

COMPARATIVE STUDY OF PTERYGIUM SURGERY

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Сравнително изследване на хирургичните методи при птеригиум

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Abstract:

Aim: To evaluate the success rates of surgical techniques for primary pterygium

- pterygium excision with conjunctival autograft transplantation and
- pterygium excision with complete suture of conjunctiva without transplantation

Methods: 75 cases with primary pterygium were prospectively reviewed. Outcome was evaluated in terms of recurrence of pterygia onto the cornea. The patients were divided into 2 groups. 40 eyes were operated with conjunctival autograft transplantation (20 cases by pterygium invades the cornea 3mm and 20 cases by pterygium invades the cornea 3mm and more). 35 cases were operated by pterygium excision with complete suture of conjunctivae without transplantation (20 cases by pterygium invading the cornea 3mm and 15 cases by pterygium invading the corneae 3mm and more).

Results: Mean follow up was 12 months (2 to 24 months). 4 out of 40 recur (10%) after the conjunctival autograft transplantation, while 14 of 35 cases recur (40%) after the pterygium excision with complete suture of conjunctiva without transplantation. One surgeon performed the surgery.

Conclusion: Conjunctival autografts in pterygia have excellent efficacy against recurrence within the first year.

Key words: pterygium, recurrent, primary, conjunctival autograft, transplantation

Резюме:

Целта на нашето изследване е да проследим степента на успеваемост на различните хирургични техники за птеригиум. Разглеждат се две техники:

- ексцизия на птеригиума с автоложна трансплантация на конюнктивата
- ексцизия с плътно зашиване на конюнктивата без трансплантация.

Материали и методи: Проследихме 75 случая на първичен птеригиум, като оценявахме постоперативния резултат с оглед на рецидив на птеригиума в роговицата. Разделихме пациентите на две групи - 40 очи оперирани с конюнктивна автотрансплантация (20 случая с птеригиум до 3 mm в роговицата и 20 случая с птеригиум на 3 mm в роговицата) и 35 случая оперирани само със зашиване на конюнктивата без трансплантация (20 случая с птеригиум до 3 mm в роговицата и 15 случая с птеригиум на 3 mm в роговицата).

Резултати: Средната продължителност на проследяване беше 12 месеца (2 до 24 месеца). Имахме 4 рецидива (10%) при очите оперирани с конюнктивна автотрансплантация и 14 рецидива (40%) при очите оперирани само със зашиване на конюнктивата без трансплантация. Операциите се извършваха от един и същ хирург.

Заклучение: Автотрансплантацията на конюнктивата при птеригиум е много ефикасна хирургична техника срещу рецидиви през първата година.

Ключови думи: птеригиум, рецидив, конюнктивален автотрансплантант.

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Introduction:

Pterygium is an active, invasive, inflammatory process, a key feature of which is focal limbal failure (1). It is proposed that the initial biologic event in pterygium pathogenesis is an alteration of limbal stem cells due to chronic ultraviolet light exposure (1,2). The concomitant breakdown of the limbal barrier and subsequent conjunctivisation of the cornea explain the shape and formation of a primary pterygium (3,4).

In white population the prevalence of pterygium is between 1-7,7% depending proper proportional of the geographic location of the country (5).

The etiologies of pterygia still intrigued the researchers. Even the ultraviolet exposure is emphasize, there are other factors as genetic attributes, lifestyle behaviors (outdoor, dust, wind), viral infections, immunological thesis, TGF, disruption in tear film, micro-trauma on the conjunctiva and cornea (trichiasis, Meibomians cysts, etc).(6-9). Davenger and Evenson were the first to postulate that a limbus serves as a generative organ for corneal epithelial cells (10).The source of corneal epithelial cellular migration and proliferation comes from the peripheral cornea. This has been extended to clinical application of conjunctival transplantation.

Motivation for preparing this study was: the high frequency of the pterygia in capable working middle age people, permanent damage of visual acuity, cosmetic lack and an effective prophylaxis.

Aim:

To evaluate the success rates of surgical techniques for primary pterygia

- pterygium excision with conjunctival autograft transplantation

- pterygium excision with complete suture of conjunctiva without transplantation.

Material and method:

75 cases with primary pterygium were prospectively reviewed. Outcome was evaluated in terms of recurrence of pterygia onto the cornea. The patients were divided into 2 groups. 40 eyes were operated by conjunctival autograft transplantation (20 cases with pterygium invading the cornea 3mm and 20 cases with pterygium invading the 3mm and above). 35 cases were operated by pterygium excision with complete suture of conjunctiva without transplantation (20 cases with pterygium invading the cornea 3mm and 15 cases by pterygium invading the cornea 3mm and above).

The surgical technique of pterygium excision with conjunctival autograft transplantation is performed using topical and subconjunctival anesthesia (sometimes adrenaline used also). A rigid lid speculum facilitates maximal exposure. A disposable scarifier Grishaber 681 is used to superficially excise the corneal portion of the pterygium and the remainder is excised with Westcott scissors following careful identification and dissection of the extra-ocular muscles. The size of exposed bare sclera is measured with calipers and then the eye is turned down to expose the superior bulbar conjunctiva, where an area of corresponding size is measured and marked with metilen blue. These marks are included within the margins of the thinly dissected graft tissue in order to facilitate its unequivocal reorientation. The free graft is transferred to its anatomically equivalent position in the recipient bed and secured with approximately eight interrupted suture of 10-0 vicryl.(Fig.1) The donor site some times is also closed with a single suture of the same material. Postoperatively, topical corticosteroid and antibiotic ointment are administered frequently and are continued for approximately 4 to 6 weeks.

Results:

The mean follow up was 12 months (2-24 months) 4 out of 40 recurred (10%) after the conjunctiva

autograft transplantation, while 14 of 35 cases recurred (40%) after the pterygium excision with complete suture of conjunctiva without transplantation. One surgeon performed the surgery.

The recurrences in the group of pterygium excision with conjunctival transplantation were 4 cases where pterygium reaches more than 3mm of cornea. Also in the second group 19 of 14 recurred were of pterygium expands 3 mm and more.(Fig 2-5).

Discussion:

Recurrence rates reported for pterygium excision with conjunctival autografting are generally low (3-16%).(11,12). (Tab.I). Variations in the results from a given technique may be influenced by number of factors including: variation within techniques, the age and geographical location of the population studied, the length of follow up, the definition of recurrence employed and experience of the surgeon in pterygium excision and conjunctival autografting (13,14,15,16).

Conclusion:

Conjunctival autografts in pterigia have excellent efficacy against recurrence within the first year.

This study demonstrates a low recurrence rate from pterygium excision and conjunctival autografting in the group in an area in which pterigia are prevalent and ultraviolet light levels are high.

Conjunctival autografting is relatively slow procedure, often taking at least 45 minutes to perform. But we recommend it for primary pterigia also as for advance and for recurrent pterigia. (Fig.6).

Table I.

Published rates of pterygium recurrence after excision and conjunctival autografting

Author	Location	Numbers	Recurrence
Dowlut	Canada	15	8% (1)
Kenyon	Boston	57	5% (3)
Lewallen	St Kitts	19	16% (3)
Singh	Los Angeles	13	8% (1)
Mrzygold	Poland	41	3% (1)
Koch	Essen	13	8% (1)
Simona	Geneva	14	15% (3)

Figure 1.

A schematic illustration of pterygium excision and conjunctival grafting

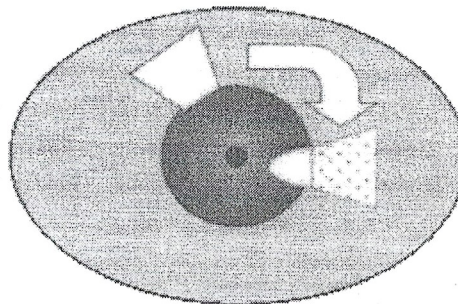


Figure 2.

Recurrence after pterygium excision with conjunctival autograft

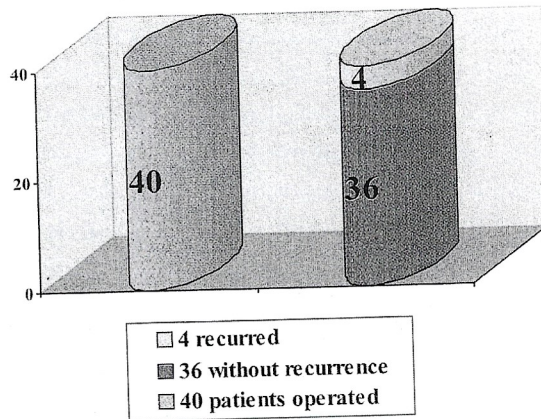


Figure 3.

Recurrence after the pterygium excision with complete suture of conjunctiva without transplantation

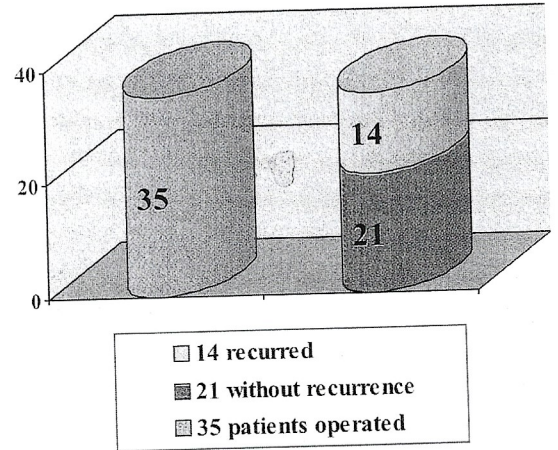


Figure 4.

Recurrence after the pterygium excision with complete suture of conjunctiva without transplantation

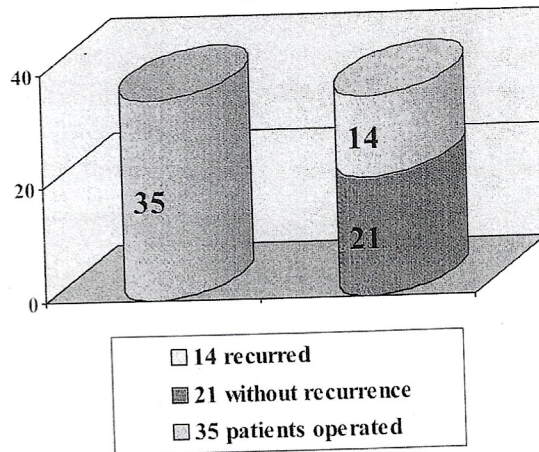


Figure 5.

Recurrence after the pterygium excision with complete suture of conjunctiva without transplantation

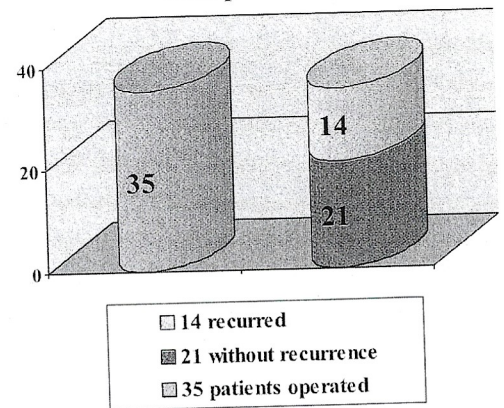
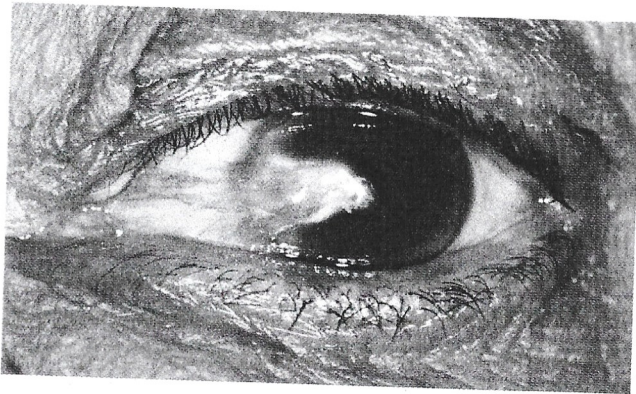
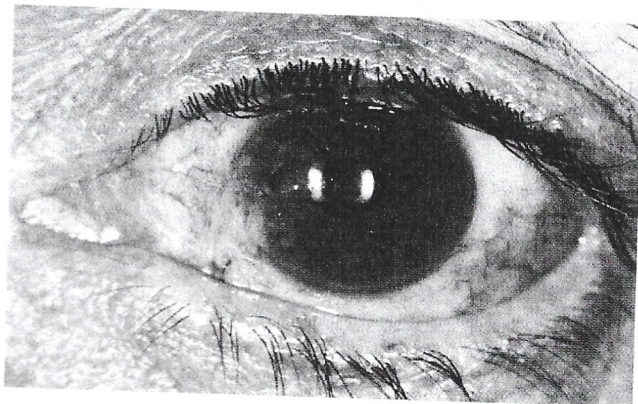


Figure 6. Pterygium before the operation, a day after operation and three months later

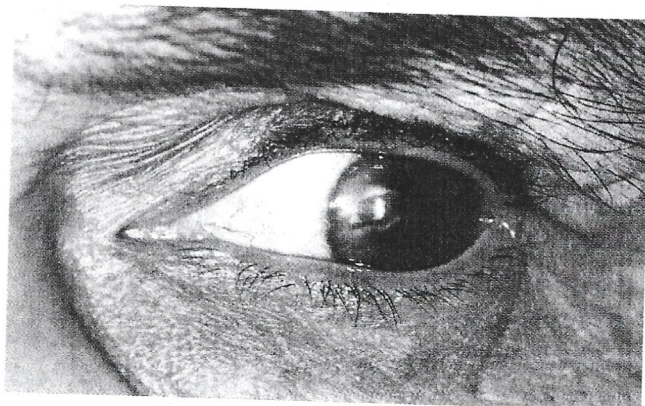
Progressive advance pterygium



Conjunctival autograft after the exision of the pterygium



No recurrence after three months



References:

1. Coroneo MT, Di Girolano N, Wakefield D. The pathogenesis of pterygia. *Curr Opin Ophthalmol* 1999 Aug; 10(4):282-8.
2. Kwok LS, Coroneo MT, A model for pterygium formation. *Cornea* 1994 May;13(3)219-24.
3. Coroneo MT, Muller Stolzenburg NW, Ho A. Peripheral light focusing by the anterior eye and ophthalmohelioses. *Ophthalmic Surg* 1991; 22: 705-11.
4. Bron AJ. Vortex patterns of the corneal epithelium. *Trans Ophthalmol Soc UK* 1993; 93: 455-72
5. Cameron ME. Pterygium throughout the world Springfield, Massachusetts: Charles C.Thomas, 1965:141-71.
6. Hill JC, Maske R. Pathogenesis of pterygium, *Eye* 1999; 3: 218-26.
7. Barraquer JI. Etiology, pathogenesis and treatment of the pterygium. Symposium on medical and surgical diseases of the cornea. *Trans New Orleans Acad Ophthalmol. St.Louis: Mosby, 1990: 167-78.*
8. Kamel S. The pterygium: its etiology and treatment. *AmJ ophthalmol* 1994; 38: 682-8
9. Hilgers JHCh. Pterygium: its incidense, heredity and etiology. *AmJ Ophthalmol* 1990; 50: 635-44
10. Davinger M, Evensen A. Role of the pericorneal papillary structure in renewal of corneal epiteliium. *Nature* 1991; 229: 560-1.
11. Allan BD, Short P, Crakford GJ, Barret GD, Constable IJ Pterygium excision with conjunctival autografting: an effective and safe technique.1: *Br. J.Ophthalmol* 1993 Nov;77(11):698-703.
12. Ti SE, Chee SP, Dear KB, Tan DT. Analysis of variation in success rates in conjunctival autografting for primary and recurrent pterygium. *Br Jophthalmol* 2000 Ap; 84(40):385-9.
13. Kenyon KR, Wagoner MD, Hettinger ME. Conjunctival autograft transplantation for advanced pterygium and recurrent pterygium. *Ophthalmology* 1994;92:1461-70.
14. Dowent MS, Junflamme MY. Recurrent pterigia: frequency and treatment by conjunctival autograft. 1: *Can J Ophthalmol* 16(3):119-20.
15. Bruce DS Allan, Perry Short, Geoffrey J Crawford, Graham D Barrett, Ian J Constable. Pterygium excision with conjunctival autografting: an effective and safe technique. *British J Ophthalmol* 1995;77:698-701.
16. Starck T, Kenyoun K, Serrano F. Conjunctival autograft for primary and recurrent pterygia: surgical technique and problem menagement. *Cornea* 1993, 10(3) 196-202.