



A STUDY TO EVALUATE POST SURGICAL EFFECTS OF PTERYGIUM EXCISION ON CORNEAL ASTIGMATISM

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ABSTRACT

Purpose: To study the post operative effects of surgical excision of pterygium on corneal astigmatism. **Material and methods:** This present study was carried out on 40 patients having pterygium, who underwent surgical excision with placement of limbal based autologous conjunctival graft. Visual acuity, refraction and kerometry were carried out on all patients' pre and post operatively. Data obtained was analysed statistically. **Results:** Pre-operatively mean astigmatism was 6.28 ± 4.19 D and this decreased significantly post-operatively to 1.98 ± 1.34 D at 6 weeks. **Conclusion:** A significant improvement of corneal astigmatism and best corrected visual acuity was observed after a meticulous pterygium surgery.

KEYWORDS : Pterygium, corneal astigmatism, visual acuity, conjunctival graft utilization

INTRODUCTION

Pterygium is a degenerative condition in which a wing shaped hyperplastic proliferative fibrovascular growth extending from bulbar conjunctiva invading onto the superficial layers of cornea is seen causing corneal distortion and significant change in corneal curvature leading to astigmatism.¹ Pterygium is of common occurrence amongst Indian population and its prevalence is around 22%. Various risk factors for development of pterygium can be ageing, sunlight (exposure to ultraviolet rays), dry eyes, dusty environment, genetics, immunology, occupational exposure to irritants, therefore more commonly encountered in outdoor workers.^{3,4,5} Patient present with complaints of ocular itching, foreign body sensation, dryness, watering, redness, blurring of vision (due to astigmatism induced by pterygium) and diplopia (due to restriction of ocular movements).⁶ Pterygium induced astigmatism can be due to many reasons; firstly it can be due to mechanical traction on cornea exerted by the pterygium and it leads to localised flattening, secondly, some amount of corneal flattening is caused by pooling of tear film at advancing head of pterygium.^{6,7} Effect on cornea can be evaluated by keratometry, corneal topography and refraction. The definitive treatment for pterygium is surgical excision with the placement of an autologous conjunctival graft. This prospective study was carried out to evaluate the post surgical effects of the pterygium excision on induced corneal astigmatism and improvement of visual status.

MATERIALS AND METHODS

The present study was carried out on forty patients having primary pterygium who presented in out-patient department of Ophthalmology, Government Medical College, Jammu from November, 20 to April, 21.

Inclusion Criteria:

1. Patients having primary pterygium encroaching over the cornea
2. Patients who gave consenta

Exclusion Criteria

1. Recurrent pterygium
2. History of ocular trauma or any ocular surgery
3. Contact Lens users
4. Pseudopterygium
5. Double headed pterygium
6. Any corneal scarring or corneal opacity

7. Any other corneal pathology
8. Patients having cataract, glaucoma, or any other organic ocular disease.

After obtaining the informed written consent from patients, a detailed examination was carried out. Best corrected visual acuity was recorded using Snellen's chart and a thorough slit lamp examination was carried out and size, laterality and position of pterygium were noted. Other possible causes of diminution of vision were ruled out. Keratometry was done, K1 and K2 values were noted and difference between them was calculated. Posterior segment examination was done using direct and indirect ophthalmoscope to rule out other potential cause of diminution of vision. Grading of pterygium was done as follows:

Table 1: Grading Of Pterygium

Type 1	0-2 mm
Type 2	2-4 mm
Type 3	>4 mm

All patients underwent pterygium excision, under all universal aseptic precautions. Topical anesthetic drops (proparacaine) were instilled, pterygium was excised and autologous conjunctival graft was placed using autologous serum technique. Patients were followed up routinely, visual acuity, refraction, keratometry were recorded at the end of six weeks. All the data was compiled and subjected to statistical analysis. Pre-operative and post-operative values were compared using a paired t-test and a p-value of <0.05 is considered significant.

RESULTS

In the current study 40 patients having pterygium were studied. Out of all patients 47.5% cases were in the age group of 30-40 years as shown in Table 2. Majority of subjects were males (70%) (Table 3). On the basis of position 92% of cases had nasal pterygium. In the present study pterygium was frequently encountered in right eye (55%) (Table 4). Table 6 depicts that maximum number of patients were having type 2 pterygium i.e 57.5%. The mean corneal astigmatism varied with the type of pterygium. Table 7 illustrates that astigmatism increases with increasing grade of pterygium. Mean astigmatism in type 1 pterygium was 3.64 ± 2.75 D which drastically reduced to 1.02 ± 1.67 D post operatively at 6 weeks. Similarly keratometric astigmatism in type 2 and type 3 pterygium also decreased to 2.62 ± 1.19 D & 2.81 ± 2.09 D from

5.75 ± 1.66 D & 7.83 ± 3.63 D respectively. The differences in these values were statistically significant (p < 0.001). Best corrected visual acuity improved in 21 eyes as shown in table 8.

Table 2: Age Distribution

AGE (YEARS)	NUMBER	PERCENTAGE (n=40)
20-30	3	7.5%
30-40	19	47.5%
40-50	10	25%
>50	8	20%

Table 3: Gender Distribution

GENDER	NUMBER	PERCENTAGE (n=40)
MALE	28	70%
FEMALE	12	30%

Table 4: Laterality

EYE	NUMBER	PERCENTAGE (n=40)
RIGHT	22	55%
LEFT	18	45%

Table 5: Nature Of Work

PATIENT	NUMBER	PERCENTAGE (n=40)
OUTDOOR WORKER	25	62.5%
INDOOR WORKER	15	37.5%

Table 6: Type Of Pterygium

GRADE	NUMBER	PERCENTAGE (n=40)
TYPE 1	11	27.5%
TYPE 2	23	57.5%
TYPE 3	6	15%

Table 7: Corneal Astigmatism

GRADE	MEAN PRE-OPERATIVE ASTIGMATISM	MEAN POST-OPERATIVE ASTIGMATISM
TYPE 1	3.64 +/- 2.75	1.02 +/- 1.67
TYPE 2	5.75 +/- 1.66	2.62 +/- 1.19
TYPE 3	7.83 +/- 3.63	2.81 +/- 2.09

Table 8: Best Corrected Visual Acuity

BCVA	TYPE 1		TYPE 2		TYPE 3	
	PRE OP	POST OP	PRE OP	POST OP	PRE OP	POST OP
3/60 – 5/60	0	0	6	2	5	2
6/60 – 6/24	9	4	12	4	1	3
>6/18	2	7	5	17	0	1

DISCUSSION

Besides being a cosmetic blemish, pterygium also leads to visual complaints by either inducing astigmatism or invading the visual axis.^{8,9} The exact pathophysiology of pterygium is still unknown, but various environmental risk factors are known. Out of which exposure to ultraviolet (UV) light rays is most widely emphasised. Cornea and conjunctiva absorb UV rays which lead to cellular damage and triggers fibrovascular proliferation.¹⁰ 62.5% of cases in our study were outdoor workers which is in concordance with this postulation. In the present study, substantial amount of relationship between size of pterygium and pre-operative astigmatism was observed. Similar results were noted by Stern and Lin.¹¹ We observed that pre-operative vision was more affected in patients having Type 2 and Type 3 pterygium and post operative visual improvement was more marked in type 2 pterygium patients. A study by Verma et al concluded that post operative visual acuity of patients having pterygium less than 2 mm from limbus was comparable to the preoperative visual status.¹² Various studies showed that pterygium excision reduces induced corneal astigmatism. Stern and Lin observed reduction in corneal astigmatism from 5.93D to 1.92 D following surgery.¹¹ Soriano et al also found corneal

astigmatism reduces after surgical excision of pterygium.⁸ Bajantri et al corroborated that larger pterygia have greater reduction in astigmatism post operatively.¹³ Present study have resemblant results with the previous studies

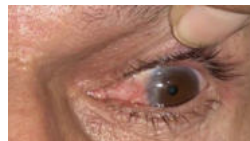


Photo 1: Pre-operative Type 2 pterygium



Photo 2: Post-operative at 6 weeks

CONCLUSION

The current study verifies that more the grade of pterygium more is the induced astigmatism. In accordance with above results we draw a conclusion that proper diagnosis and early intervention of pterygium has a significant impact on corneal astigmatism and leads to improved visual status and esthetics of the patients.

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