusion criteria for allergic conjunctivitis symptoms for this study included at least 2 symptons the following:

1) Itchy eyes
2) Foreign body sensation of the eyes
3) Burning sensation of the eyes
4) Recurrent red eye (white eye or inner eyelid)
5) Recurrent swelling of eyelid
6) Increased amount of tears or mucous tears formation

The patients had to have controlled allergic conjunctivitis symptoms with mast cell stabilizer eye drop and artificial tear eye drop or topical steroid eye drop at least 2 weeks before surgical treatment. Only one eye for both-eyes pterygium patients were enrolled in the study.

Exclusion criteria: the patients presented dry eye syndrome, wound healing problems, ocular cicartricial pemphigoid, immunocompromised patients, used of immunosuppressive drugs, contact lens used, high intraocular pressure more than 21.00 mmHg, familial history of glaucoma, loss of follow-up more than 2 months for appointment and follow-up less than 1 years post operatively were excluded.

Informed consents were obtained from all patients. This study used Natear (Hydroxypropyl methylcellulose) eye drop for artificial tear, Relestat (Epinastine HCl) eye drop for mass cell stabilizer and FML (Fluorometholone) for topical steroid eye drop. Preoperative and postoperative treatment used Relestat eye drop 2 to 3 times a day and Natear eye drop 2 times a day. If patients were unable to control allergic conjunctivitis symptoms preoperatively and postoperatively with Relestat and Natear eye drop, treatment was switched to Relestat eye drops 2-3 times a day and FML (Fluorometholone) eye drops 1-2 times a day.

Operation techniques were pterygium excision and conjunctival limbal autograft for all patients. Pterygium excision was performed under local anesthesia. This study used topical 0.5% tetracaine and 1% xylocaine with adrenaline injected to the head of pterygium. The limbal conjunctival autograft was taken from upper central bulbar conjunctiva, excluding the Tenon's capsule. The bleeding was stopped by cotton bud pressure. Cauterization techniques were not used for this study. The dorner site was closed the bare sclera. The free graft was sutured to the received site with interrupted 10/0 Nylon sutures. Chloramphenical eye ointment was applied to the eye and pressure eye patching taken for 24 hours postoperatively. Postoperative follow-up was taken full slit-lamp examination at 1 day, 3 days, 7 days, 10 days, 30 days, and every 1 month. The examination covered complication, inflammation, allergic conjunctivitis reaction and fibro vascular tissue growth over the limbal cornea. Recorded data included history taking, physical examination in the all appointed visits. After surgical treatment, the patients were followed for assessing recurrence and complications of surgical treatment for 1 year.

Results

The prospective descriptive study included 40 eyes of 40 patients with primary pterygium. They were 12 males and 28 female. There were 14 patients with both eye pterygium and 26 patients with one eye pterygium. All one eye pterygium patients showed pinguecula on the other eye. Age ranged of patients was between 17-35 years, with the mean of 29.40±4.70 years. Most of patients had fresh

pterygium and developed atrophic change after control of allergic conjunctivitis.

Five patients were excluded from this study due to loss follow-up more than 2 months at 3 months (2 patients), 4 months, 5 months and 6 months. The data were available for 35 patients (Table 1).

The common symptoms of allergic conjunctivitis were foreign body sensation (100%), burning sensation (82.85%) and itchy eyes (82.85%) (Table 2).

The complication of surgery developed in 18 (51.42%) patients, 10 (28.57%) patients with chemosis graft swelling, 5 (14.28%) patients with sub-Tenon granuloma, 1 (2.85%) patient with under graft hematoma, and 2 (5.71%) patients recurrent of pterygium growth over limbal cornea (Table 3).

Table 1 Age group of patients

Age group (years old)	Patients	%
15-20	4	11.42
21-25	4	11.42
26-30	11	31.42*
31-35	16	45.71**
Summary	35	100.00

Remark: * loss of follow-up 2 patients
** loss of follow-up 3 patients

Table 2 Symptoms of allergic conjunctivitis for this study

Symptoms of allergic conjunctivitis	Number of patients	%
Itchy eyes	29	82.85
Foreign body sensation of the eyes	35	100.00
Burning sensation of the eyes	29	82.85
Recurrence red eye	21	60.00
Recurrence swelling of eyelid	4	11.43
Increased amount of tears of mucous tears formation	15	42.85

Table 3 Complication for this study

Complication	Patients in age group					
	18-20	21-25	26-30	31-35	Total	%
1. Under graft hematoma	0	0	1	0	1	2.85
2. Chemosis graft swelling	1	1	4	4	10	28.57
3. Post operative high IOP	0	0	0	0	0	0.00
4. Post operative wound infection	0	0	0	0	0	0.00
5. Sub-Tenon granuloma	0	1	2	2	5	14.28
6. Corneal scar formation	0	0	0	0	0	0.00
7. Recurrent of pterygium	1	0	1	0	2	5.71

All patients were followed for 1 year. Elevated IOP postoperatively, postoperative wound infection and corneal scarring formation were not observed for this study.

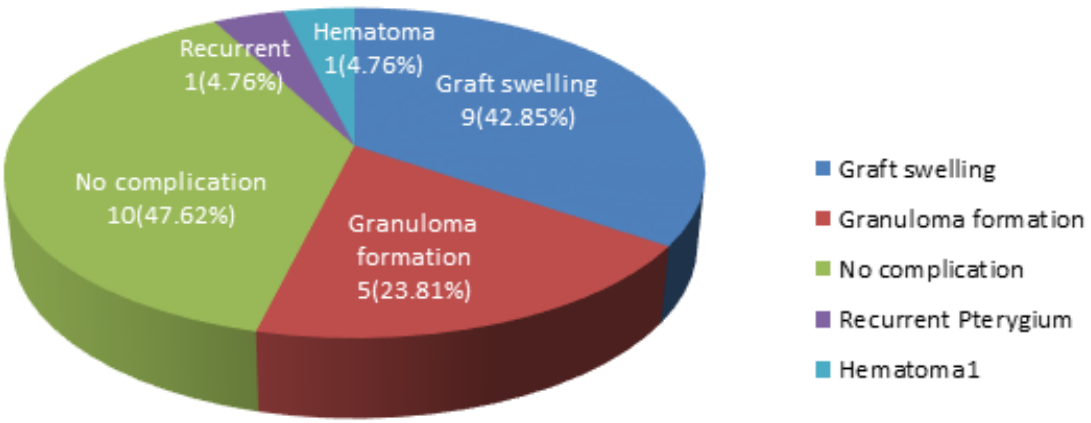
The patients presented with recurrent red eye appeared to be likely developed postoperative chemosis graft swelling and postoperative sub-Tenon granuloma formation. The patients presented with recurrent red eye developed postoperative chemosis graft swelling for 9 (42.85%) patients and post-operative sub-Tenon granuloma formation 5 (23.81%) patients (Figure 1). All patients with postoperative chemosis graft swelling healed within 10 days post-operatively. The patients with postoperative sub-Tenon granuloma presented at 3 days (1 patient) and 7 days (4 patients) postoperatively. All patients developed sub-Tenon granuloma formation. Natear eye drops was discontinued and replaced by FML eye drops. The sub-Tenon granuloma developed atrophic change and complete healed within 3-4 weeks postoperatively. Two patients developed red eye and symptoms of allergic conjunctivitis two months postoperatively. Their clinical symptoms completed recovery after Natear eye drop discontinued, FML eye drops were started and increased the dose of Relestat from twice daily to three times daily.

The patients with one eye pterygium, the other eye was showed pinguecula. The pinguecula eyes were developed atrophic change after control allergic conjunctivitis symptoms postoperatively.

The patients with both eye pterygium, the pterygium of the other eye developed atrophic change after control allergic conjunctivitis symptoms postop-eratively.

Two (5.71%) patients developed recurrent of pterygium growth over limbal cornea about 1-1.5 mm. in 2 months and 3 months for this study. All patients with recurrent pterygium, Natear eye drop was discontinued, and replaced with FML eye drops with ncreased dose of Relestat from twice daily to three times daily. All patients with recurrent pterygium were able to control their progression after adjusting the eye drops.

Figure 1 Chemosis graft swelling and sub-tenon granuloma formation in recurrent red eye patients



Discussion

Pterygium is a common worldwide external eye disease affecting population especially in tropical and subtropical area. It was believed that young age group appears to be associated with pterygium recurrence after pterygium excision followed by conjunctival autograft and adjunctive therapy.[18] This study is different from other studies in Thailand and around the world. The control for allergic conjunctivitis was performed prior and after pterygium surgical treatment.

The aim of this study was to evaluate the rate of recurrence after pterygium excision surgery and conjunctival autograft for primary pterygium in young age group patients.

This study demonstrated low recurrence rate of pterygium after pterygium excision and conjunctival autograft with preoperative and postoperative allergic conjunctivitis symptoms control in young age group patients. It had shown that there was a high rate of pterygium recurrence after pterygium surgical treatment in young adult.[18] Only 5.71% developed recurrent pterygium after pterygium excision surgery for this study. All recurrent pterygium patients were able to control their progress after adjusting the eye drops. The treatment outcome was acceptable in all patients with recurrent pterygium. The control of recurrence was not the only by surgical technique. This study demonstrates that the control of allergic conjunctivitis before and after pterygium surgical treatment could reduce the rate of recurrence. But it also depends on the patient's discipline for treatment and controlling the entry of allergens into the eye. Patient advice is critical to the treatment outcomes.

The results of this study detected many complicated patients (51.42%); but all complications were not serious. The most common complications for this study were chemosis graft swelling and sub-Tenon granuloma formation. The chemosis graft swelling healed in 10 days postoperatively; and the sub-Tenon granuloma completly healed in 3-4 weeks after adjusting the eye drops. The artificial tear and Chloramphenical eye ointment might be associated with postoperative inflammation and sub-Tenon granuloma formation in some patients.

The pterygium patients presented with recurrent red eye symptom appeared to be related with chemosis graft swelling and sub-Tenon granuloma formation in this study.

In this study, some patients presented with both eyes pterygium; and some presented with one eye pterygium and the other eye with pinguecula. The conjunctival pinguecula formation might be an ongoing continuous process for pterygium formation.

This study demonstrated that pterygium and pinguecula of the other eye developed atrophic change after control allergic conjunctivitis symptoms. In the other hand, we may be able to control the progress of pinguecula and small size of pterygium by control allergic conjunctivitis symptoms for the patients. We may be able control allergic conjunctivitis symptoms for patients presented with allergic conjunctivitis symptoms with no pinguecula and pterygium formation.

Allergic conjunctivitis may be one of predisposing factor of pinguecula and pterygium formation in the large population. Surgical treatment for pterygium may not be necessary for allergic conjunctivitis patients

with early pinguecula formation and control for allergic conjunctivitis symptoms\. Controlling allergic conjunctivitis before and after pterygium surgical treatment may be a new adjuvant treatment for pterygium. Some study observed hereditary predisposition may be fundamental for pterygium;[15] but it may not be the case for this study because allergic conjunctivitis is a hereditary disease. Pterygium may be the only complication for patients with uncontrolled allergic conjunctivitis.

For the limitations of this study, the sample size was small because there were not many young patients with pterygium as Muak Lek Hospital is just a community hospital. The larger population for study and long time for follow-up more than one year should be considered in the further study for the treatment of young age group. Further studies should assess the recurrent rate of pterygium after primary pterygium excision surgery with conjunctival autograft technique, preoperative and postoperative control for allergic conjunctivitis symptoms in adult over 35 years of age.

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อัตราการเกิดซ้ำของต้อเนื้อภายหลังการผ่าตัดรักษาต้อเนื้อและปลูกถ่ายเนื้อเยื่อบุตาของผู้ป่วยร่วมกับการรักษาเยื่อบุตาอักเสบจากภูมิแพ้เยื่อบุตาก่อนการผ่าตัดรักษาและภายหลังการผ่าตัดรักษาในผู้ป่วยอายุน้อย

มงคล คณินการัณยภาส พ.บ.

แผนกจักษุวิทยา โรงพยาบาลมวกเหล็ก อำเภอมวกเหล็ก จังหวัดสระบุรี

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บทคัดย่อ: การรักษาต้อเนื้อด้วยการผ่าตัดรักษาในผู้ป่วยอายุน้อย ผลการรักษาพบอัตราการกลับเป็นซ้ำในระดับสูง จักษุแพทย์ไม่แนะนำการผ่าตัดรักษา เนื่องจากอัตราการกลับเป็นซ้ำสูง แต่ผู้ป่วยต้องการการผ่าตัดรักษา เนื่องจากปัญหาด้านความสวยงาม ในการรักษาต้อเนื้อของผู้ป่วยอายุน้อย ผลลัพธ์ของการรักษาดี หากสามารถควบคุมอัตราการกลับเป็นซ้ำได้ วัตถุประสงค์การศึกษา เพื่อศึกษาอัตราการกลับเป็นซ้ำของต้อเนื้อภายหลังการผ่าตัดรักษา ใน 1 ปี โดยใช้การปลูกถ่ายเนื้อเยื่อบุตาของผู้ป่วย ร่วมกับการรักษาภูมิแพ้ของเยื่อบุตาก่อนและหลังการผ่าตัดรักษาด้วยยาหยอดตาของผู้ป่วยอายุน้อย วิธีการศึกษา ศึกษาแบบไปข้างหน้าเชิงพรรณนา โดยรวมรวมข้อมูลจากประวัติและตรวจร่างกาย ผู้ป่วยชายและหญิงอายุน้อย อายุ 15-35 ปี ช่วง มกราคม พ.ศ. 2559 ถึง ธันวาคม พ.ศ. 2562 ที่มีต้อเนื้อและเยื่อบุตาอักเสบจากภูมิแพ้ของเยื่อบุตา ผู้ป่วยเป็นต้อเนื้อปฐมภูมิ ผู้ป่วยทุกรายได้รับการรักษาภูมิแพ้ของเยื่อบุตาก่อนและหลังการผ่าตัดรักษา โดยใช้ยาหยอดตาสำหรับการรักษาเยื่อบุตาอักเสบจากภูมิแพ้ของเยื่อบุตา ผลการศึกษารวบรวมผู้ป่วยต้อเนื้อชนิดปฐมภูมิ 40 ตา จากผู้ป่วย 40 คน อายุระหว่าง 17-35 ปี (อายุเฉลี่ย 29.40 ปี SD±4.70) ผู้ป่วย 5 คนถูกตัดออกจากการศึกษาเนื่องจากขาดการติดตามการรักษา อาการภูมิแพ้ของเยื่อบุตาที่พบบ่อยของการศึกษาคือ ระคายเคืองตา (ร้อยละ 100.00) แสบตา (ร้อยละ 82.85) และคันตา (ร้อยละ 82.85) ภาวะแทรกซ้อนที่พบบ่อยของการศึกษาคือ เนื้อเยื่อบุตาบวม (ร้อยละ 28.57) และมีก้อนอักเสบของเยื่อบุตา (ร้อยละ 14.28) การศึกษา พบการกลับเป็นซ้ำ ร้อยละ 5.71 ภายหลังการผ่าตัดรักษาในระยะเวลา 1 ปี การศึกษานี้ แสดงให้เห็นการกลับเป็นซ้ำของต้อเนื้อในอัตราต่ำ ภายหลังการรักษาต้อเนื้อ ด้วยวิธีผ่าตัดรักษาต้อเนื้อ โดยใช้การปลูกถ่ายเนื้อเยื่อบุตาของผู้ป่วยร่วมกับการรักษาภูมิแพ้ของเยื่อบุตาก่อนและหลังการผ่าตัดรักษาด้วยยาหยอดตาสำหรับการรักษาเยื่อบุตาอักเสบจากภาวะภูมิแพ้ของเยื่อบุตาในผู้ป่วยอายุน้อย

คำสำคัญ: **อายุน้อย; อาการเยื่อบุตาอักเสบจากภาวะภูมิแพ้; การผ่าตัดต้อเนื้อ; การปลูกถ่ายเนื้อเยื่อบุตาของผู้ป่วย; อัตราการกลับเป็นซ้ำของต้อเนื้อ**