

Conjunctival autograft in pterygium treatment

Macarie Sorin Simion*, Macarie Daniela Mariana**

*Department of Ophthalmology, "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

**Department of Ophthalmology, Integrated Ambulatory, Clinical Hospital of Infectious Diseases, Cluj-Napoca, Romania

Correspondence to: Sorin Simion Macarie, MD, PhD,
Department of Ophthalmology, "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca,
8 Victor Babes Street, Code 400012, Cluj-Napoca, Romania,
Mobile phone: +40722 499 041, E-mail: sorin_macarie@yahoo.com

Accepted: July 18, 2016

Abstract

Pterygium is characterized by the thickening of the bulbar conjunctiva and the invasion of the cornea from the sclerocorneal limbus to the central portion of the cornea. Pterygium produces corneal deformation, which extends toward the central portion of the cornea. The visual disorders depend on the corneal extent. The treatment goal is the removal of the corneal and conjunctival portion of the pterygium and the coverage of the resulting conjunctival defect.

The association of the pterygium surgical excision was assessed with conjunctival autograft. For this purpose, a retrospective study was performed on 68 patients and was extended over 7 years (2009-2015). Patients with recurrent pterygium were excluded. The time for corneal re-epithelization and for the pain and photophobia disappearance was followed. The incidence of recurrence was also observed. Pain levels were assessed by using a 10-point visual analog linear scale (VAS).

The mean time for ocular pain and photophobia disappearance was of 48 hours. The mean pain score was 3.38 at 24 hours after surgery. Corneal re-epithelialization was achieved in 60 hours after surgery. Recurrence occurred in 6 patients. It was concluded that pterygium surgical excision with conjunctival autograft is effective in pterygium surgery.

Keywords: pterygium, conjunctival autograft, pterygium management, pterygium recurrence

Introduction

Pterygium is a degenerative disease characterized by the thickening of the bulbar conjunctiva and the invasion of the cornea from the sclerocorneal limbus towards the central portion of the cornea. One of the consequences of pterygium is corneal distortion, initially in the peripheral area. In time, there is a tendency

towards the deformity of paracentral and central portion of the cornea, which causes more or less severe vision disorders, depending on the extension of corneal pterygium. The treatment is represented by surgery, developing several surgery techniques. All these techniques have as common element the removal of corneal and conjunctival pterygium and the covering of the

defect resulted from the removal of the conjunctival pterygium portion.

A characteristic of pterygium is the postoperative relapse, which is due to several factors, such as the limbic stem cell deficiency. In order to decrease the recurrence rate, conjunctival autografts, amniotic membrane application, and application of antimetabolites (mitomycin C) or VEGF (bevacizumab) were used.

Objective

The aim of the study was to show the effectiveness of pterygium excision surgery associated with conjunctival autograft.

Method

A retrospective clinical study was performed on 68 patients with pterygium and was extended over a period of 7 years (2009-2015). The admission criteria in the study were the following:

- Patients with invasive cornea pterygium of more than 1.5 mm from the sclerocorneal limbus,
- Patients without any previous ocular surgery with pterygium.

Moreover, patients with recurrent pterygium were excluded from the study. 27 patients (39.7%) were females and 41 patients (60.3%) were males. The distribution according to sex and age group of patients is shown in **Fig. 1**. In 37 patients (55.9%), corneal invasion was between 1.5 and 2.5 mm from the limbus, in 24 patients (35.3%) pterygium invaded between 2.6 and 4 mm of the cornea, reaching the paracentral area of the cornea. In 6 patients (8.8%), the corneal invasion was over 4 mm, invading the central area of the cornea. 4 of these patients were females.

The excision of pterygium and conjunctival autograft were performed in all the patients to cover the conjunctival defect. The time for corneal re-epithelization and for the pain and photophobia disappearance was followed. Postoperative pain levels were assessed by using the 10-point visual linear scale (VAS). The time needed for the reepithelialization of the cornea was also noted. The incidence of

recurrence was determined at the end of the survey period.

Results

Postoperatively, the average time for the pain to disappear was 48 hours. 24 hours after surgery, the pain score was on average 3.38. According to the visual analogue scale, the mean pain scores were the following: 4.27 in the 12th postoperative hour, 3.38 in the 24th postoperative hour and 1.64 in the 36th postoperative hour.

48 hours postoperatively, photophobia disappeared on average. The time required for pain and photophobia to disappear, depending on the size of pterygium corneal invasion, is shown in **Fig. 2**. There were no significant differences between genders or ages.



Fig. 1 Age and sex of the patients included in our study

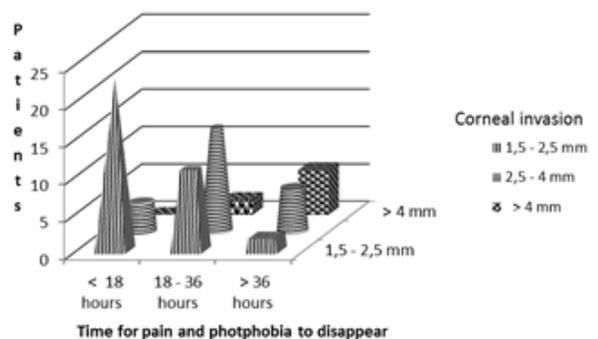


Fig. 2 Time required for the disappearance of pain and photophobia depending on the size of the pterygium corneal invasion

Corneal re-epithelialization was evaluated by slit lamp biomicroscopy. Corneal re-epithelialization was achieved on average in 48 hours postoperatively. In patients with a severe corneal invasion, the re-epithelialization required was longer than in patients with smaller corneal invasion. The re-epithelialization assessment was made at every 12 hours. **Fig. 3** shows the time required for the re-epithelialization of the cornea depending on the size of pterygium corneal invasion. There were no significant differences between the sexes or ages of the patients in terms of the time length of the corneal re-epithelialization.

Recurrence of pterygium appeared in 6 patients (8.8%) during the study. The size of pterygium corneal invasion in all these patients was between 2.5 and 4 mm.

Table 1. The time required for cornea re-epithelialization depending on the size of pterygium corneal invasion

time for re-epithelialization	Corneal invasion		
	1,5 – 2,5 mm	2,5 – 4 mm	> 4 mm
< 24 hours	21 patients	3 patients	0 patients
24 - 48 hour	8 patients	8 patients	4 patients
> 48 hours	4 patients	11 patients	8 patients

Discussions

Nowadays, pterygium treatment raises issues related to the possibility of recurrence and postoperative discomfort. For this reason, various surgical techniques have been developed for pterygium. One of these techniques deals with covering the defect resulted from conjunctival pterygium extirpation with conjunctival autograft. Application of amniotic membrane, antimetabolites (mitomycin C) or antiVEGF (bevacizumab) are also mentioned.

Conjunctival grafting is a safe, uncomplicated procedure and does not involve loss of tissue. It reduces the recurrence rate of pterygium and induces only mild damage on the ocular surface [1]. Also it reduces the risk of granuloma formation, scleral thinning and necrosis [2-4]. Age is a risk factor for relapse [2,5]. There are several conjunctival autograft techniques, all having approximately the same

efficacy in lowering the pterygium recurrence, the incidence of recurrence being between 7,9% and 9% [6,7].

Additional excimer phototherapeutic keratectomy should lower astigmatism and reduce the recurrence rates in patients with primary pterygium [8].

The application of VEGF (bevacizumab) does not influence the relapse rate [9-11], although some studies involving both inflammation and angiogenesis indicate that it does play a pivotal role, in parallel, in the pathogenesis of pterygium [12].

Conjunctival autograft is an advantage on aesthetics and it presents a lower rate of relapses compared to the application of antimetabolites [13]. Some authors claim that the mitomycin C [14] should not be used anymore due to complications that are harder to treat.

The use of the amniotic membrane in pterygium surgery is not fully clarified. It may be a useful alternative to autologous conjunctival grafts but it seems to have a better success rate than the amniotic membrane graft [15,16]. At the same time, other authors found no difference between the amniotic membrane, conjunctival mitomycin C and autologous grafts in the management of pterygium, but recommend the use of the membrane [17].

Conclusion

Pterygium excision and conjunctival autograft is a safe and effective technique in reducing the recurrence rate and the corneal re-epithelialization time. These facts are found in literature and confirmed by other authors.

References

1. Yang Y, Pi M, Xu F. Eye Science. 2013; 28(2):73-8.
2. Kocamis O, Bilgec M. Graefes Archive for Clinical Experimental Ophthalmology. 252(5):817-20. doi: 10.1007/s00417-014-2581-y.
3. Salagar KM, Biradar KG. Journal of Clinical and Diagnostic Research. 2013; 7(12):2825-7.
4. Sadiq MN, Arif AS, Jaffar S, Bhatia J. Journal of Ayub Medical College. 2009; 21(4):121-4.
5. Alusanya OB, Ogun OA, Bekibele CO, Ashaye AO, Baiyeroju AM, Fasina O, Ogundipe AO, Ibrahim AO. African Journal of Medicine and Medical Sciences. 2014; 43(1):35-40.

6. Akhter W, Tayyab A, Kausar A, Masrur A. Journal of the College of Physicians and Surgeons-Pakistan. 2014; 24(10):740-4.
7. Kim SH, Oh JH, Do JR, Chuck RS, Park CY. Cornea. 2013; 32(12):1578-81.
8. Promesberger J, Kohli S, Busse H, Uhlig CE. Ophthalmic Research. 2014; 51(1):52-8.
9. Razeghinejad MR, Banifatemi M. Journal of Ophthalmic and Vision Research. 2014; 9(1):22-30.
10. Karalezli A, Kucukerdonmez C, Akova YA, Koktekir BE. International Journal of Ophthalmology. 2014; 7(3):512-6.
11. Hu Q, Qiao Y, Nie X, Cheng X, Ma Y. Cornea. 2014; 33(2):154-60.
12. Talghini S, Shenasi A. Pakistan Journal of Biological Sciences. 2013; 16(19):1046-50.
13. Paracha Q, Ayoob M, Dawood Z, Mirza SA. Pakistan Journal of Medical Sciences. 2014; 30(6):1243-6.
14. Shi WY, Wang FH. Chinese Journal of Ophthalmology. 2013; 49(10):869-72.
15. Prabhasawat P, Barton K, Burkett G, Tseng SC. Ophthalmology. 1997; 104:974-985.
16. Reinhard T, Larkin DFP. Cornea and External Eye Disease. Springer Verlag, 30.
17. Ma DH, See LC, Liau SB, Tsai RJ. British Journal of Ophthalmology. 2000; 84:973-978.