

A Study of Outcome of Pterygium Dissection and Surface Conjunctival Autografting with Sparing of the Superior Conjunctiva for the Management of Primary Pterygium

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Abstract

Objective: To evaluate the success and outcome of pterygium dissection and surface conjunctival autografting with sparing of the superior conjunctiva for the management of primary pterygium. **Methods:** Prospective non comparative interventional case series involving 30 eyes with primary pterygium who underwent pterygium dissection with surface conjunctival autografting in the cornea clinic of a medical college. **Results:** There were 22 (73.33%) males and 8 (27%) females included in the study. Mean age of the patients was 43.88 years (range 19-66 years). Pterygium was Grade 1 in 9 (30%) eyes, grade 2 in 10 (33.3%) and Grade 3 in 11 (36.6%) eyes. No significant intra-operative complications were encountered. Average surgical time was 12.8mins. Mean follow-up period was 48 weeks (ranged 24 weeks to 72 weeks). Graft adherence by the end of 4 weeks post operative period was seen in 29 (99.218%) eyes. Pterygium recurrence occurred in 1 (3.3%) eye. No vision threatening complications were encountered either intra-operatively or post-operatively. **Conclusion:** pterygium dissection with surface conjunctival grafting is an excellent option for treating primary pterygia and helps in maintaining a virgin superior bulbar conjunctiva which may be required for future glaucoma surgeries.

Keywords: Pterygium; Pterygium Surgery; Conjunctival Limbal Autograft.

Introduction

Pterygium is a slow growing proliferation of wing shaped fibrovascular tissue. More common in warm and dry climates. India being a part of 'Pterygium Belt of Cameron', an equatorial belt delimited by latitude 37°N and 37°S [1], is having higher prevalence of pterygium (9.5%) [2]. The accepted etiopathogenesis for pterygium is the ultraviolet radiation induced damage or mutation to the limbal stem cell barrier with subsequent conjunctivalisation resulting in the encroachment of a wing-shaped, fibrovascular growth on to the cornea [3,4]. The definitive management of pterygium is surgical excision. Recurrences being the main complication of simple surgical excision, various adjuvant procedures have been described in literature with the aim of reducing the recurrence rates. These are intra-operative and post-operative mitomycin C drops, post-operative Thiotepe drops, beta

irradiation, various conjunctival grafting procedures, amniotic membrane transplantation. Reported recurrence rates with these procedures vary from 89% with simple surgical excision to 5% with pterygium excision with conjunctival autografting [5]. Literature review shows that of all the available options for the management of pterygium, conjunctival-limbal autografting is proven to be associated with least recurrence rate hence this procedure has become the gold standard for the management of primary pterygium [6,7,8]. Superior bulbar conjunctiva is commonly used as an auto graft for pterygium surgery the method has good results with regards to less recurrence rate, good cosmesis and good patient compliance. Using superior conjunctiva may

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however have an adverse effect on the outcome of future filtration surgery and even a cataract would healing. In cases of large pterygium harvesting the superior conjunctiva alone would not suffice. Even in cases of double headed pterygiums only superior conjunctiva would not be suffice. This study is done to analyse the recurrence rate, complications, and cosmesis after using the surface conjunctiva remaining after dissection of the fibrovascular tissue of the pterygium as an auto graft instead of the superior conjunctiva so that it is spared for future filtration surgeries .

Methods

A Prospective non comparative interventional case series involving 30 cases of primary pterygium who underwent a dissection of the pterygium and grafting of the surface conjunctiva . To ensure consistency, all surgeries were done by a single surgeon. Informed written consent from the patient was taken for the procedure as per the protocol of the Institute.

Inclusion Criteria

Patients above 18 years of age Primary pterygium. Patients who completed a minimum of 6 months post operative follow up.

Exclusion Criteria

Recurrent pterygium, history of previous ocular trauma or surgery, usage of contact lenses, presence of other ocular pathology. Patient data collected included gender, age, rural/urban/tribal domicile, history of previous ocular trauma or surgery, indication for pterygium surgery, grade of pterygium, pre-op & post-op BCVA, duration of surgery, intra-operative and post-operative complications, post-operative treatment, post-operative reviews and recurrence of pterygium. Pterygium Grading (T1-3) according to the extent (mm) on to the cornea Grade 1 = 0-2 mm from limbus, Grade 2 = 2-4mm from limbus, Grade 3 = > 4mm from limbus. Success is defined as graft adherence to the surgical site at the end of 4weeks post-operative period. Recurrence is

defined as a corneal recurrence that is evidenced by growth of fibrovascular tissue across the limbus onto the cornea at the surgical site.

Surgical Technique

Under peribulbar anaesthesia, with 2% xylocaine, lids were separated by a wire speculum. Superior rectus bridle suture was inserted .The head of the pterygium was held with a collibri and peeled of the cornea with gentle anti clockwise pull.The head was thus separated from the cornea. With Westcott scissors,the subconjunctival fibrovascular tissue was gently dissected from the surface conjunctiva. The dissection was extended medially just up to caruncle and towards upper and lower fornices in a triangular fashion. The dissected fibrovascular tissue was excised. Care was taken not to buttonhole the surface conjunctiva and not to injure the caruncle which is a very vascular structure. The pterygium remnants on the cornea was scraped off using a crescent blade. Using blunt and sharp dissection, the fibrovascular tissue was dissected from the sclera. Care was taken to avoid damage to the underlying medial rectus. The detached head of the pterygium from the corneal surface and the limbus was excised saving the conjunctiva of the body of the pterygium. The limbal conjunctiva was not included in the graft. Blood was allowed to pool on the scleral surface and the surface conjunctiva is put back on the sclera. Using two iris repositors pressure is applied over the surface conjunctiva for about 2-3 mins Graft was smoothed on to the scleral surface for 2-3 minutes with iris repositors. Speculum was removed carefully taking care not to disturb the graft and eye was patched for 24 hours. Post-operatively, topical antibiotic drops were given 4 times a day for 2 weeks, and topical steroid drops were given 6 times a day to be tapered over 6 weeks. Post-operative follow-ups were done on 1st post op day, 1 week, 2 weeks, 4 weeks, 1 month, and once every 3 months subsequently.

Results

22 (73.33%) males and 8 (27%) females were included in the study. Mean age of the patients was 43.88 years (range 19-66 years). Pterygium was Grade

Table 1: Early operative findings

	No of Patients	Percentage
Watering and Lid Edema	14	47%
Graft Edema and Inflammation	12	40%
Dellen Formation	1	3.3%
Retraction of Limbal Edge	2	3.3%

1 in 9 (30%) eyes, grade 2 in 10 (33.3%) and Grade 3 in 11(36.6%) eyes. No significant intra-operative complications were encountered. Average surgical time was 12.8 minutes. Post-operative discomfort in

the form of watering and lid edema was observed in 14 (47%) patients which resolved in 2 weeks' time. Recurrence of the graft was seen in 1 eye (3.3%). Graft

Table 2: Late operative findings

	No of Patients	Percentage
Recurrence of Graft	1%	3.3%
Adherence of the Graft	29	99.21%

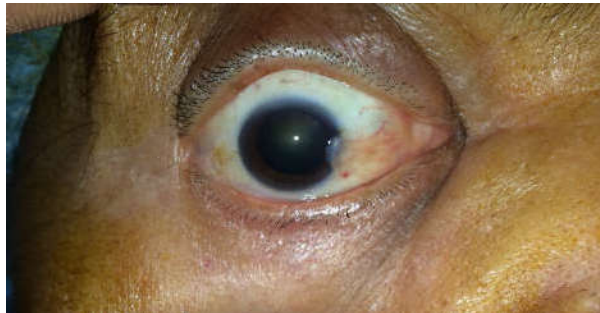


Photo 1: Pre operative

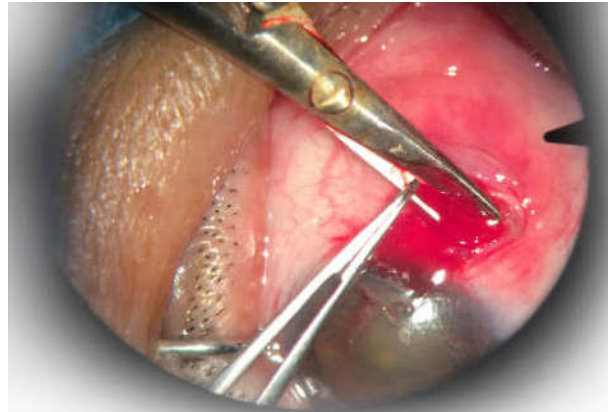


Photo 4: Removal of sub-conjunctival Fibro vascular tissue

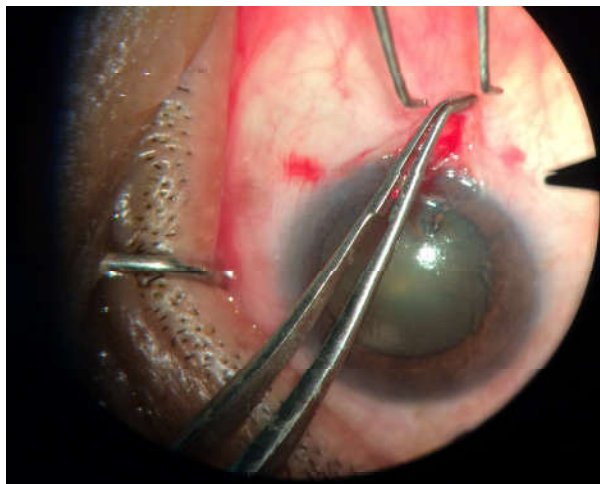


Photo 2: Pterygium head removal

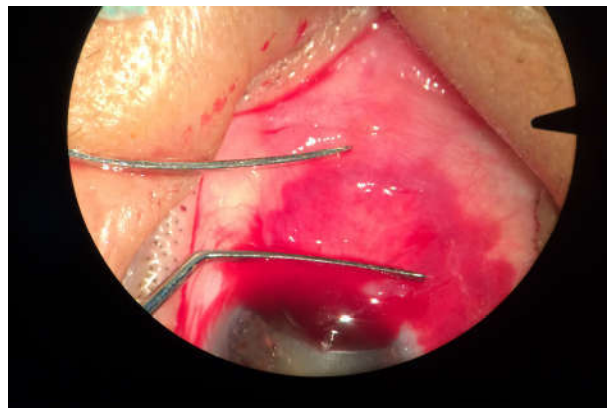


Photo 5: Reposition of surface conjunctiva

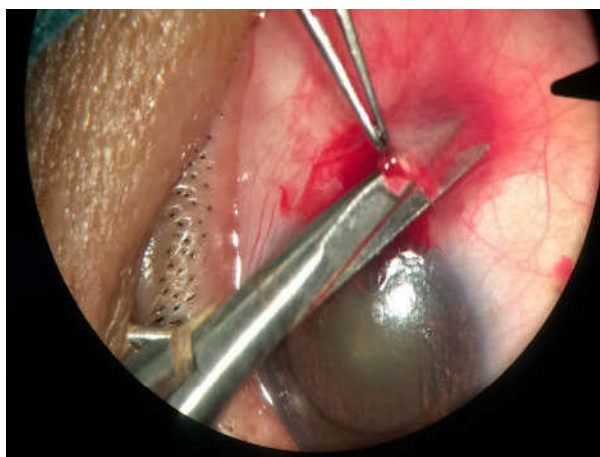


Photo 3: Pterygium dissection

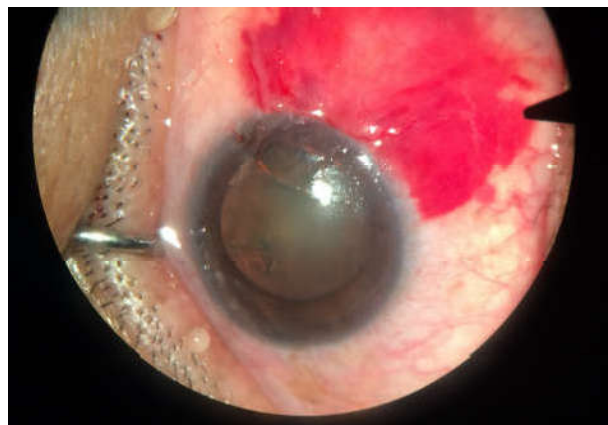


Photo 6: After reposition of surface conjunctiva

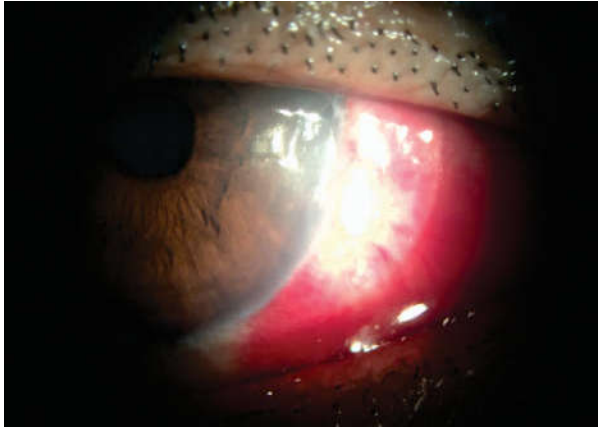


Photo 7: Post op day 1

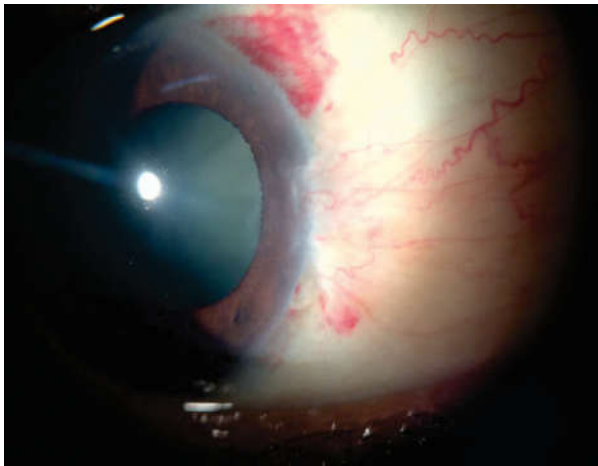


Photo 8:

edema and inflammation was seen in 12 (40%) eyes, subsided in 3-4 weeks with routine post-op treatment. Dellen formation was seen in 1 (3.3%) eye at 2nd week post-operative review which resolved on treatment with intense lubrication along with routine post-operative regime. Retraction of the limbal edge of the graft was seen in 2 (6.6%) eyes. All patients were happy regarding the cosmesis.

Discussion

Recurrence after successful removal of pterygium is undesirable. Despite the surgical options with their adjuvant procedures, that one satisfactory method of removing pterygium, which has minimal complications and a very low recurrence rate, that can deal with any form or grade of pterygium has not yet been identified. A recent detailed review on the treatment of pterygium revealed that, despite the variable success rates reported in literature, conjunctival limbal autograft remains the safest

technique and offers the lowest rate of recurrence in the management of primary pterygium [10,12]. Though technically more demanding, authors like Kenyon et al, Koch et al insisted on the inclusion of limbal tissue in the graft to reduce the recurrence [8,11]. Superior conjunctiva is preferred for the grafting due to reasons like more conjunctival graft is available, The upper lid protects the bare sclera area left behind and also due to cosmetic reasons. However, it has a disadvantage that the thin reepithelized area cannot be used for filtration site for future filtration surgeries. We have also found it difficult to make a superior incision during cataract surgery as the wound is exposed due to lack of superior conjunctiva. Also in cases of large pterygium or double headed pterygium only a superior conjunctival grafting would not suffice. In these cases both the surface conjunctiva of the pterygium and the superior conjunctiva may be used. In this study we used the same surface conjunctiva after thorough dissection of the underlying fibrovascular tissue. The results found were similar to a superior conjunctival grafting. The limbal tissue was not included in the graft. This surgery is also technically more easier and less time consuming the average time taken for the surgery was about 12.8mins. There is also no complications like graft loss which is present with pterygium excision and grafting. The graft is placed using blood autografting. Pterygium recurrence occurred in 1 (3.3%) patient in our study. Recurrence was observed in the fourth post-operative month, in a 32 year old male who was operated for Grade 2 pterygium. Recurrence rate of our study is consistent with the reported recurrence rate of conjunctival-limbal autografting which ranges from 0-15%. 13. Graft adherence at 4 weeks postoperative period i.e. success of this procedure, was seen in 29 (99.218%) eyes. Graft retraction at the limbal edge occurred in 2 (5.468%) cases. These were sutured at the limbus with 1 or 2 sutures the next day. However the graft did not adhere in one case after 2 wks. Good adherence occurred in the rest of cases with good cosmesis. Our study suggests that surface conjunctival autograft with pterygium dissection adheres to the surgical bed freely, without the aid of glue and sutures. It's recurrence rate is comparable with superior limbal autografting techniques.

Conclusion

Pterygium dissection with surface conjunctival grafting is an excellent option for treating primary pterygia. It is technically simple and helps in maintaining a virgin superior bulbar conjunctiva

which may be required for future glaucoma surgery.

References

1. Demartini DR, Vastine DW. Pterygium In: Abbott RL, editor. Surgical intervention in Corneal and External diseases. Orlando, USA: Grune and Straton; 1987. 141.
2. Asokan R, Venkatasubbu RS, Velumuri L, Lingam V, George R Prevalence and associated factors for pterygium and pinguecula in a South-Indian population. *Ophthalmic Physiol Opt.* 2012 Jan;32 (1):39-44.
3. Dushku N, Reid TW. Immunohistochemical evidence that human pterygia originate from an invasion of vimentin-expressing altered limbal epithelial basal cells. *Curr Eye Res* 1994;13:473-81.
4. Luthra R, Nemesure B, Wu S, Xie S, Leske M: Frequency and risk factors for pterygium in the Barbados Eye Study. *Arch Ophthalmol* 2001;119: 1827-1832.
5. Juan Camilo Sánchez-Thorinan B, Guillermo Rochab, Julie B Yelinb. Meta-analysis on the recurrence rates after bare sclera resection with and without mitomycin C use and conjunctival autograft placement in surgery for primary pterygium *Br J Ophthalmol* 1998;82:661-665.
6. Abraham A Solomon, MD, Renato T.F A Pires, MD, Scheffer C.G A Tseng, MD, PhD. Amniotic membrane transplantation after extensive removal of primary and recurrent pterygia. *Ophthalmology* 2001;108(3): 449-460.
7. Koch JM, Mellin JB, Wauble TN. The pterygium - Autologous conjunctiva - limbus transplantation as treatment. *Ophthalmology* 1992;89:143-46.
8. Lawrence WA Hirst, MBBS, MD MPH, DO, FRACO, FRACS. The treatment of pterygiuma. *Survey of Ophthalmology* 2003;48(2):145-180.
9. S Srinivasan, M Dollin, P McAllum, Y Berger, D S Rootman, A R Slomovic. Fibrin glue versus sutures for attaching the conjunctival autograft in pterygium surgery: a prospective observer masked clinical trial *Br J Ophthalmol* 2009.p.93.
10. Kenyon KR, Wagoner MD, Hettinger ME. Conjunctival autograft transplantation for advanced and recurrent pterygium. *Ophthalmology* 1985;92:1461-70.
11. Srinivas K Rao, T Lekha, Bickol N Mukesh, G Sitalakshmi, Prema Padmanabhan Conjunctival-Limbal autografts for primary and recurrent Pterygia: Technique and results *IJO* 1998;46(4): 203-209.
12. Du Z, L Liang D, Nie A Limbal epithelial autograft transplantation in treatment of pterygium *Chin J Ophthalmol* 2002;38:351-54.