ORIGINAL ARTICLE J. Med. Sci. (Peshawar, Print) January 2010, Vol. 18, No.1: 36-39

RECURRENCE RATE OF PTERYGIUM: A COMPARISON OF BARE SCLERA TECHNIQUE AND FREE CONJUNCTIVAL AUTOGRAFT

Nazullah[1], Akbar Shah[2], Mushtaq Ahmed[3], Abdul Baseer[1], Shafqatullah Khan Marwat[1], Nasir Saeed[4]

[1]Department of Ophthalmology, Khyber Teaching Hospital, Peshawar - Pakistan
[2]Department of Ophthalmology, Al-Shifa Eye Trust Hospital, Kohat - Pakistan
[3]Department of Ophthalmology, Hayatabad Medical Complex, Peshawar - Pakistan
[4]Department of Ophthalmology, Khyber Girls Medical College, Peshawar - Pakistan

ABSTRACT

Objectives: The main objective of this study was to compare the recurrence rate of pterygium after excision using bare sclera technique and free conjunctival autograft (CAG).

Material & Methods: This was a comparative interventional case series conducted from March 2005 to March 2006 in the Ophthalmology Department of Khyber Teaching Hospital Peshawar. A total of 60 patients were included in this study. The patients were divided into. Group A and group B. An equal number of patients were included in each group. We used the bare sclera technique for group A patients and free conjunctival autograft (CAG) for group B. In free conjunctival autograft (CAG), the bare sclera was measured with a caliper and a graft of the same size was taken from the supero temporal region of the bulbar conjunctiva and grafted onto the bare sclera suturing it with 10/0 nylon to the surrounding conjunctiva. All patients were operated under subconjunctival anesthesia.

Results: Out of 60 patients, 67% were male and 33% female. Patient age ranged from 20-50 years. The recurrence was 36.6% in group A and 6.6% in group B.

Conclusion: Free conjunctival autograft is a better technique for prevention of recurrence after pterygium surgery.

Key words: Pterygium, Conjunctival, Autograft, Recurrence.

INTRODUCTION

Pterygium appears as a fleshy vascular mass that occurs in the interpalpebral fissure. The typical pterygium is triangular in shape and is made up of a cap, head and body. It is more frequently located nasally rather than temporally[1]. The cause of pterygium is not known but those who work out doors exposed to sun and wind are more prone to develop pterygium probably from conjunctival irritation.[2] It is more common in tropical and subtropical region with a reported prevalence of 2 to 7% worldwide [3]. It is more frequent in areas with higher ultraviolet radiation[4], especially UVR-A and UVR-B (290-400nm) which are considered the most dangerous[5,6]. The recurrence rate is significant and recurrent pterygia are often worse than primary ones[7]. A recurrent pterygium can be associated with decreased visual acuity due to involvement of the visual axis and/or irregular astigmatism, extraocular motility restriction and symblepharon (scarring and adhesions between palpebral and bulbar conjunctiva) formation[8].

The growth of pterygium across the cornea is a slow process and it usually takes several years to reach the visual axis. Progressive pterygium is characterized by a fleshy and congested appearance, whereas regression or inactivation is characterized by the absence of episodic congestion, disappearance of punctate staining over the body and shrinkage of the cap[9]. The lesion may remain stationary for several years and finally involution occurs. The head gets flattened and thinned out leaving behind a scar that blends with the adjacent cornea and the body changes into a membrane-like structure with a few fine blood vessels.

Numerous surgical techniques including bare sclera excision with or without the use of adjuncts like beta irradiation,[10] thiotepa eye drops,[11] intra-operative mitomycin-C (MMC),[12] 5-flourouracil[13], amniotic membrane transplantation[14] and conjunctival autograft[15] (CAG) have been described.

Kenyon et al[16], were the first who described the conjunctival autograft in 1985. The primary disadvantage of this procedure is the prolonged operative time as compared to the bare sclera technique.

Address for Correspondence:
Dr. Nazullah
Registrar Ophthalmology, KTH, Peshawar
H. # 260, St # 10, Sector N-1, Phase-4,
Hayatabad, Peshawar.
Contact No. 0333-9288040

Recurrence of pterygium is defined as the postoperative regrowth of 2mm or more of fibrovascular tissue crossing the corneoscleral limbus into the area of previous excision[17]. Pterygium is common in males as they spend most of their time in out-door activities. Majority of patients with pterygium are farmers, labourers and teachers.

The purpose of this study was to compare the recurrence rate of bare sclera technique and conjunctival autograft in pterygium excision.

MATERIAL AND METHODS

This study was conducted on the patients who underwent pterygium surgery at the Ophthalmology Department, Khyber Teaching Hospital, from March 2005 to March 2006. The patients were divided into two groups, Group A and group B. A total of 60 patients were included in this study. Thirty patients were included in each group. We used the bare sclera technique for group A patients and free conjunctival autograft (CAG) for group B. Patients were alternatively placed in each group in such a way that odd number i.e patient no 1, 3, 5, were allotted to group A and even number i.e patient no 2,4,6 and so on to group B. Forty male and 20 female patients underwent a pterygium surgery. All information was recorded on a proforma.

The inclusion criteria were: age 20-50 years, pterygium of 3mm or more in size, disturbance of vision by occluding visual axis or inducing astigmatism, and/or cosmetically disfiguring pterygium. The exclusion criteria were: One eyed patients, glaucoma, ocular surface abnormalities, lid abnormalities, chronic ocular infection and chronic dacryocystitis, and recurrent pterygium. Patients presented with visual impairment, cosmetic complaints, recurrent inflammation and redness and foreign body sensation (Table 1).

All Patients were admitted to the hospital and operated under sub-conjunctival anaesthesia. A wire speculum was used to separate the lids. 0.5 ml of xylocaine with adrenaline was given into the head of the pterygium and an additional 0.5 ml at the donor site in cases undergoing free conjunctival autograft. Firstly, the head of the pterygium was excised from the cornea with number 15 knife and cut with scissors 2-3 mm away from the limbus. The cornea was shaved.

In free conjunctival autograft the bare sclera was measured with caliper and same size graft was taken from the supero temporal region and put onto the bare sclera stitching it with 10/0 nylon to the conjunctiva.

On the next day the eye pad was changed and the patient discharged. Post operatively topical medications in the form of steroid and antibiotic combinations and oral analgesics were prescribed. All the patients were followed after one month, two months, and then after six months from the date of surgery.

RESULTS

A total of 60 patients were operated upon. Forty (67%) patients were male and 20 (33%) female. Patients were equally divided into group A and group B. Patient data was analyzed for the main parameters of the study i.e age, sex, rate of recurrence and occupation. In 31 (52%) cases the right eye was involved and the left eye in 29 (48%) patients.

Recurrence rate in both groups is given in (Table 2).

There was no major complication such as perforation, scleral melt or endophthalmitis in either group. The details of minor complications are shown in Table 3.

Table 1: Clinical Presentation of Pterygium

S. #	Clinical features	No. of cases
1.	Visual impairment	35 (58.33%)
2.	Cosmetically unacceptable	10 (16.66%)
3.	Repeated inflammation	10 (16.66%)
4.	Redness & discomfort	5 (8.33%)

Table 2: Rate of Recurrence

S. No.	Surgical	Total No. of patients	No. of re-currence
1.	Bare sclera technique	30	11(36.6%)
2.	Free conjunctival-autograft	30	2(6.6%)

Chi-square test = 7.958

P-value = 0.0048 (Statistically significant)

Table 3: Complications

S. No.	Group A	No. of cases	Group B	No. of cases
1.	Scleral necrosis	2(6.7%)	Graft oedema	2(6.7%)
2.	Conjunctival cyst	3(10.0%)	Graft retraction	3(10%)
3.	Tenon granuloma	4(13.3%)	Tenon granuloma	4(13.3%)
4.	Symble-pharon	2 (6.7%)		

DISCUSSION

Pterygium is one of the most common eye disorders in tropical and subtropical region including Pakistan. The most important risk factor is exposure to sunlight. It affects the visual acuity either by directly affecting the visual axis or by producing changes in the corneal curvature[5].

In our study the maximum number of patients were farmers (50%), followed by labourers (35%), who have to work outside for long periods of time and are exposed to the hazardous effects of the infrared and ultraviolet radiation present in sunlight. Our results are compatible with Threfall TJ et al[18], where there is a high association between the outdoor work and pterygium.

Bare sclera technique is an easy method but is associated with a recurrence rate as high as 89% as reported by Hirst LW[19]. In our study the recurrence rate after this technique was 36.6% which is also supported by a study conducted by Ashaye AO[20], who gave a 40% recurrence rate. Another study done by Dash and Bapor[21] observed 25% recurrence rate. Conjunctival autograft is a time consuming procedure and needs surgical skill but recurrence rate is low as 5.3%, as reported by Kenyon et al[16] with relatively minor complications. It is also cosmetically acceptable technique and related to low or no recurrence rate. This is due to transplantation of normal conjunctiva that forms a barrier to the proliferation and advancement of residual abnormal tissue towards the limbus.[22] Guler M et al[23] observed recurrence in only 2% patients. Narsani et al[24] report a 7.69% recurrence with CAG, De Keizer[25] noted 6.6% recurrence rate after free conjunctival autograft. These results are compatible to our study in which the recurrence rate was 6.6%.

In our study the free conjunctival autograft technique was found superior to bare sclera technique as the recurrence rate was statistically low (6.6% vs 36.6% P-value =0.0048).

CONCLUSION

Conjunctival autograft has better results and is widely accepted in the management of pterygium. However this technique cannot be used in eyes in which the conjunctiva is already scarred from previous surgery or if the conjunctiva has to be preserved for future glaucoma filtering surgery.

REFERENCES

1. Michael R, Edward GJ, Holland EJ. Management of pterygium. In: Krachmer JH, Mannis MJ, Holland EJ. Cornea Vol 3: Surgery of the cornea and conjunctiva. Newyark : Mosby 1997; 1873-85.
2. Saleem M, Muhammad L, Islam Z. Pterygium and dry eye, a clinical study. J Postgrad Med Inst 2004; 18: 558-62.
3. Donnenfeld ED, Perry HD, Fromer S, Doshi S, Solomon R, Biser S. Subconjuctival mitomycin C as adjunctive therapy before pterygium excision. Ophthalmology 2003; 110: 1012-26.
4. Moran DJ, Hollows FC. Pterygium and ultraviolet radiation: a positive correlation. Br J Ophthalmol 1984; 68: 343-46.
5. Taylor HR, West SK, Rosenthal FS, Munoz B, Newland HS, Emmet AE. Corneal changes associated with chronic UV irradiation. Arch Ophthalmol 1989; 107(10): 1481-84.
6. Detorakis ET, Zafiropoulos A, Arvanitis DA, Spandidos DA. Detection of point mutations at codon of Kl-ras in ophthalmic pterygia. Eye 2005; 19: 210-14.
7. Walkow T, Anders N, Antoni HJ, Wollensak J. Incidence of recurrence after primary pterygium excision, phototherapeutic keratectomy with the ARF: Excimer laser and local mitimycin C administration [Article in German]. Klin Monatsbl Augenheilkd 1996; 208(5): 406-09.
8. Shimazaki J, Shinozaki N, Tsubota K. Transplantation of amniotic membrane and limbal autograft for patients with recurrent pterygium associated with symblepharon. Br. J Ophthalmol 1998; 82: 235-40.
9. Chatter Jee BM. Anatomy and disease of the conjunctiva. In: Handbook of Ophthalmology. 6th ed. New Delhi: CBS; 1997; 41-84.
10. Cooper JS. Postoperative irradiation of pterygia. Ten more years of experience. Ther Radiol 1978; 128: 753-60.
11. Meacham C. Triethylene thiophosphoramide in the prevention of pterygium recurrence. Am J Ophthalmol 1962; 54: 751-54.
12. Saeed N, Islam Z, Ali N. Intraoperative use of mitomycin-C for prevention of post operative pterygium recurrence. J Postgrad Med Inst 2002; 16, 103-07.
13. Rahman L, Baig M A, Islam Q; Prevention of pterygium recurrence by using intra-operative 5-fluorouracil. Pakistan Armed Forces Medical Journal; March 2008, No 1. 75-78.
14. Katbaab A, Anvari H R Ardekani, Khoshniyat H, Reza H Jahadi Hosseini. Amniotic membrane transplantation for primary pterygium surgery. Journal 24 of ophthalmic and vision research (J Ophthalmic Vis Res); 2008; 3 (1): 23-27.
15. Chen PP, Ariysan RG, Kaza V, labee LD, McDonnel PJ. A randomized trail comparing mitomycin-C and conjunctival autograft after excision of primary pterygium. Am J Ophthalmol 1995; 120: 151-60.

16. Kenyon KR, Wagoner MD, Hettinger ME. Conjunctival autograft transplantation for advanced and recurrent pterygium. Ophthalmology 1985; 92: 1461-70.

17. Mashoor F, Fayez AL. Limbal versus conjunctival autograft transplantation for advanced and recurrent pterygium. Ophthalmology 2002; 109: 1752-55.

18. Threlfall TJ, English DR. Sun exposure and pterygium of the eye: a dose- response curve. Am J Ophthalmol 1999; 128: 280-87.

19. Hirst LW. The treatment of pterygium. Surv Ophthalmol 2003; 45: 145-80.

20. Ashye AO. Pterygium in Ibadan West Afr-J. Med 1991; 10: 232-43.

21. Dash RG, Bopari MS. Pterygium, evaluation & management. Indian J Ophthalmol 1986; 34: 7-10.

22. Doughman DJ. In discussion: Kenyon KR, Wagoner MD, Hettinger ME. Conjunctival autograft transplantation for advanced and recurrent pterygium. Ophthalmology 1985: 1470-76.

23. Guler M, Sobaci G, Jiker S, Ozturk F, Mutlu FM, Yildirm E. Limbal conjunctival autograft transplantation in cases with recurrent pterygium. Acta Ophthalmol 1994; 72: 721-26.

24. Narsani A K, Jatoi S M, Gul S and Dabir S A. Treatment of primary pterygium with conjunctival autograft and mitomycin C. A comparative study. Journal of Liaquat University of Medical & Health Sciences *(JLUMHS)* Hyderabad, September-December 2008.

25. De Keizer RJ. Pterygium excision with free conjunctival autograft versus postoperative strontium 90 beta irradiation. J Fr Ophthalmol 2001; 86: 111-15.