

To Study The Effect of Pterygium Excision on Corneal Curvature And Contrast Sensitivity

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Abstract:

Introduction: There is a high incidence of Pterygium in our country. Pterygium effects corneal curvature as well as contrast sensitivity. Hence in this study 50 patients with pterygium were taken and the effect of pterygium excision on corneal curvature and contrast sensitivity were studied.

Material and Methods: It was a prospective interventional study. 50 patients who underwent pterygium excision were taken. Corneal curvature and contrast sensitivity were tabulated pre-operatively as well as after pterygium excision. The follow up duration was 1 month after pterygium excision. The astigmatism induced by primary pterygium was measured by automated keratometry and contrast sensitivity by Pelli Robson chart. Preoperative and postoperative values were compared using paired t-test and ANOVA test.

Results: Astigmatism decreased significantly following pterygium excision. The mean preoperative k1 k2 decreased from 4.56 to 1.56 postoperatively. The contrast sensitivity increased significantly following pterygium excision. The mean preoperative contrast sensitivity increased from 1.59±0.21 to 1.80±0.20 postoperatively. Surgical removal of pterygium caused a significant improvement in contrast sensitivity.

Conclusion: Contrast sensitivity is significantly improved after pterygium excision. Induced astigmatism is reduced significantly after pterygium excision.

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I. Introduction

A pterygium (plural pterygia) is a triangular fibrovascular subepithelial in growth of degenerative bulbar conjunctival tissue over the limbus onto the cornea. [1]. Direct invasion of visual axis or astigmatism induced causes reduction in Visual acuity. All aspects of visual function are not taken into consideration while testing for visual acuity and hence it is a crude method of measurement. Contrast sensitivity measures two variables, size and contrast, while visual acuity measures only the size. (3-6)

Contrast sensitivity is closely correlated with the ability to detect and discriminate between visual targets. It refers to the ability to distinguish an object from other objects and the background, even when it is not clearly outlined or prominent (2) Contrast sensitivity is a very important measure of visual function, especially in situations of low light, fog or glare, when the contrast between objects and their background often is reduced. Some tasks requiring distance judgement, night driving and mobility are more closely related to contrast sensitivity than to visual acuity. Contrast sensitivity loss can occur secondary to optical or neural loss, due to corneal scarring, optic nerve damage, or cataract. It is crucial for daily living skills and therefore would have an impact on functional employment skills. It is the best predictor of visual function, even more so than visual acuity which only measures high contrast letters.

Pterygium causes reduction in contrast sensitivity. Both spatial contrast sensitivity and glare disability are worsened in patients with pterygia even when the Snellen's visual acuity is minimally affected.

Pterygium induced astigmatism appears to be due to alteration in tear film caused by lesion. As the head of pterygium approaches the apex of cornea, a tear meniscus develops between the corneal apex and the elevated pterygium, causing an apparent flattening of normal corneal curvature

Thus, the present study was undertaken to determine the effect of pterygium excision on corneal curvature and contrast sensitivity.

I. Aims and Objectives

To determine the effect of pterygium excision on induced astigmatism and contrast sensitivity

II. Material and Methods

Study design- Prospective Interventional study

Inclusion Criteria:

- 1) Both sex
- 2 >18 years old
- 3) Patients with primary pterygium with $\geq 2D$ astigmatism were included in study
- 4) Informed consent for pterygium surgery.

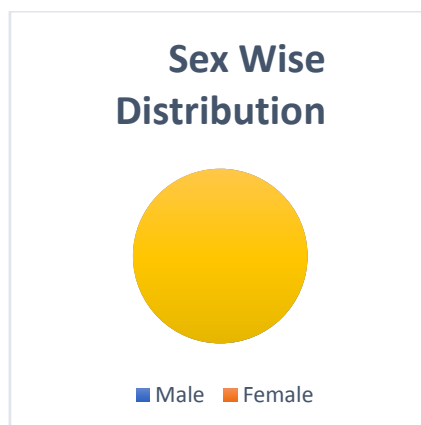
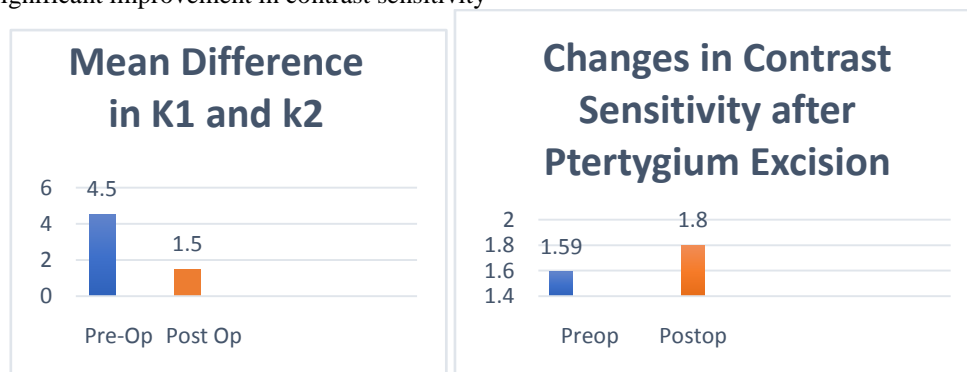
Exclusion Criteria:

1) Pterygium with any anterior or posterior segment pathology was excluded from study
Preoperatively-Fifty patients having pterygium above 18 years who are able to come for follow up were selected for this prospective study. Those with any anterior or posterior segment pathology were not included in the study. Sex distribution showed that 30/50 cases (60%) were males.
All the patients were operated after confirming normalcy of blood pressure, sac syringing and blood sugar level. Operations were done under local anesthesia with retrobulbar injections.
Automated keratometry and contrast sensitivity with Pelli-Robson chart were recorded preoperatively.
Post-operative- These cases were hospitalized for 2 days and administered oral antibiotics for 3 days and topical Lubricating eye drops four times a day and Moxifloxacin 0.5% and 0.1% dexamethasone eye drops 7-8 times a day for 1 month. The patients were followed up at 30th day. Examination included -Automated keratometry and contrast sensitivity with Pelli-Robson chart was done one month postoperatively.

III. Observation & Results

Surgical intervention resulted in an increase in the mean refractive power one month postoperatively, which indicates steepening of flattened cornea. Pterygium induced astigmatism appears to be due to alteration in tear film caused by lesion. As the head of pterygium approaches the apex of cornea, a tear meniscus develops between the corneal apex and the elevated pterygium, causing an apparent flattening of normal corneal curvature.(7,8,9,10,11)The Mean difference in k_1 k_2 pre operatively was 4.56 ± 0.45 which after pterygium excision reduced to 1.54 ± 0.36 . There was flattening of cornea horizontally. This flattening dissipated after pterygium removal.

The contrast sensitivity improved significantly following pterygium excision. The mean preoperative contrast sensitivity increased from 1.59 ± 0.21 to 1.80 ± 0.20 postoperatively. Surgical removal of pterygium caused a significant improvement in contrast sensitivity



IV. Conclusion

Surgical excision of pterygium improves contrast sensitivity, visual acuity and reduce astigmatism. Contrast sensitivity testing may provide additional objective methods for documenting impaired vision in patients with pterygium when Snellen visual acuity is minimally affected. Corneal astigmatism and contrast sensitivity values in patients with pterygia are useful indicators for the need of pterygium surgery or as an indicator of surgical success,

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