



A STUDY ON EFFECT OF PTERYGIUM EXCISION ON PTERYGIUM INDUCED ASTIGMATISM

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ABSTRACT **Purpose:** To determine the effect of pterygium excision on pterygium induced astigmatism. **Methods:** A statistical comparison of the refractive astigmatism before and after effective pterygium surgery was done on 30 patients who underwent preoperative and postoperative refraction testing. **Results:** pterygium surgery caused significant improvements in visual acuity, with the rule astigmatism. **Conclusion:** The corneal astigmatism tended to decrease significantly following pterygium excision with conjunctival limbal autograft transplantation.

KEYWORDS : Pterygium; astigmatism; conjunctival limbal autograft transplantation.

INTRODUCTION:

The corneal pterygium, which develops from the bulbar conjunctiva and underlying subconjunctival tissue, is an extension of fibrovascular connective tissue. Pterygium-induced astigmatism or a direct invasion of the visual axis can both impair vision.¹

The astigmatism that was created has been accounted for using a variety of strategies. These include (a) tear film accumulation at the leading edge of the pterygium and (b) mechanical traction put on the cornea by the pterygium.² Topographic alterations accompanied by an increase in astigmatism may result from pterygium.³

Based on how much of the cornea is affected, pterygium can be categorized as follows:

Pterygium crossing the limbus in grade one, in second grade, Pterygium midway between the limbus and the pupil, Pterygium reaching the pupillary edge in grade III and Pterygium that is barely crossing the pupillary border in grade IV.⁴

Severe corneal astigmatism caused on by pterygium gets better after excision.⁵ Astigmatism caused by pterygium is improved by surgical excision of the growth.⁶

OBJECTIVE: To examine how pterygium excision affects pterygium-induced astigmatism.

MATERIALS AND METHODS:

A hospital - based prospective study was carried out in the Department of Ophthalmology at Shridevi Institute of Medical Sciences and Research Hospital in Tumkur.

STUDY OBJECTS: Pterygium excision with conjunctival limbal autografting was performed on 30 pterygium patients.

STUDY PERIOD: December 2021 to June 2022.

METHOD: Thirty pterygium patients were chosen from the Out Patient Department of Ophthalmology. Pterygium excision with conjunctival limbal autografting was performed on all patients. All 30 patients underwent a thorough history and ocular examination.

SURGICAL METHOD:

Local anaesthetic was used during each surgery (peribulbar block). A wire speculum was used to expose the eye after usual sterile preparation and draping. Under the conjunctiva, the pterygium head and pathologic fibrovascular tissue were carefully divided and removed with a surgical blade. The remaining tissue was then scraped from the corneal surface with a crescent-shaped knife. After excision, an autograft made from the superotemporal conjunctiva was applied over the exposed sclera in the proper anatomical position and secured with 8-0 vicryl sutures to the limbus and the periphery of the surrounding conjunctiva.

Statistical analysis was performed. The probability level of 0.05 was set as the statistically significance value.

RESULTS:

Table 1 : Patients profile

sex	Grade				Total
	I	II	III	IV	
F	2	7	2	0	11
M	4	7	6	2	19
Total	6	14	8	2	30

Table 1 shows that there were 30 patients assessed in all, with 19 (63.3%) men and the remaining 11 (36.6%) women. The male to female ratio was 1.7:1. 18 individuals, or 60% of the group, were between the ages of 40 and 50. 14 patients (46.6%) had Grade II pterygium, 8 patients (26.6%) had Grade III pterygium, 6 patients (20%) had Grade I pterygium, and 2 patients (6.6%) had Grade IV pterygium that covered the eye's visual axis.

FIG 1: Comparison of preoperative and postoperative astigmatism versus grades of pterygium.

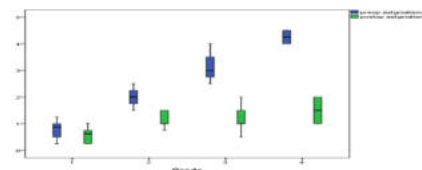


Table 2: Comparison of preoperative and postoperative astigmatism versus grades of pterygium

Grade		preop astigmatism	postop astigmatism
I	N	6	6
	Minimum	.25	.25
	Maximum	1.25	1.00
	Median	.8750	.6250
II	N	14	14
	Minimum	1.50	.75
	Maximum	2.50	1.50
	Median	2.0000	1.0000
III	N	8	8
	Minimum	2.50	.50
	Maximum	4.00	2.00
	Median	3.0000	1.0000
IV	N	2	2
	Minimum	4.00	1.00
	Maximum	4.50	2.00
	Median	4.2500	1.5000
p value		< 0.001	0.010

According to Table 2, there is a substantial difference between pre-operative and post-operative astigmatism, with preoperative astigmatism P values showing 0.001 and postoperative astigmatism P values showing 0.010.

DISCUSSION:

A significant amount of astigmatism might develop as a result of pterygium growth. The cornea close to the pterygium's apex flattens locally as a result of pterygia.

By causing astigmatism or by affecting the visual axis, pterygium induces refractive alterations that result in vision impairment.⁷ When this flattening happens along the horizontal meridian, it commonly causes corneal astigmatism that follows the rule. Similar to earlier research, our investigation revealed that there were more male patients than female patients.⁸ This could be accounted for by the fact that men often participate in more outside activities than women.⁹ According to our study and other comparable studies, the majority of pterygium patients end with astigmatism.¹⁰

Pterygium is mostly treated surgically. Successful pterygium excision surgery, which reduces astigmatism and removes pterygium from the visual axis, can enhance visual acuity.¹¹ In all grades of pterygium, the Maheswari et al. study demonstrated statistically significant increases in visual acuity following pterygium removal surgery (P 0.05). Similar to this, Misra et al. found that following pterygium surgery, the mean BCVA dramatically increased from 6/7.5 preoperatively to 6/6 after 1 month (P = 0.001).¹¹ We discovered in our study as well that pterygium excision surgery greatly reduced astigmatism.

CONCLUSION:

Patients with pterygium have a mix of artificial and naturally occurring astigmatism. After surgical treatment, the changes in corneal topography caused by pterygium are almost entirely reversible. This study demonstrates that the astigmatism caused by pterygia can be effectively reduced with pterygium excision surgery.

REFERENCES:

- Errais, K., Bouden, J., Mili-Boussen, I., Anane, R., Beltaif, O. and Meddeb Ouertani, A. Effect of Pterygium Surgery on Corneal Topography. *European Journal of Ophthalmology*, 2008;18(2), pp.177-181.
- Pavilack MA, Halpern BL. Corneal topographic changes induced by pterygia. *J Refract Surg* 1995; 11:92-5.
- Seitz B, Gutay A, Kuchle M, et al. Impact of pterygium size on corneal topography and visual acuity- a prospective clinical cross-sectional study. *Klin Monbl Augenheilkd*. 2001;218(9):609-615.
- Sejal Maheshwari et al Pterygium induced Corneal refractive changes, *IJO* 2007 Sept-Oct 55(5):383-386.
- Popat K, Sheth H, Vyas V, Rangoonwala M, Sheth R, Shah J. A study on changes in keratometry readings and astigmatism induced by pterygium before and after pterygium excision surgery. *Journal of Research in Medical and Dental Science*. 2014;2(3):37.
- Lawan A, Hassan S, Ifeanyi Chukwu EP, Yahaya HB, Sani RY, Habib SG, et al. The astigmatic effect of pterygium in a tertiary hospital in Kano, Nigeria. *Annals of African Medicine*. 2018;17(1):7.
- Maheshwari S. Effect of pterygium excision on pterygium induced astigmatism *Indian J Ophthalmol*. 2003; 51:187-8.
- Tan CS, Lim TH, Koh WP, Liew GC, Hoh ST, Tan CC, et al. Epidemiology of pterygium on a tropical island in the Riau Archipelago. *Eye (Lond)* 2006; 20:908-12.
- Makkar B, Agrawal I, Ahuja A, Shah HK. Comparison of preoperative and postoperative astigmatism following pterygium excision with conventional conjunctival graft and amniotic membrane graft. *Sch J Appl Med Sci* 2015; 3:1477-82.
- Ayanniyi AA, Badmos KB, Olatunji FO, Owocye JF, Sanni TO. Blindness caused by pterygium - A case report. *Sierra Leone J Biomed Res* 2011; 3:60-2.
- Misra S, Craig JP, McGhee CNJ, Patel DV. A prospective study of pterygium excision and conjunctival autograft with human fibrin tissue adhesive: Effects on vision, refraction, and corneal topography *Asia Pac J Ophthalmol*. 2014; 3:202-6