

## A study of recurrence of pterygium; following pterygium excision with conjunctival autograft

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### ABSTRACT

**Aim:** To study the recurrence rate after pterygium excision with conjunctival autograft for a period of 18 months. After surgery, patients will be followed up monthly for a period of 6 months to look for recurrence of pterygium. **Material and Methods:** It is a prospective study conducted at Department of Ophthalmology in Out Patient Department of Medciti Medical College Hospital, for a period of 18 months from November 2011 to June 2013. Total 50 patients were operated of which 3 were recurrent pterygium. All patients were in age group 30 to 60 and above. **Results:** Highest prevalence of pterygium was seen in age group of 40-49 years 16 eyes (32%). Their is high incidence in outdoor patients i.e., 80%, indoor 20%. All the pterygium were nasally located with mean corneal encroachment of 3x3 mm. Right eye 56%, left eye 44%. During the follow-up period of this study, progressive pterygium recurred in 3 patients. The average duration of recurrence was 5.3months. The mean age of the patients with recurrence was 43.3 years. **Conclusion:** Autogenous conjunctival grafting is a safe, uncomplicated, quick procedure with low recurrence rate. It is with fewer and no sight threatening complications, Offers anatomical and physiological restoration of ocular surface, Simple procedure not requiring additional surgical skill or Instrumentation, Cost effective and does not require any special post operative care.

**Keywords:** Conjunctival autograft, Primary pterygium, Recurrent pterygium

### Introduction

Pterygium is a fibrovascular, wing shaped encroachment of the conjunctiva on to the cornea[1]. It is common worldwide but is particularly prevalent in tropical and sub tropical areas. Since the days of Susruta, the world's first ophthalmic surgeon who recognized the pterygia, disturbing both the patient because of their unsightly appearance and the surgeon also by their tendency to recur. Its incidence varies across geographical sites. The prevalence rates of pterygia range from 0.7 to 31% among different populations and are also influenced by age, race and exposure to solar radiations.

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Pterygium is found in the sunny, hot, dusty regions of the world, mostly between the Latitude of 37° North and South of the Equator. The pterygium belt extends around the world between latitudes 35-degree north and 35 degree south of the equator.[2] most of the cases of pterygium occur, where the temperature is more than 30°C. People who work in agricultural fields, laborers etc., i.e outdoor occupations. Working in dry and dusty place is the cause of pterygium. A number of hypotheses have been approved to its aetiology[3]. Now, it is believed that Pterygium most likely due to growth disorder characterized by conjunctivalisation of the cornea could be due to localized ultraviolet stimulated damage to the limbal stem cells [4]. Destructive Pterygial fibroblasts is one of the reason responsible for corneal invasion. The excision of a pterygium with no added therapy (Bare sclera technique) was widely practiced because it was believed to be safe and simple. However it became apparent that the recurrence rate was unacceptably high ranging from 32% to 88%. Several methods were implemented with the aim of improving the success

rates, among them conjunctival autograft was one of the recent recommended techniques. This study concerns itself with a clinical study of pterygium excision with conjunctival autograft in order to determine: The safety of the procedure in terms of complications. The success rate of the procedure in terms of recurrence

### Materials and methods

Study was carried out on 50 Eyes from November 2011 to June 2013 (18 months). After surgery, patients will be followed up monthly for a period of 6 months to look for recurrence. Patients of age between 30-60 yrs presenting, with pterygium, to Ophthalmology out patient Department of Mediciiti Medical College Hospital were taken into our study.

<b>Grade 1</b>	<b>Up to ¼ the corneal diameter (&lt;3mm)</b>
<b>Grade 2</b>	<b>&gt; ¼- ½ the corneal diameter (3-6mm)</b>
<b>Grade 3</b>	<b>Extending beyond the visual axis(&gt;6mm)</b>

Health of the conjunctiva at harvest site and any associated corneal diseases were noted. All patients were evaluated to rule out Diabetes mellitus, hypertension. All patients underwent IOP measurement and lacrimal passage syringing prior to surgery. A written informed consent explaining the complications and possibility of recurrence was obtained from all patients.

Patients were started on

- Ciprofloxacin eye drops 0.3% 6th hourly in the eye to be operated, one day prior to surgery.
- Injection xylocaine 2% test dose was given subcutaneously to look for any signs of sensitivity.

All Patients underwent pterygium excision with conjunctival auto grafting in the following manner.

### Surgical procedure

- Peribulbar anesthesia was given with 2% xylocaine and 0.5% bupivacaine.
- The surgical field was painted with Betadine and draped with sterile drapes.
- Universal eye speculum was used to separate the lids and expose the surgical field.
- The head of the pterygium was grasped with a fine-toothed forceps and the head was dissected off from the cornea with a crescent blade up to the limbus.
- The body of the pterygium was dissected and excised using Westcott's scissors.

**Inclusion criteria:** All cases of operable pterygium were taken up for surgery and studied .Only patients with primary pterygium were included in the study.

**Exclusion criteria:** Recurrent Pterygium, any previous ocular surgery, previous ocular trauma, age below 30 yrs and beyond 60 yrs or any existing ocular disease. All patients included in the study underwent the following examination: Visual acuity testing, Refraction and best corrected vision, Slit lamp biomicroscopic examination was done for all patients and following were noted: Location of the pterygium, Progressive or non progressive, Extent of the pterygium encroachment onto the cornea was estimated and classified according to understated classification.

- The excised area included a 1mm border beyond the edges of the excised head at the limbus.
- The globe was turned inferiorly and lignocaine 2% was injected subconjunctivally in the supero-temporal quadrant to form a bleb and separate conjunctiva from the Tenon's Capsule.
- Westcott's scissors was used to cut a conjunctival flap of the exact size of the receiving scleral bed measured using Castroviejo's calipers.
- The exact limbal orientation of the conjunctival graft was maintained and shifted to the receiving bed.
- The donor site was covered by pulling the superior fornicial conjunctiva and anchoring it to the limbal episcleral tissue with one 10-0 nylon suture.
- The graft was sutured using 10/0 nylon interrupted sutures, with the bites incorporating the episclera in some cases.
- The dissected area of the cornea was smoothed out by scraping with no. 15 BP blade.

Injection Gentamycin was given to the inferior fornix at the end of the procedure and the eye was closed and padded. Post-operatively the patients were evaluated for Visual acuity, Condition of the cornea (amount of opacity – nebular, macular, leucoma), Condition of the graft (retraction, chemosis, haemorrhage, congestion), Condition of the donor site. Post-operatively the patients were started on topical antibiotic-steroid

combination eye drops (Moxiblu-D eye drops) 8 times a day and tear substitutes (Moisol eye drops) 4 times a day. The antibiotic drops were stopped after a period of 2 weeks and tapering doses of steroids, tear substitutes were continued for 1 month. Any retained sutures were removed after 1 month. Patients were then evaluated with respect to visual acuity, and presence or absence

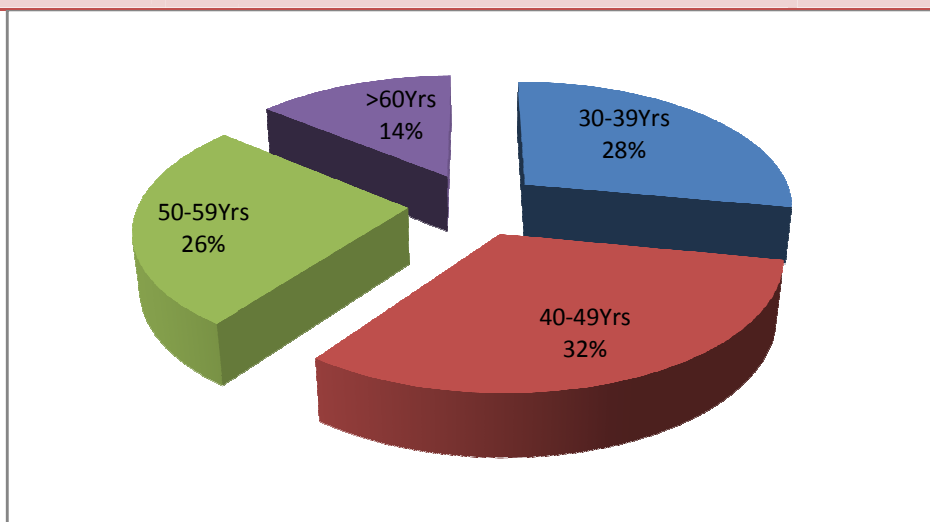
of recurrence and complications at 1 week, 1 month, 2 months, 4 months and 6 months. Recurrence was considered as encroachment of the cornea by vascularization more than 1.5mm along with presence of conjunctival drag. Vascularization without conjunctival drag was not considered as recurrence

## Results

Out of 50 patients, 16 (32%) were male, 34 (68%) were female.

**Table -1: Age distribution in present study**

Age(in Yrs)	Total number	Mean $\pm$ SD	Percentage (%)
30-39	14	35.2 $\pm$ 2.11	28%
40-49	16	42.8 $\pm$ 2.18	32%
50-59	13	53 $\pm$ 2.97	26%
>60	7	63.32 $\pm$ 4.41	14%
<b>Total</b>	<b>50</b>	<b>46.56<math>\pm</math>10.78</b>	



**Figure-1: Pie diagram showing age distribution**

Out of 50 patients, 14 eyes(28%) belonged to 30-39 yrs age group, 16 eyes (32%) belonged to 40-49 yrs age group, 13 eyes(26%) belonged to 50-59 yrs age group, 7 eyes (14%) belonged to  $\geq$  60 yrs age group.

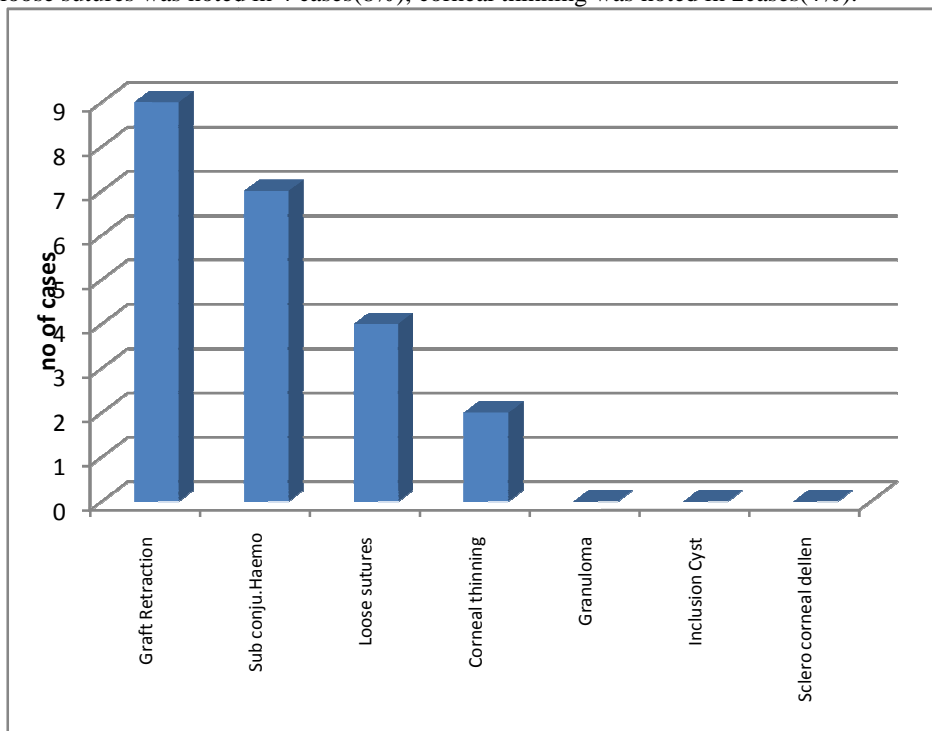
**Table-2: Patient characteristics**

Characteristic		Number of patients	Percentage (%)
Occupation	Outdoor	34	68%
	Indoor	16	32%
Grade of Pterygium	Grade-1	10	20%
	Grade-2	32	64%
	Grade-3	8	16%
Pterygium type	Progressive	48	96%
	Non progressive	2	4%
Chief complaints	Fleshy mass	45	90%
	Redness	5	5%
Operated eye	Right	28	56%
	Left	22	44%

**Table -3: Post-operative Complications**

Complications	Total	Percentage (%)
Graft Retraction	9	18
Sub conjunctival Hemorrhage	7	14
Loose sutures	4	8
Corneal thinning	2	4
Granuloma	0	0
Inclusion Cyst	0	0
Sclero corneal dellen	0	0

Among 50 operated cases, graft retraction was noted in 9 cases(18%),subconjunctival haemorrhage was noted in 7 cases(14%), loose sutures was noted in 4 cases(8%), corneal thinning was noted in 2cases(4%).



**Figure-2: Diagram showing Post operative Complications**



**Right eye post operative graft retraction**

**Right eye operative loose suture**

**Figure-3: Showing post operative complications**

**Table-4: Recurrence of Pterygium**

Recurrence of Pterygium		Total
No. of Recurrence		3
Gender	Male	0
	Female	3
Mean Age(in years) of Recurrence		43.33
Mean time (in months) of Recurrence		5.3
Progressive		3
Non Progressive		0
Indoor activities		0
outdoor activities		3

Out of 50 operated cases for pterygium excision with autograft, 3 cases had recurrence. All the recurrences occurred in progressive type of pterygium and in outdoor activities

**Right eye pre operative****post operative recurrence****Figure-4: Showing recurrence of pterygium in right eye**

## Discussion

Total 50 patients were included in our study. They underwent pterygium excision with Conjunctival autograft technique. In our study, number of males were 16 (32%) and females were 34 (68%). It was seen that, females in our study in addition to doing housework also work in fields and get exposed to UV rays dust and wind. In a study done by Riordan-Eva *et al* (1993)<sup>5</sup>, 66 cases (61%) were males and 42 cases (38.89%) were females. In our study, the patients were in the age group between 30 - 60 years. Highest numbers of patients were in the age group 40-49 years (32 %). Lowest numbers of cases were in the age group  $\geq 60$  (14 %). Mean age was  $46.56 \pm 10.78$  years ( Table-1). In the study done by Riordan-Eva *et al* (1995) [5], age of patients ranged from 25-77 years. Mean age in that study was 47 years. In another study done by Philip Chen *et al* (1995)[6], ages of patients ranged from 23-79 years. Mean age in that study was 45.6 years. These two studies correlate with the present

study. In our study, 34 cases (68%) of pterygium were seen in patients with outdoor activities and 16 cases (32%) of pterygium were seen in patients with indoor activities. Recurrence was seen in 3 patients with outdoor activities (20%). In our study, 32 cases (64%) of pterygium were grade II eyes, 10 cases (20 %) of pterygium were grade I and 8 cases (16%) were grade III. In our study all pterygia were nasally located with a pre-operative mean corneal encroachment of 3x3mm (Table-2). In a study by Donald Tan *et al* (1997), 90% of pterygium were located nasally[7]. In another study by Philip Chen *et al* (1995)<sup>30</sup>, 61 cases (95.31%) were nasally located, 2 cases (3.12%) were temporal and 1 cases (1.56%) were both nasal and temporal pterygium. In our study, 48 cases (96 %) were progressive and 20 cases (4%) were non progressive pterygium (Table-2). In a study by Donald Tan *et al* (1997), 124 cases (78.34%) were progressive pterygium and 34 cases (21.66%) were non progressive

pterygia[7]. In our study the most frequent complaint was fleshy growth, followed by redness. In our study, 28 cases (56%) of pterygium were right eyes and 22 cases (44 %) of pterygium were left eyes. All the cases were taken up for surgery. In a study by Riordan-Eva *et al* (1993)<sup>5</sup>, 65 cases (60.19%) operated were right eye and 52 cases (48.15%) operated were left eye. In the present study we did not encounter any intra-operative complication during surgery. All the surgeries were done under local anesthesia and minor post – operative complications as 4 cases of loose sutures were seen, which did not require any active intervention, 9 cases of graft retraction were seen due to use of a small graft of 5x5mm size, 7 cases of subconjunctival hemorrhage were seen, which did not require any active intervention and also 2 cases of corneal thinning was seen. In our study, the overall complication rate was 18 % (Table-3) In our study we did not encounter any granuloma, epithelial inclusion cyst, sclerocorneal dellen. In a study by Chen P, *et al* (1995), 1 case (5.88%) of granuloma and 1 case of epithelial inclusion cyst (5.88%) seen in Bare Sclera group and 1 case (4.35%) of loose suture and 1 case (4.35%) of dellen seen in conjunctival autograft group[6]. In a study by Chee SP, *et al* (2000), 4 cases (2.88%) developed granuloma at donor conjunctival site and 3 patients had (2.16%) conjunctival cyst on the graft, 1 case (0.72%) developed scleral thinning in Conjunctival Autograft group[8]. In a study by Jap A, *et al* (1999), pigmentary changes were noted in 6 grafts (12%) following conjunctival rotation autograft. In a study by Gris O, *et al* (2000), one case of graft retraction was seen[9-10]. In our study pterygium recurred in 3 cases (6 %) out of 50 cases. In the present study the average age of recurrence was 43.3 years. The average time of recurrence was 5.3 months after surgery. All the 3 recurrent cases were females who were involved in outdoor activities. Recurrence was common in progressive pterygium. The average postoperative corneal encroachment of recurrent pterygium was 3mm x 3.7mm. It is seen that younger age appears to be a risk factor for recurrence. Hence patients age should be taken into consideration before taking up for surgery and majority of recurrence was noted in female patients.(Table-4). In a study by Lewallen *et al* (1998) , patients younger than 37 years showed a higher risk of pterygium recurrence. In another study by Sharma A, *et al* (2000), all cases of recurrence occurred in patients below 40 years of age[11-12]. In another study by Chen Philip *et al* (1995), recurrent pterygia had a mean corneal encroachment of 3mm x 3.7mm[6]. Conjunctival autograft technique has a recurrence rate of 5% to 39%. The wide range of recurrence rates reported has been attributed to various study difference

including methodology (prospective/retrospective), patient characteristics (race, age); nature of pterygium (advance, recurrent, progressive), geographic area of domicile; number of patients studied, definition of recurrence, duration of follow up, loss to follow up, surgical technique and surgeons experience. On reviewing published literature we feel surgical technique could probably be the single most factor influencing recurrence. The meticulousness with which the limbal tissue is included in the autograft in our opinion determines the success of the procedure. Authors like Guler, Prabhaswat, Mutlu and Allan Bruce have specifically described the inclusion of limbal tissue in the graft and have reported low recurrence rate[13-16]. Conjunctival autograft technique is a safe and effective technique with problems including greater surgical skill, use of operating microscope, with extended operating time, surgical disturbance of superior bulbar conjunctiva. Concern exists about the outcome of future filtering surgery in such eyes, patient discomfort from multiple suture knots and need for conjunctival donor tissue that may not be available in eyes with both nasal and temporal pterygia. The recent use of biologic adhesives to fixate the autograft in place simplifies this procedure.

### Conclusion

Conjunctival autografting is a safe and effective procedure in the management of pterygium. The advantages of Conjunctival autografting over other modalities of treatments as low recurrence, Fewer and no sight threatening complications, offers anatomical and physiological restoration of ocular surface, simple procedure not requiring additional surgical skill or instrumentation, cost effective and also does not require any special post operative care.

### References

1. Jack J Kanski, Brad Bowling, Clinical Ophthalmology a systematic approach, 7th Edition , Elsevier; 2011.
2. Cameron ME: Pterygium throughout the world. Springfield, Ill: Charles C. Thomas, 1965.
3. Hiwt L. Distribution, risk factors and epidemiology. In Taylor HR (ed) Pterygium. Vol 2. The Hague, Netherlands: Kugler Publications; 2000. pp. 15–28.
4. 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.

5. Riordan –Eva P, Kielhorn I, Ficker LA. Conjunctival autografting in the surgical management of pterygium Eye 1993; 7: 634-638.
6. Chen Philip Reginald G Ariyasu, venu kaza. A randomizes trial comparing mitomycin C and conjunctival autograft after excision of primary pterygium. American Journal of Ophthalmology 1995; 120:151-160.
7. Tan DH, Soon-Phaik Chee, Keith BG Dear. Effect of pterygium morphology on pterygium recurrence in a controlled trial comparing conjunctival autografting with Bare sclera excision. Arch Ophthalmology 1997; 115: 1235-1240.
8. Ti SE, Chee SP. Analysis of variation in success rates in conjunctival autografting for primary and recurrent pterygium. British Journal of Ophthalmology 2000; 84: 385-389.
9. Jap A, Chan C, Lim L. Conjunctival rotation autograft for pterygium. An alternative to conjunctival autografting. Ophthalmology 1999 ; 106 (1): 67-71
10. Gris O, Guell JL. Limbal-conjunctival autograf transplantation for the treatment of recurrent pterygium. Ophthalmology 2000 ; 107(2):270-3.
11. Lewallen S. A randomized trial of conjunctival autografting for pterygium in the tropics. Ophthalmology 1989 ; 96 (11): 1612-4.
12. Sharma A, Gupta A. Low-dose intraoperative mitomycin-c versus conjunctival autograft in primary pterygium surgery: Longterm follow-up Ophthalmic Surg .Lasers 2000 July-August; 31(4):301-7.
13. Guler M, Sobaci G. Limbal conjunctival autograft transplantation in cases with recurrent pterygium. Acta Ophthalmol (Copenh) 1994 Dec; 72 (6): 721-6.
14. Prabhasawat Pinnita; Keith Barton. Comparison of conjunctival autografts, Amniotic membrane grafts, and primary closure for pterygium excision. Ophthalmology 1997; 104: 974-985
15. Mutlu FM, Sobaci G. A comparative study of recurrent pterygium surgery: limbal conjunctival autograft transplantation versus Mitomycin C with conjunctival flap.Ophthalmology 1999 April; 106 (4): 817-21.
16. Allan Bruce DS, Perry Short. Pterygium excision with conjunctival autografting: an effective and safe technique. British Journal of Ophthalmology 1993;77:698-701.

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