Original Research Paper

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Ophthalmology

THE INFLUENCE OF PTERYGIUM ON CORNEAL ASTIGMATISM

Dr G. Suneetha* M.S Department Of Ophthalmology Maharajah's Institute Of Medical Sciences Nellimarla Vizianagaram, Andhra Pradesh. *Corresponding Author

Dr G. Hanumantha Rao M.S Department Of Ophthalmology Maharajah's Institute Of Medical Sciences Nellimarla Vizianagaram, Andhra Pradesh.

ABSTRACT

AIM: To study the influence of progressive pterygium on corneal astigmatism and it's modification by excision and amniotic membrane grafting.

METHODS: This was a prospective interventional case series of 31 patients with progressive pterygium treated at Ophthalmology Department of a tertiary center between January 2018 to June 2018. Every patient was subjected to a thorough clinical evaluation. Corneal astigmatism was measured with a Keratometer before and after surgery. Surgery performed was pterygium excision and amniotic membrane grafting.

RESULTS: The average preoperative corneal astigmatism was 2.1D (grade 1 - 0.9D and grade 2 - 3.06D) The average postoperative corneal astigmatism was 1.04D (grade 1 - 0.73D and grade 2 - 1.8D). The astigmatism was more with higher grades of pterygium.

CONCLUSIONS: Pterygium induced significant corneal astigmatism was proportional to the area of corneal involvement which was modified by pterygium removal and amniotic membrane grafting.

KEYWORDS : Corneal Astigmatism, Pterygium, Keratometer.

INTRODUCTION:

Pterygium is a very common subconjunctival degenerative growth onto cornea causing astigmatism. It is a pink, fleshy, thick fibro vascular tissue. Parts of a pterygium are cap, head, neck and body. It occurs more commonly on nasal side due to increased exposure to UV rays from reflected nasal bridge and also dust in tears carried towards nasal side. Small pterygiums are asymptomatic but large pterygium causes decreased vision by inducing with-the-rule astigmatism and also by blocking pupillary axis (grade III pterygium). It also causes irritation, congestion and cosmetic blemish. Astigmatism and corneal scarring occur in proportion to pterygium size[1]. Pterygium was graded depending on the extent of corneal involvement[2]

GRADE I –
between limbus and a point midway between limbus and pupillary margin

GRADE II –
head of pterygium present between a point midway between limbus and pupillary margin and pupillary margin (nasal pupillary margin for nasal pterygium and temporal pupillary margin for temporal pterygium)

GRADE III- crossing pupillary margin.

Surgical options for pterygium are excision with bare sclera and with Mitomycin-C application, simple closure, rotational flaps, conjun ct I val membrane graft and amniotic membrane graft.

AIM:

To study the influence on corneal astigmatism induced by progressive pterygium and how it is modified by its excision and amniotic mem brane grafting.

MATERIALS AND METHODS:

This was a prospective interventional case series of 31 eyes of 31 patients with unilateral primary progressive nasal pterygium treated at Department of Ophthalmology of Maharajah's Institute of Medical Sciences, Vizianagaram between January 2018 to June 2018.

Examination included auto refractrometry, Snellen's visual acuity, complete slit lamp examination, keratometry.

Every patient was subjected to a thorough clinical evaluation including the grade and type of pterygium.

The amount of corneal astigmatism was measured with a Keratometer before and after surgery (6weeks). Surgery performed was pterygium excision and amniotic membrane grafting under peribulbar anaes thesia.

INCLUSION CRITERIA:

All patients of either gender with primary progressive nasal pterygium, who gave consent and were willing to undergo treatment with a minimum follow up of 6 months.

EXCLUSION CRITERIA:

1. History of trauma to eye of study
2. History of previous surgeries to eye of study
3. Eyes with double headed pterygium
4. History of recurrent pterygium
5. History of other ocular disorders and abnormalities
6. Grade III pterygiums

INDICATION FOR SURGERY

1. Progressive grade I and II pterygium
2. Recurrent irritation and foreign body sensation
3. Cosmetic

STEPS OF SURGERY

Choice of surgical procedure is excision and amniotic membrane graft transplantation.

1. Eye was prepared and draped
2. Head of pterygium was excised along the neck parallel to limbus.
3. Head was peeled off from limbus onto corneal surface and irregularities were smoothened with blade
4. Body was separated and excised taking care not to injure medial rectus
5. Amniotic membrane of required size was taken.
6. Amniotic membrane was peeled off from nitrocellulose paper and was placed on the raw surface of cornea and bare sclera after excision of pterygium.
7. Amniotic membrane was sutured with 10-0 vicryl sutures to conjunctival edges.
8. Pad and bandage was applied and post operatively steroids and antibiotic eye drops and systemic analgesics were prescribed.

Postoperatively corneal astigmatism was measured with keratometer at 6weeks.

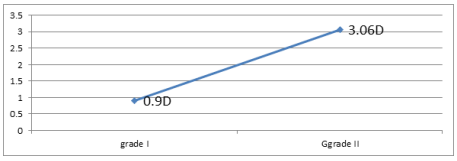
RESULTS

1. Present study included 31 cases of which 23 were females and 8 were males. The average age among females was 43.7years and males was 46.0 years with mean age of 44.4 years.
2. Present study of 31 cases, 14 (45.2%) cases involved right eye and 17 (54.8%) involved left eye. There was no significant difference in the involvement of right eye and left eye.
3. The type of astigmatism was with the rule astigmatism among 16 (80%) patients of grade 1 and all patients of grade 2 pterygium. 4 (20%) patients of grade 1 pterygium had against the rule

astigmatism.

4. The amount of astigmatism increased with the area of contact between the pterygium and the Cornea i.e increase in grade of pterygium. Grade II pterygium was associated with higher amount of astigmatism. The average preoperative astigmatism in Grade I pterygium was 0.9D and that of Grade IIpterygium was 3.06D.

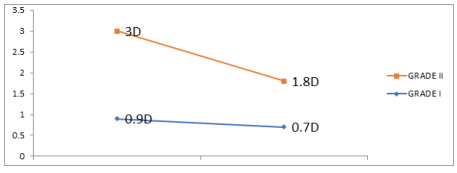
Table 1: Grade of pterygium Vs Induced astigmatism



5. Comparison of induced corneal astigmatism among different grades of pterygium and amount of correction after surgery

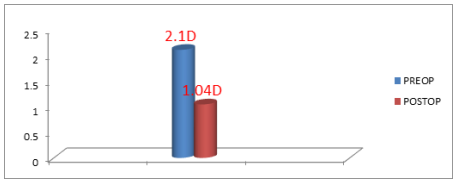
- For 20 cases of grade I, the average preoperative astigmatism was 0.9D and average post operative astigmatism was 0.7D, with average correction of 0.2D of astigmatism after surgery and the amount of correction in astigmatism was not significant with a p value of 0.945
- For 11 cases of grade II, the average preoperative astigmatism was 3.06D and average postoperative astigmatism was 1.81D with average correction of 1.25D after surgery. The amount of correction in stigmatism was significant with a p value of 0.019

Table 2: Preoperative and postoperative astigmatism in different grades of pterygium



6. The average preoperative astigmatism was 2.1 D (0.5D - 7.25D) and the average post operative astigmatism was 1.04 D (0.25D - 3.75D), with significant correction of 1.06 D (55%) of astigmatism after surgery which is significant with a p value of 0.04

Table 3: Preoperative and postoperative astigmatism



7. The surgical outcomes were satisfactory with mean correction of more than 50.4% of astigmatism

DISCUSSION

Mean age of patients of present study was 44.4 years. In the present study pterygium was almost equally distributed between right and left eye. There were no Intraoperative and post-operative complications.

In the present study it was observed that with increase in grade of pterygium, pterygium induced corneal astigmatism increased. It was similar to the study of S Maheswari[3] who observed that as the size of pterygium increases the amount of induced corneal astigmatism increases in direct proportion. A study by Kampitak K.I[4] concluded that the corneal extension of pterygium is proportional to the degree of with-the-rule astigmatism and is statistically significant. Pterygium exceeding 2.25 mm of length should be considered within the limits of surgery. In the present study also most of the patients developed with the rule astigmatism.

A study by Mohammad-Salih PA, et al.[5] concluded that pterygium extension and total area have a stronger correlation with corneal astigmatism than does width. Surgical intervention is indicated when pterygium extension exceeded 2.2 mm, width exceeded 5 mm, or total area exceeded 6.25 mm

CONCLUSIONS

1. Pterygium induces significant with the rule corneal astigmatism
2. Astigmatism increases with grade of pterygium.
3. Surgery for pterygium reduces the corneal astigmatism, more in higher grades.

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