



EFFECT OF PTERYGIUM EXCISION ON ASTIGMATISM INDUCED BY PTERYGIUM

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ABSTRACT**Aim:** To study the effect of Pterygium excision on Astigmatism induced by Pterygium.

Materials and Methods: This is a Prospective interventional study conducted at the department of Ophthalmology of Bhaskar General hospital which is attached to Bhaskar Medical College. Study was done during the June 2017 to May 2018. 100 patient of Primary Pterygium which induce more than 1.5 D Cyl Astigmatism were included in the study. Patients with recurrent Pterygium, Pseudo-Pterygium and those who were having ocular disorders like Herpetic keratitis were excluded from the study. All cases were examined by an experienced Ophthalmologist. Pre operative Astigmatism was measured by Auto refractometer. Basic surgical profile investigations were done. Cases were posted for surgical excision of Pterygium leaving bare sclera or Excision with Conjunctival limbal autograft harvested from supero temporal Limbus sutured by 10'0 Nylon or attached by Glue to bare area from where Pterygium was excised. Post operative Astigmatism was recorded and reduction in Astigmatism was obtained by subtracting Post operative astigmatism from pre operative astigmatism.

Results: The pre operative Astigmatism ie mean cylinder with SD was 4.56D Cyl + 1.81 was reduced to Mean Cyl of 1.96D Cyl with SD of 1.06. P value of <0.05 which is statistically significant.

Conclusion: Pterygium induced astigmatism and its surgical removal reduces astigmatism to statistical significant level.

KEYWORDS : Pterygium, Astigmatism, Limbal autograft, Cylinder**Introduction:**

Pterygium literally means wing¹. It is essentially a triangular encroachment of bulbar conjunctiva on to the cornea. Exposure to UV irradiation may be an initial trigger in the development of this lesion^{2,3}. Recent work by Dushku et al⁴ suggest a primary limbal epithelial stem cell dysfunction.

There is loss of junctional barrier between conjunctival and corneal epithelium and a centripetal migration of the mutant limbal basal cells (pterygium cells) resulting in a 'migrating limbus'. Other theories include changes of the apoptotic pathway the presence of some active angiogenetic factors or involvement of the MMPs, cytokines and growth factors⁵. The classic pathologic feature of pterygia is elastotic degeneration of sub-epithelial substantia propria⁶. Pterygium can be graded based on involvement of Cornea as follows⁷:

Grade I: Pterygium crossing the limbus

Grade II: Pterygium midway between limbus and pupil

Grade III: Pterygium extending upto pupillary margin

Grade IV: Pterygium just crossing the pupillary margin

Surgical procedures: Four main procedures employed for the removal of the pterygia are as follows⁸:

1. Pterygium excision by bare sclera technique
2. Pterygium Excision and Conjunctival autograft with sutures
3. Pterygium Excision and Conjunctival autograft with fibrin glue
4. Pterygium Excision and Conjunctival autograft with no glue and no suture.

Materials and methods:

This was a prospective interventional study conducted at The Department of Ophthalmology of Bhaskar Medical College. The study was conducted between June 2017 to May 2018. 100 patients with Primary Pterygium which induces more than 1.5 D Cyl of Astigmatism were included in the study.

Patients with recurrent Pterygium, Pseudo Pterygium, and those who were having corneal scars which can induce Astigmatism were excluded from study. All cases were examined by an experienced

Ophthalmologist using slit lamp, direct and indirect Ophthalmoscopy. Refraction was done by an Auto-refractometer pre operatively. Informed consent was obtained from the patient. Basic surgical profile investigations was done in all cases. Patient were posted for surgery and one of the four procedure mentioned above was done. Post Operative refraction is recorded on third day by an Auto-Refractometer. Change in Astigmatism is obtained by subtracting Post operative Cylindrical Power from Pre operative Cylindrical power.

Results :

Out of 100 patient selected for study 51 were males and 49 were females. Age of the patient varied between 21 to 70 years. Maximum number of patient ie. 86 were between 31 to 60 years. Based on grade of pterygium, 6 patients were having grade I, 35 were having grade II, 39 were having grade III and 20 were having grade IV. Pre Operative Mean Astigmatism with Standard deviation was 4.56 D Cyl +/- SD 1.81 which was reduced to Mean Post operative astigmatism of 1.96 DCyl +/- SD 1.06D. The P Value was <0.05 which is statistically significant. Maximum reduction in Astigmatism of > 4.0D Cyl occurred in cases with grade III and grade IV Pterygium.

Table 1 Showing No.of Patients in different age group

Age group	No. of Patients
21 to 30 years	4
31 to 40 years	21
41 to 50 years	25
51 to 60 years	40
61 to 70 years	10

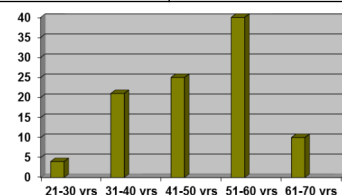
**Graph showing no. of patient in different age group**

Table 2 showing No. of patients with different grades of Pterygium

Grade	No. of patients
I	6
II	35
III	39
IV	20

Table 3 showing reduction in Astigmatism in different grades of Pterygium

Grade of pterygium	No. of patients	Pre-op mean astigmatism +/- SD	Post-op mean astigmatism +/- SD	p value
I	6	2.13 +/- 1.43	0.83 +/- 0.54	>0.05
II	35	2.88 +/- 0.44	1.49 +/- 0.84	<0.05
III	39	4.28 +/- 0.60	1.61 +/- 0.69	<0.05
IV	20	6.57 +/- 0.92	2.74 +/- 1.15	<0.05

Discussion:

This study shows excision of Pterygium will reduce the astigmatism induced by it. Grade III and Grade IV Pterygium induces maximum astigmatism.

Lin et al⁹ have reported the pterygium begins to induce significant degrees of astigmatism once it reaches upto 45% from the limbus to the visual axis or within 3.2 mm of the visual axis.

Mohammed Saleh et al correlated pterygium size with induced Astigmatism¹⁰. Similar observations were made in the present study. Patients with grade III and grade IV Pterygium induces maximum Astigmatism. Reduction in Astigmatism is also maximum in this group ie reduction of > 4 D Cyl of Astigmatism.

The astigmatism decreased significantly following pterygium excision. The mean pre-operative refractive astigmatism was 4.56 D Cyl with SD of +/- 1.81 D Cyl, which decreased to mean astigmatism of 1.96 D Cyl with SD of +/- 1.06 D Cyl following pterygium excision (p value <0.05).

These results correlate with those of Sejal Maheshwari¹¹.

Conclusion:

The study concludes that Pterygium incidence is more common in the working Age group, especially those with predominantly outdoor activities. Exposure to visible light and UV radiation has definite relationship in etiopathogenesis. The degree of induced astigmatism is directly proportional to the grade of the pterygium.

The change in induced astigmatism following surgery was higher for higher grades of pterygium.

Successful surgery significantly reduces the pterygium induced refractive astigmatism and also improves vision by clearing the visual axis.

Financial interest Nil

Conflict of interest Nil

Article should be cited as: Farha and Mohammed Ather et al

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