

Surgery for Primary Pterygium Using a Pedunculated Conjunctival Sliding Flap Technique Compare to a Bare Sclera Technique

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ABSTRACT : Background : Pterygium is a common ophthalmic condition in Thailand. The recurrence after primary pterygium excision is one of the major problems. We report the efficacy of primary pterygium excision with a pedunculated conjunctival sliding flap (PCSF) technique compare to a bare sclera technique.

Methods : This is a retrospective study of all patients with primary pterygium who underwent a primary pterygium excision with a PCSF technique or a bare sclera technique at Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand from June 1996 to May 1999.

Results : Thirty-one eyes from 30 patients were included in this study. Pterygium excision was done with a PCSF technique in 16 eyes and 15 eyes with a bare sclera technique. Mean age \pm SD was 44.1 ± 11.3 years and 58.9 ± 10.3 years in a PCSF group and a bare sclera group, respectively ($p = 0.001$). There were significantly more males in PCSF group than bare sclera group ($p = 0.029$). The recurrence occurred in 4 eyes (25.0%) of PCSF group and 5 eyes (33.3%) of bared sclera group ($p = 0.71$). Mean follow-up time \pm SD in PCSF group was 52.9 ± 66.9 weeks and bare sclera group was 50.6 ± 70.8 weeks ($p = 0.68$). The recurrent was detected varied from 2 months to 4 years in both groups.

Conclusion : Pterygium excision with a PCSF technique is an effective procedure to prevent the recurrence in high-risk patients. The recurrent rate of this technique is not different from the bare sclera technique. **Thai J Ophthalmol 2004 ; July-December 18(2) : 141-146.**

Background

Pterygium is a fibrovascular overgrowth of bulbar conjunctiva over the cornea. It may cause visual impairment, ocular irritation or cosmetic problem. Risk factors reported for the occurrence of pterygium and the recurrence after an excision include age, environment¹, the pterygium morphology and the fleshiness of the pterygium.^{2,3} The removal of a pterygium is usually followed

by a variable recurrence rate from 0.35% to 82%, depending on the removal method and the adjunctive therapy. Lei reported recurrent rate of 1.6% after pterygium excision using a pedunculated conjunctival sliding flap (PCSF).⁴ This technique is believed to be simple and effective with low rate of complication. In June 1996, we considered using the PCSF technique in some high-risk patients to prevent a recurrence. This study is to

analyze the outcome of all patients who under-went an excision of a primary pterygium combined with a PCSF technique compare to bared sclera technique.

Methods

This is a retrospective study of all patients who underwent a primary pterygium excision with a PCSF technique or bared sclera technique by one ophthalmologist (N.K.) at Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand from June 1996 to May 1999. Primary pterygium was diagnosed by clinical findings of a fibrovascular connective tissue either on nasal or temporal side extended into cornea more than 2.5 mm without any surgical intervention prior to diagnosis. The patients selected for a pterygium excision with PCSF technique usually had preoperative risk factors for a recurrence such as young age, and/or fresh active pterygium. The operation was done in the operating room under local anaesthesia. After the eye was prepped and draped, lidocaine 2% was injected into the subconjunctival space to balloon the conjunctival layer of the pterygium. A full thickness vertical incision was done at the junction between the head and the body of the pterygium. The body was dissected from the overlying conjunctiva. A small amount of lidocaine 2% was injected just under pterygium to separate pterygium from the sclera. Muscle hook was inserted under pterygium and moved back and forth, resulted in separation of the body from the sclera. The body was incised as far as possible. By holding the body, the head was dissected from the cornea with a surgical blade. The tissue left over sclera or cornea may be removed with a surgical blade as well.

In bare sclera group, the conjunctival was fixed to sclera with virgin silk 8-0 interrupted sutures about 2 mm away from limbus. In PCSF group, subconjunctival injection of lidocaine 2% was accomplished at the upper bulbar conjunctiva. A pedunculated conjunctival flap without Tenon's capsule was created from adjacent conjunctiva and was slid down over the bare sclera (figure 1). The flap was fixed to sclera with virgin silk 8-0, leaving bared sclera about 2 mm between the flap and the limbus. The conjunctiva and the flap were sutured with virgin silk 8-0 interrupted sutures. Combined topical antibiotics and corticosteroids were administered postoperatively for about 2-4 weeks depend on the amount of inflammation.

All patient were followed at 1 day, 1 week, 4 week postoperative, and up until there was no sign of a recurrence. All suture materials were removed 1 week after the procedure. An occurrence of a fibrovascular tissue overgrowth on the cornea more than 1.0 mm was deter-

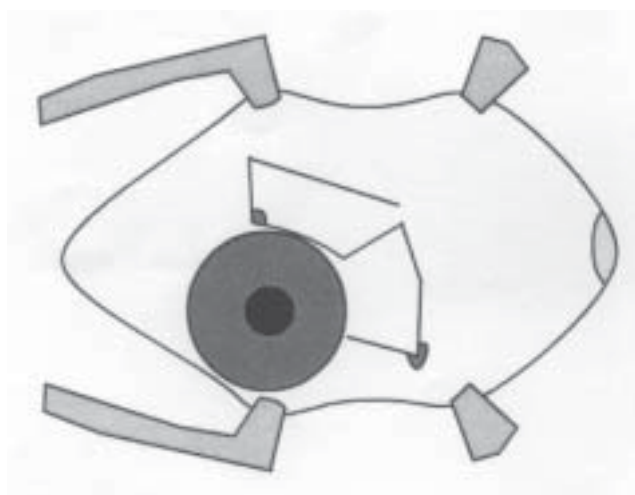


Fig. 1 A pedunculated conjunctival flap is created from the superior conjunctiva and slid down to cover the bare sclera

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mined as a recurrence. Long-term follow-up was done by sending out the letters to all the patients and asked them to come back for a free check at the hospital. The informed consent was obtained before the surgery and at the follow-up time.

The data collections included the demographic data, pre and postoperative visual acuity, ophthalmoscopic findings, the operative technique, intraoperative and postoperative complications, and the recurrence. The statistic analysis included Student *t*-test for para-

metric and Mann-Whitney *-U* test for non-parametric comparison between groups.

Results

Thirty-one eyes from 30 patients were included in this study. One patient had bilateral pterygium. Pterygium excision was done with a PCSF in 16 eyes and the remaining 15 eyes with a bare sclera technique. The demographic data are shown in table 1. The patients in the bare sclera group had average age significantly greater

Table 1 The demographic data of the patients in a pedunculated sliding flap and bare sclera group

	Pedunculated flap	Bared sclera	p value*
Patients	15	15	
Eyes	16	15	
Age ± SD	44.1 ± 11.3	58.9 ± 10.3	0.001**
Gender			0.03
Male	10	3	
Female	5	12	
Side (eyes)			0.28
Right	9	5	
Left	7	10	
Occupation			0.87
Office employee	8	5	
Agriculturist	5	2	
Merchant	1	3	
House wife	1	3	

*Mann-Whitney-*U* test

**Student *t*-test

than in the PCSF group ($p = 0.001$). There were significantly more males and fewer females in PCSF group than bare sclera group ($p = 0.03$). The differences in side and occupations between groups were not significant ($p = 0.28$, and 0.87 respectively). The mean \pm SD of pterygium on cornea were 3.06 ± 0.25 mm and 3.13 ± 0.352 mm in PCSF and bared sclera group respectively ($p = 0.74$).

Postoperatively, 85% of the patients in both groups gained visual acuity at least the same as preoperative visual acuity. Corneal epithelial defect was completely repaired in all patients within 7 days. The donor site in PCSF group healed within 1 week after surgery. There was no major complication intraoperatively or postoperatively. The most common postoperative complication included pain and irritation, which relieved within 3 days after the procedure. Four eyes (25.0%) in PCSF group and 5 eyes (33.3%) in bared sclera group were considered as recurrence ($p = 0.71$). Mean follow-up time \pm SD in PCSF group was 52.9 ± 66.9 weeks and bare sclera group was 50.6 ± 70.8 weeks (range 1 to 192 weeks in both groups, $p = 0.68$). The recurrence was detected varies from 2 months to 4 years in both groups.

Discussion

Pterygium is one of the common ophthalmic conditions in Thailand. This may be the result of the environment, which has been reported to be an important factor in the causation of pterygium. The actual prevalence in Thailand has not been established. Recently, the purpose of primary pterygium removal has focused on the recur-

rent prevention, which is one of the major problems after the procedure. The recurrent rates after variable excision techniques and adjunctive therapies include bare sclera 24% to 82%,^{5,6} beta-irradiation 4.3% to 35%,⁷⁻⁹ mitomycin C 0.35% to 13%,⁹⁻¹² 5-fluorouracil 25%,¹³ conjunctival autograft 5% to 10%,^{5,14} amniotic membrane transplantation 3.0%-40.9%,^{6,15-17} processed pericardium 48%,¹⁸ conjunctival rotation autograft 16.6%,¹⁹ and conjunctival sliding flap 1.6%-5%.^{4,20-21} Our study shows the same recurrence rate in bare sclera group as previous studies but we could not demonstrate the difference in recurrent rate between a PCSF technique and bare sclera technique. The recurrent rate in PCSF technique in this study is higher than the study by Lei.⁴ The possible explanations are : (1) We selected only the patients with high risk of recurrence for PCSF technique. (2) The difference in environment, which was claimed to be an important factor for the recurrence, especially the day light exposure time. This study found the difference in gender between groups but we could not explain the correlation between gender and the recurrence. We support the advantages of a PCSF technique as follows: (1) This technique is easy to perform. (2) A pedunculated conjunctival flap is easier to be placed in the right position compare to a free conjunctival graft. (3) The complications are uncommon. (4) The efficacy for prevention of a recurrence is favourable in high-risk patients.

This study has some limitations. This is a retrospective study, which is unable to control the study group, such as age, gender, and occupation. The enrolled patient is small and non-randomised. The advantage of

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this study is that only one surgeon performed the procedure, which reduces the bias of surgical skill. The prospective randomised controlled trial should be considered to compare the recurrent rate between these two techniques.

Conclusions

Pterygium excision with a PCSF technique is an effective procedure to prevent a recurrence in high-risk patients. The recurrent rate is not different from a bare sclera technique.

REFERENCES

1. Saw SM, Tan D. Pterygium: prevalence, demography and risk factors. *Ophthalmic Epidemiol* 1999 ; 6(3) : 219-28.
2. Tan DT, Chee SP, Dear KB, Lim AS. Effect of pterygium morphology on pterygium recurrence in a controlled trial comparing conjunctival autografting with bare sclera excision. *Arch Ophthalmol* 1997 ; 115(10) : 1235-40.
3. Rohrbach IM, Starc S, Knorr M. [Predicting recurrent pterygium based on morphologic and immunohistologic parameters]. *Ophthalmologie* 1995 ; 92(4) : 463-8.
4. Lei G. Surgery for pterygium using a conjunctival pedunculated flap slide. *Br J Ophthalmol* 1996 ; 80(1) : 33-4.
5. Riordan-Eva P, Kielhorn I, Ficker LA, et al. Conjunctival autografting in the surgical management of pterygium. *Eye* 1993 ; 7 (Pt 5) : 634-8.
6. Tekin NF, Kaynak S, Saatci AO, Cingil G. Preserved human amniotic membrane transplantation in the treatment of primary pterygium. *Ophthalmic Surg Lasers* 2001 ; 32(6) : 464-9.
7. Ajayi BG, Bekibele CO. Evaluation of the effectiveness of post-operative beta-irradiation in the management of pterygium. *Afr J Med Med Sci* 2002 ; 31(1) : 9-11.
8. Alaniz-Camino F. The use of postoperative beta radiation in the treatment of pterygia. *Ophthalmic Surg* 1982 ; 13(12) : 1022-5.
9. Amano S, Motoyama Y, Oshika T, et al. Comparative study of intraoperative mitomycin C and beta irradiation in pterygium surgery. *Br J Ophthalmol* 2000 ; 84(6) : 618-21.
10. Anduze AL, Burnett JM. Indications for and complications of mitomycin-C in pterygium surgery. *Ophthalmic Surg Lasers* 1996 ; 27(8) : 667-73.
11. Anduze AL. Pterygium surgery with mitomycin-C : ten-year results. *Ophthalmic Surg Lasers* 2001 ; 32(4) : 341-5.
12. Avisar R, Gatton DD, Loya N, et al. Intraoperative mitomycin C 0.02% for pterygium: effect of duration of application on recurrence rate. *Cornea* 2003 ; 22(2) : 102-4.
13. Akarsu C, Taner P, Ergin A. 5-Fluorouracil as chemoadjuvant for primary pterygium surgery : preliminary report. *Cornea* 2003 ; 22(6) : 522-6.
14. Chaidaroon W, Wattananikorn S. Conjunctival autograft transplantation for primary pterygium. *J Med Assoc Thai* 2003 ; 86(2) : 111-5.
15. Solomon A, Pires RT, Tseng SC. Amniotic membrane transplantation after extensive removal of primary and recurrent pterygia. *Ophthalmology* 2001 ; 108(3) : 449-60.
16. Tananuvat N, Martin T. The results of amniotic membrane transplantation for primary pterygium compared with conjunctival autograft. *Cornea* 2004 ; 23(5) : 458-63.
17. Prabhasawat P, Barton K, Burkett G, Tseng SC. Comparison of conjunctival autografts, amniotic membrane grafts, and primary closure for pterygium excision. *Ophthalmology* 1997 ; 104(6) : 974-85.
18. Alvarenga LS, de Sousa LB, de Freitas D, Mannis MJ. Efficacy and safety of recurrent pterygium surgery using human processed pericardium. *Cornea* 2002 ; 21(6) : 542-5.
19. Alp BN, Yanyali A, Ay GM, Keskin O. Conjunctival rotation autograft for primary pterygium. *Ophthalmologica* 2002 ; 216(5) : 333-6.
20. Tomas T. Sliding flap of conjunctival limbus to prevent recurrence of pterygium. *Refract Corneal Surg* 1992 ; 8(5) : 394-5.
21. McCoombes JA, Hirst LW, Isbell GP. Sliding conjunctival flap for the treatment of primary pterygium. *Ophthalmology* 1994 ; 101(1) : 169-73.

การผ่าตัดลอกต้อเนื้อโดยวิธี Pedunculated Conjunctival Sliding Flap เทียบกับวิธี Bare Sclera

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บทคัดย่อ วัตถุประสงค์ เพื่อทราบถึงประสิทธิภาพของการป้องกันการเกิดซ้ำของโรคต้อเนื้อภายหลังการผ่าตัดลอกต้อเนื้อด้วยวิธี Pedunculated conjunctival sliding flap (PCSF) เทียบกับวิธี Bare sclera

วิธีการ ทำการศึกษาแบบ retrospective โดยการรวบรวมข้อมูลจากเวชระเบียนผู้ป่วยนอกและบันทึกการผ่าตัดของผู้ป่วยทั้งหมดที่ได้รับการผ่าตัดลอกต้อเนื้อด้วยวิธี PCSF หรือวิธี Bare sclera โดยจักษุแพทย์คนเดียว ที่คณะแพทยศาสตร์ ศิริราชพยาบาล มหาวิทยาลัยมหิดล ระหว่างเดือนมิถุนายน พ.ศ. 2539 ถึงเดือนพฤษภาคม พ.ศ. 2542

ผลการศึกษา มีผู้ป่วย 30 ราย จำนวน 31 ตาที่ได้รับการผ่าตัดลอกต้อเนื้อในช่วงระยะเวลาที่ทำการศึกษา โดยแบ่งเป็นวิธี PCSF 16 ตา และวิธี Bare sclera 15 ตา กลุ่ม PCSF มีอายุเฉลี่ย 44.1 ± 11.3 ปี และในกลุ่ม Bare sclera มีอายุเฉลี่ย 58.9 ± 10.3 ปี ซึ่งแตกต่างกันอย่างมีนัยสำคัญทางสถิติ ($p = 0.001$) กลุ่ม PCSF มีผู้ป่วยชายมากกว่า และมีผู้ป่วยหญิงน้อยกว่าในกลุ่ม Bare sclera อย่างมีนัยสำคัญ ($p = 0.03$) พบการเกิดเป็นซ้ำของต้อเนื้อ ในผู้ป่วยกลุ่ม PCSF 4 ราย (ร้อยละ 25.0) และในกลุ่ม Bare sclera 5 ราย (ร้อยละ 33.3) แต่ไม่มีความแตกต่างกันทางสถิติ ($p = 0.71$) ระยะเวลาการติดตาม ผลการรักษาเฉลี่ยในกลุ่ม PCSF คือ 52.9 ± 66.9 สัปดาห์ และ ในกลุ่ม Bare sclera 50.6 ± 70.8 สัปดาห์ ($p = 0.68$) สามารถตรวจพบการเกิดซ้ำของโรคต้อเนื้อ ภายหลังการผ่าตัดได้ตลอดเวลาตั้งแต่ 2 เดือน ถึง 4 ปี เท่ากันทั้งสองกลุ่ม

สรุป การผ่าตัดลอกต้อเนื้อด้วยวิธี PCSF สามารถป้องกันการเกิดเป็นซ้ำของโรคต้อเนื้อได้ โดยเฉพาะในผู้ป่วยที่มีโอกาสกลับเป็นซ้ำสูง และอัตราการเกิดซ้ำไม่แตกต่างไปจากวิธี Bare sclera
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