

A STUDY OF MANAGEMENT OF PTERYGIUM: A COMPARATIVE STUDYTrimurthulu Bunga¹, Lakshmojinaidu Kotipalli²¹Assistant Professor, Department of Ophthalmology, Rangaraya Medical College, Kakinada.²Assistant Professor, Department of Ophthalmology, Rangaraya Medical College, Kakinada.**ABSTRACT****PURPOSE**

To study the results of various surgical techniques in the management of Pterygium.

METHODS

50 patients were selected for detailed study of Pterygium. Out of 290 cases only those willing to undergo surgery were taken up for the study.

RESULTS

The recurrence rate of Pterygium depends on length of Pterygium, type of Pterygium and age.

CONCLUSION

Progressive Pterygium in young patients are more prone for recurrence.

KEYWORDS

Mitomycin C, Recurrence, Surgical Management, 5-Fluorouracil, Pterygium.

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INTRODUCTION: Pterygium has an unknown origin and pathogenesis. It is a chronic condition characterised by the encroachment of fleshy triangular fold of conjunctiva encroaching the cornea. Most common occurrence is in low socioeconomic people who work in sunny outdoors and in lower socioeconomic strata of the society. Many theories have been advanced to the causation of Pterygium including chronic conjunctivitis due to infection, chronic irritation due to wind and dust, ultraviolet and infrared radiations.

AIMS AND OBJECTIVES OF STUDY:

- The aim of the study is to study the results of various surgical techniques in the management of Pterygium.
- The present study helps to know the outcome of various surgical techniques and to choose the best surgical technique.

MATERIALS AND METHODS: The material for the present study constituted of patients who came for the exact problem of Pterygium or any other ocular symptoms to the Outpatient Department of Ophthalmology, Government General Hospital, Kakinada, Andhra Pradesh. 50 patients were selected for detailed study out of 290 cases during the period August 2013 to November 2015. Out of 56 eyes from 50 cases selected for the present study, excision of Pterygium with Bare sclera technique was done in 20 cases, excision of Pterygium with free autologous conjunctival grafting was done in 20 cases.

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Intraoperative Mitomycin C was used in 3 cases, limbal conjunctival autografting was done in 8 cases, sliding closure was done in 3 cases, amniotic membrane transplantation was done in 2 cases.

Inclusion Criteria:

1. All types of Pterygium Patients who were diagnosed with pterygium met the criteria for surgical treatment.
2. Patients with Pterygium who signed the informed consent to enrol into the study.

Exclusion Criteria:

Membranous Pterygium, congested Pterygium.

OBSERVATIONS: After careful study of 50 patients with Pterygium who attended the Outpatient Department of Ophthalmology, Government General Hospital, Kakinada, some observations were made based upon the following factors.

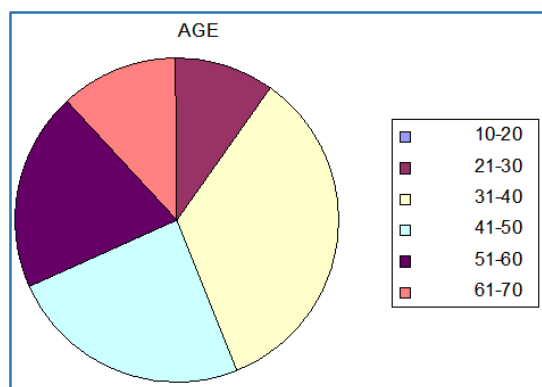
1. Age Distribution.
2. Sex.
3. Occupation & Wearing Spectacles.
4. Presenting Complaints.
5. Position of Pterygium.
6. Pterygium Length.
7. Surgical Procedure Performed.
8. Visual Improvement after Surgery.
9. Pterygium Length and Postoperative Astigmatism.
10. Complications.
11. Recurrence.

In the following tabulations, a comparative as well as generalised study was made & charts and pie-charts were plotted.

1. Age: Pterygium is seen more often in certain age groups. As such age is an important factor in relation to its frequency. The following table shows the incidence of Pterygium in different age groups.

Age in Years	No. of Patients	Percentage
10-20	0	0%
21-30	5	10%
31-40	17	34%
41-50	12	24%
51-60	10	20%
61-70	6	12%
Total	50	100%

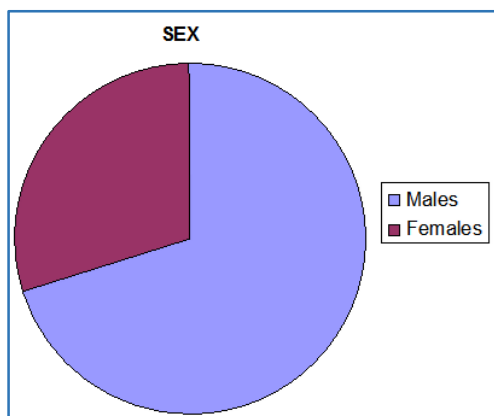
The observations from the above table suggest that the incidence of Pterygium is higher in 3rd & 4th decades i.e. 34% & 24% respectively. 78% of cases were present between 30-60 years. The incidence is lower in 6th decade which is 12%. Cases observed below 20 years is 0%. 3rd & 4th decade persons are more active in outdoor work, so more exposure to the solar radiation. The lower incidence after 6th decade might be because of inability of work & confined to home.



2. Sex: Gender Ratio As Shown in the Following Table.

Sex	No. of Patients	Percentage
Males	35	70%
Females	15	30%

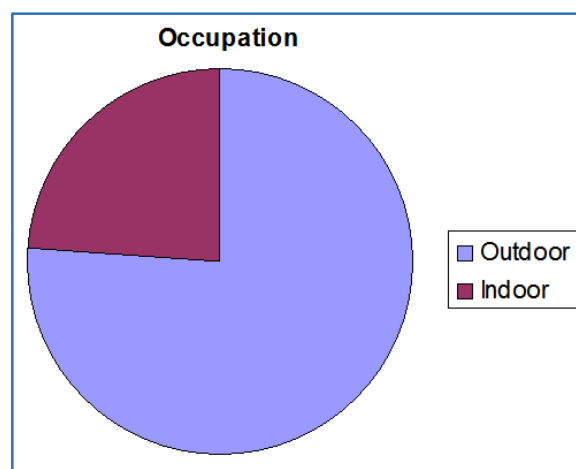
This table shows 30% of the affected patients were females & 70% were males. Male to female ratio is 2.3:1.



3. Occupational Incidence & Wearing Spectacles: Occupation:

Occupation	No. Of Patients	Percentage
Outdoor	38	76%
Indoor	12	24%
Total	50	100%

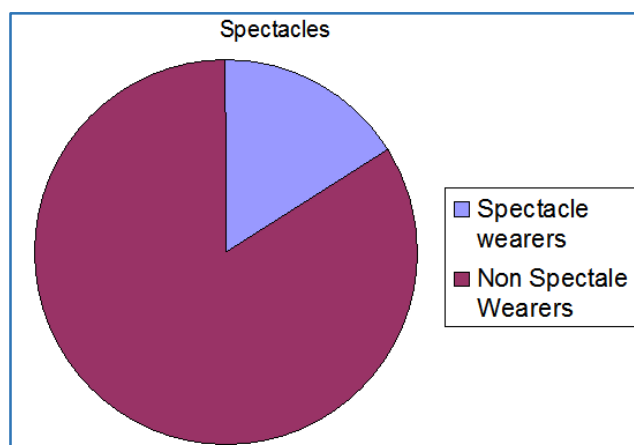
Occupation plays significant role in the aetiopathogenesis of Pterygium. Housewives & persons restricted to home were grouped as indoor. It is observed from the above table that 76% of the affected patients were in outdoor group, who are more exposed to hot, sunny & dusty climate. 24% of patients were in indoor group.



Spectacles:

Type of Patients	No. of Patients	Percentage
Spectacle Wearers	8	16%
Non-Spectacle Wearers	42	84%
Total	50	100%

Those who wore spectacles for at least one year prior to their presentation with the Pterygium at the time of study were considered as spectacle wearers.



4. Presenting Complaints:

Symptoms	No. of Patients	Percentage
Foreign Body Sensation	59	20%
Mass Growth	29	10%
Watering	50	17%
Defective Vision	56	19%
Burning Sensation	2	0.68%
Redness	30	10%
Itching	24	8%

The most common complaints at the initial presentation were foreign body sensation in 20%, Mass growth 10%, Watering 17%, Defective vision 19%. Other complaints like Burning sensation, redness, & itching were 0.68%, 10% & 8% respectively.

5. Pterygium Location:

Location of Pterygium	No. of Eyes	Percentage
Nasal	54	96.4%
Temporal	2	3.5%

Out of 56 eyes from 50 patients examined, 54 (96.4%) presented with Nasal Pterygia & 2 (3.5%) presented with Temporal Pterygia.

6. Pterygium Length:

Size/Extension of Pterygium on to Cornea in mm	No. of Pterygia	Percentage
<2 mm (Grade I)	10	17%
2-3 mm (Grade II)	44	78.5%
>3 mm (Grade III)	2	3.5%

The size of the Pterygium most commonly seen is Grade II (2.1-3 mm).

7. Surgical Procedure Performed:

Surgical Procedure	No. of Pterygia	Percentage
Bare Sclera Technique	20	35%
Free Conjunctival Autografting	20	35%
Limbal Conjunctival Autografting	8	14.2%
Sliding Closure of Conjunctiva	3	5.3%
Intraoperative Mitomycin C Application	3	5.3%
Amniotic Membrane Transplantation	2	3.5%

Pterygium excision with free conjunctival autograft was the commonest procedure performed in 20 (35%) out of 56 Pterygia, Limbal autografting was performed in 8 (14.2%), Sliding closure was performed in 3 cases (5.3%). Bare sclera technique was performed in 20 cases (35%). In 3 eyes (5.3%), intraoperative application of Mitomycin-C was done. Amniotic membrane transplantation was done in 2 (3.5%) eyes.

8. Recurrence:

Surgical Procedure	No. of Recurrences			%
	1 Month	3 Months	6 Months	
Bare Sclera Technique	2	3	4	45%
Conjunctival Free Autografting	1	1	1	15%
Limbal Conjunctival Autografting	-	-	1	12.5%
Sliding Closure of Conjunctiva	-	-	-	-
Intraoperative Mitomycin - C Application	-	-	-	-
Amniotic Membrane Transplantation	-	-	-	-

Total Number of Recurrence	Percentage
13	22.1%

13 (22.1%) out of 56 eyes included in the study showed recurrence. 9 (45%) out of 13 recurrences are of Bare sclera technique. 2 cases showed recurrence after 1 month, 3 after 3 months, and 4 cases after 6 months. 3 (15%) out of the 13 are of conjunctival free autografting technique, 1 among them was after 1 month, another 2 cases after 3 & 6 months. 1 case (12.5%) out of 13 showed recurrence of limbal conjunctival autografting after 6 months.

9. Visual Improvement Following Pterygium Surgery:

Visual Improvement	No. of Eyes	Percentage
> 3-line	5	8.9%
3-line improvement	6	10.7%
2-line improvement	11	19.6%
1-line improvement	15	26.7%
No improvement	19	33.9%

Significant visual acuity improvement 2 Snellen's lines or more was seen in 22 eyes (39.2%), 1 line improvement was seen in 15 eyes (25.5%), no improvement was seen in 19 eyes (32.3%). Of the 19 eyes, 10 eyes had a preoperative visual acuity 6/6 better, 3 patients had macular grade corneal opacities following Pterygium surgery encroaching onto the visual axis (Grade III) & the remaining 6 patients had concurrent cataract accounting for no improvement in visual acuity.

10. Pterygium length - Preoperative, Postoperative Astigmatism:

Pterygium Length Encroaching Cornea	Preoperative Astigmatism	Postoperative Astigmatism	% Reduction
Grade I (<2 mm)	1.38 D	0.97 D	29.71%
Grade II (2-3 mm)	3.95 D	1.99 D	49.62%
Grade III (>3 mm)	5.63 D	3.25 D	42.27%

Percentage reduction of Pterygium induced Astigmatism was 29.71% for Grade I eyes, 49.62% for Grade II & 42.27% for Grade III cases.

11. Complications After Surgery:

Complications	No. of Eyes	Percentage
Donor Site Haemorrhage	4	7.1%
Subconjunctival Haemorrhage	3	5.3%
Subconjunctival Cyst	2	3.5%
Retraction of Graft	2	3.5%
Vascularisation of Cornea	2	3.5%

4 eyes (7.1%) showed donor site haemorrhage, 3 eyes (5.3%) showed subconjunctival haemorrhage beneath the graft in the immediate postoperative period. Both these conditions resolved spontaneously without sequelae by the first followup. The donor site was found to be epithelialised by the first followup. Subconjunctival cyst was noted in 2 eyes (3.5%) which resolved spontaneously. Graft retraction from the limbus was noted in 2 eyes (3.5%). Vascularisation up to 1.5 mm into the cornea without subconjunctival haemorrhage was noted in 2 eyes (3.5%) and didn't progress to recurrence during the followup period.

DISCUSSION: This study conducted between October 2013 to November 2015 included 56 eyes of 50 patients. In the forthcoming pages, the possible factors which play a role in relative frequency of Pterygium incidence have been discussed. The relative efficacy of the various surgical techniques has been discussed: Simple excision with Bare sclera technique, Free autologous conjunctival grafting,

Limbal Conjunctival autografting, Sliding graft, Mitomycin C application, & Amniotic membrane transplantation.

- Age:** Taking age into consideration, it is seen that 34% of the patients with Pterygium are in the age group of 31-40 years. 3rd & 4th Decade persons are more active in outdoor work, so more exposure to the solar radiation.^(1,2)
- Sex:** In this study, Male patients have higher incidence (70%) than the females (30%). But the individuals are involved in the same kind of occupation.
- Occupation:** It is obvious that 76% of the cases were employed in outdoors, most of their work was done outdoors, being exposed to ultraviolet rays.^(3,4) which results in Pterygium formation.
- Position of Pterygium:** The Pterygium in most of the cases were found to be Nasal. Out of the 56 Pterygia cases found in 50 patients, 54 were Nasal in position.⁽⁵⁾ and only two were temporal. The reasons for this Nasal affinity of pterygia are attributed to the following- sparseness of subconjunctival tissue, in the temporal region. Also it was thought that relatively the temporal region is exposed to lesser amount of ultraviolet radiations due to the greater amount of bowing of the outer 2/3 of the upper lid.
- Length of the Pterygium:** Preoperative and Postoperative Astigmatism.

The average preoperative astigmatism was 1.93D while the average postoperative astigmatism was 1.36D. There was a 0.57D (29.53%) reduction in Pterygium induced astigmatism. The percentage of reduction was greater for Grade II, Grade III Pterygium (49.62%) and (42.27%) respectively.^(6,7)

6. SURGICAL TECHNIQUES AND RECURRENCES

Sl. No	Surgical Techniques	Recurrence Rate
		Present Study
1.	Bare Sclera Technique	45%
2.	Free Conjunctival Autografting	15%
3.	Limbal Conjunctival Autografting	12.5%

After the surgery by various surgical techniques mentioned above along with intraoperative Mitomycin C, sliding closure of conjunctiva and Amniotic Membrane Transplantation, were followed for a period of 6 months. The recurrence rates among them are as below.

- Bare sclera Technique-9/20 (45%) has high recurrence rate.⁸
- Free Conjunctival Autografting-3/20 (15%).
- Limbal Conjunctival Autografting-1/8 (12.5%).

Other surgical techniques like Mitomycin C, sliding Closure and Amniotic Membrane Transplantation showed no recurrence.⁽⁹⁾ Conjunctival autograft and Mitomycin C can be performed for preventing Pterygium recurrence and can be considered as a preferred grafting procedure for primary Pterygium.⁽¹⁰⁾ Four cases out of 13 recurrences belong to Grade II showing that recurrence of Pterygium is also related to length of the Pterygium. This supports the fact that progressive Pterygia in young patients are more prone for recurrence. The following conclusions were drawn from this study.

CONCLUSION:

1. Pterygium was seen most commonly between the ages 20-49 years due to excessive exposure to solar radiation.
2. Pterygium was found more often in males in this study.
3. Pterygium was more common in people living in rural areas.
4. Individuals working outdoors have higher incidence of Pterygium.
5. Patients wearing spectacles were less prone to get Pterygium.
6. Nasal Pterygium is more often seen than temporal Pterygium.
7. Pterygium with 2-3 mm size is most commonly found.
8. Pterygium excision with conjunctival autografting is presently a viable surgical option for the treatment of Pterygium, in view of the good results obtained with respect to cosmetic results, visual acuity along with lower recurrence rates.
9. Bare sclera technique has high recurrence rate.
10. Thus, Pterygium excision with conjunctival grafting might finally provide the solution for the effective management of Pterygium.

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