

## Comparative Study of Surgical Outcome in Case of Primary Pterygium By Bare Sclera Excision & Conj. Autografting

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### ABSTRACT

**Aim:** To evaluate and analyze the surgical outcome of Simple pterygium excision (Bare sclera method) and Conjunctival Autografting (CAG).

**Design:** Prospective Randomized control trial, hospital based study.

**Materials and Methods:** 60 cases with primary pterygium were graded, and excision was performed by the single surgeon. 30 cases are treated by simple excision method and remaining 30 cases are treated by conjunctival autografting method (CAG). graft for CAG is taken from superotemporal quadrant from the same eye. The eye was patched for 24 hours, postoperatively patients were put on antibiotics and steroids eye drop (moxifloxacin 0.5% with loteprednol etabonate 0.5%) and carboxymethylcellulose eye drop 1% for 6 weeks. The outcomes were assessed in terms of any recurrence, complications and change in astigmatism at each follow up visit on 1, 7, 30, 45, 120, 180 days.

**Results:** In this study 32 % cases were in the age group 30-40 years, 38% 41-50 years, 20% 51-60 years, 10% 61-70 years. (2) Pterygium location –Nasal side 83%, Temporal side 12%, Bilateral 5%. (3) 50% patients are treated by Autologous conjunctival autografting method, out of these 83 % patients show reduction in astigmatism & 17 % shows no change in

astigmatism, remaining 50% patients are treated by simple conjunctival excision method out of these 70% patients show reduction in astigmatism, 10% patients show increased astigmatism, 13 % show no change in astigmatism. (4) In CAG method 3% patients show recurrence, in Simple excision method 20% patients show recurrence.

**Conclusion:** Autologous conjunctival grafting method is safe, simple, quick procedure. It does not involve loss of tissue & is effective in preventing recurrence.

**Keywords:** Conjunctival Autografting, Primary Pterygium, Bare Sclera.

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### INTRODUCTION

Pterygium, an ophthalmic enigma. Pterygium a wing shaped encroachment of bulbar conjunctiva on the cornea, known to physician for thousands of year. It is well-known entity since Hippocrates, Galeno, Celso & others, even Susruta discussed pterygium.

In its traditional definition a pterygium is the appearance of fibrovascular neo-formation, which arises in the conjunctiva & grows towards and infiltrates the surface of cornea. It is normally triangular in shape with the apex or head pointing towards the centre of the cornea and the base facing the semilunar fold, at the medial canthus. Pterygium is an active, invasive & inflammatory process, a key feature of which is focal limbal failure.<sup>1</sup> It is proposed that the initial biological event in pterygium pathogenesis is an alteration of limbal stem cells due to chronic U.V light exposure.<sup>2</sup> A true pterygium is a combined degenerative & hyperplastic process in which the conjunctiva actively invades

the cornea, breaking away the so called potential limbal barrier.<sup>3</sup> It can occur on both nasal & temporal side in inner palpebral fissure, more commonly in males than females, pterygium is mostly seen in sunny, hot & dusty regions of the world mostly between 30° –equator.

Conjunctival autografting following pterygium excision presents the advantage of re-establishing the structure of the limbus. The limbal niche serves as a regenerative organ for corneal epithelial cells stem cells which facilitates corneal epithelial healing.<sup>4</sup> Today Conjunctival autografting is widely used in pterygium surgery, because it is safe & effective surgical technique with good surgical results.<sup>5</sup> The growth of head of pterygium on cornea always creates deformation in the corneal curvature causing astigmatism & visual disturbances; hence we have studied patients with primary nasal pterygium & change in astigmatism pre-operatively & post-operatively in this study.

**CLINICAL MATERIALS**

This study is a prospective study conducted in the department of Ophthalmology, Govt. Medical College & Hospital, Miraj, Maharashtra during a period of July 2010 to September 2012. Total 60 cases with nasal and temporal pterygium were selected for the study. Conjunctival Autografting was performed in 30 patients & simple excision (bare sclera) is performed in remaining 30 patients. All the patients were in the age group of 30 -70 years. Consent was obtained from all included patients and ethical committee has approved this study.

**METHODS**

**Inclusion Criteria:** Primary pterygium

**Exclusion Criteria:** Recurrent pterygium

Thorough examination of both eyes was carried out with Slit lamp, after this Visual acuity. Ocular motility test, Retinoscopy,

Keratometry, IOP Measurement, fundus examination and Sac syringing were performed. All routine blood investigations were done.

Surgery was performed under local anaesthesia (2% Xylocaine). Pterygium excision was done by CAG and Simple excision (bare sclera) techniques. Head of pterygium was avulsed from cornea by grasping it with tooth forcep near its apex, size of the graft measured by caliper. In case of CAG, graft is taken from superotemporal bulbar conjunctiva and sutured to recessed ends of pterygium with 8-0 vicryl suture. Postoperatively patients were put on antibiotics and steroids eye drop (moxifloxacin 0.5% with loteprednol etabonate 0.5%) and carboxymethylcellulose eye drop 1% for 6 weeks or 4-6 months to study complications and recurrence of pterygium. Follow up visits were done on 1, 7, 30, 45, 120, 180 days.

**Table1. Percentage of Pterygium in Different Age & Sex Groups & Analysis of Affected Side**

S. No.	Age	No. of cases	Percentage	Sex	No. of cases	Laterality	No. of cases
1	30-40	19	32%	Male	35 (58%)	Nasal	83%
2	41-50	23	38%			Temporal	12%
3	51-60	12	20%	Female	25 (42%)	Bilateral	5%
4	61-70	6	10%				

**Table 2: Pre-Operative Astigmatism in Pterygium Affected Cases Treated with CAG Method & Bare Sclera**

Type of pterygium	Cases treated with CAG	Pre-op Keratometric readings		Astigmatism	Cases treated with Simple excision	Pre-op keratometric readings		Astigmatism
I	10	42.47	44.27	1.8 D	11	42.43	44.52	2.09
II	13	42.26	44.23	1.97 D	11	42.18	44.70	2.52
III	7	42.10	45.60	3.5 D	8	42.09	45.28	3.19

**Table 3: Comparison Between Astigmatism Change in Different Types of Pterygium**

Sr.No.	Types of pterygium	Total cases	Change in astigmatism				Change in astigmatism
			Pre-op	Post-op			
				1 <sup>st</sup> day	7 <sup>th</sup> day	1 <sup>1/2</sup> months	
1	I	21	2.19	1.55	1.15	0.61	1.58 D
2	II	24	2.80	1.60	0.92	0.63	2.17 D
3	III	15	3.63	2.55	1.68	1.01	2.62 D

**Table 4: Recurrence Rate of Pterygium**

Type of surgery	Total no.of cases	Recurrence rate	Percentage
CAG	30	1	3 %
Bare Sclera	30	6	20 %

**RESULTS**

In this study 32% cases were in the age group 30-40 years, 38% patients in the age group of 41-50, 20% cases in the age group of 51-60 and remaining 10% cases were in the age group of 61-70 years.

Pterygium is more commonly seen in men than in women. This is because of outdoor activities of men who commonly exposed to dust and environmental irritants. In this study 58% patients were

male and 42% cases were female. These results are comparable with observations in other studies of pterygium.

In this study 83% cases had nasal pterygium. The nasal affinity of the Pterygium was attributed to the sparseness of the subconjunctival tissue in the temporal region and lesser exposure of the temporal region to UV radiation because of greater amount of bowing of outer 2/3 upper lids.

This table shows pre-operative astigmatism in pterygium affected cases treated with conj. autografting method and simple excision (bare sclera) method. In this study of 60 cases. 10 cases of type I, 13 cases of type II, 7 cases of type III pterygium are treated by conj. autografting method shows pre-operative astigmatism 1.8D, 1.97D, 3.5D respectively, i.e "with-the-rule" astigmatism & 11 cases of type I, 11 cases of type II, 8 cases of type III pterygium are treated by bare sclera method shows pre-operative astigmatism 2.09 D, 2.52 D, 3.19 D respectively. i.e "with-the-rule" astigmatism.

In this study 30 patients are treated by CAG method; out of these 10 patients are of type I pterygium, 13 cases of type II & 7 cases of type III show mean reduced "with-the-rule" astigmatism to 1D (analysis of variation F-8.88,P-0.001), 0.63D, (F-2.80 P-0000), 1D (F-17.70 P-0.001) respectively. Remaining 30 cases are treated by Simple excision method. Out of these 11 cases are of type I pterygium, 11 cases of type II & 8 cases of type III pterygium show mean reduced astigmatism to 1.2D (Analysis of variation F-31.74 p-0.001), 1.0D (F-17.70 P-0.001) & 1.7D (F-4.22 P-0.008) respectively which is statistically significant.

In this study 50% patients are treated by Autologous conjunctival autografting method, out of these 83 % patients show reduction in astigmatism & 17 % shows no change in astigmatism, remaining 50% patients are treated by simple conjunctival excision method out of these 70% patients show reduction in astigmatism, 10% patients show increased astigmatism, 13 % show no change in astigmatism. Out of this two patients (7%) were not come for follow up.

#### Recurrence Rate

The total no. of patients studied for complications and recurrences are 50. 10 patients did not complete the follow up period of six months. The recurrence rate after conjunctival autografting method in this study is 3%, whereas recurrence rate for bare sclera technique in this study is 20%.

#### DISCUSSION

There have been many attempts to optimize pterygium surgery. Today a wide variety of techniques are in use. The aim is to excise the pterygium and prevent its recurrence. Autologous conjunctival transplant avoids the risk of scleral necrosis.

The relative lower recurrence in CAG technique could be due to the transplantation of the normal conjunctiva that forms the barrier to the proliferation of abnormal tissue towards the limbus.

#### Sex Incidence

Pterygium is more common in men than women, this is attributed to the fact that males are exposed to dust and environmental irritants more than women. In the present study 58% were male & 42% were female. It is fairly in accordance with the study of (J.H.Hilgers)<sup>6</sup> who were also found more incidence of pterygium in males.

#### Age Incidence

The disease affects preferentially adults over the middle age groups. The highest incidence is in forth decades. In a study conducted by (Dr.Rao S.K et al)<sup>7</sup>, showed that 56.98 % were above the age of 40 yrs.

#### Pterygium Laterality

In the present study 83 % patients had pterygium nasally. Nasal affinity of pterygium is contributed to the fact of sparseness of the subconjunctival tissues in the temporal region because of greater

bowing of outer 2/3 of the upper eyelid. In the study conducted by (Dr.Gnana Murthy and H.Sahul)<sup>8</sup>, it was found 92.7 % had nasal pterygium.

#### Astigmatism

In the present study of 60 cases of excised pterygium, astigmatism induced by pterygium is usually "with-the-rule" i.e. vertical curvature is more than the horizontal one. In this study of 60 patients, 30 patients are treated by conjunctival autografting method and remaining 30 patients are treated by simple excision (bare sclera) method out of these 46 patients show reduction in astigmatism "with-the-rule" which is statistically significant.(Ibechuku B)<sup>10</sup> studied astigmatism and visual impairment in pterygium affected eyes. He found that most of pterygium affected eyes (85 %) had "with-the-rule" astigmatism.

#### Complications

No major intraoperative complications noticed in this study. In patients treated by CAG surgery recurrence occurred in 3 % of the patients and in patients treated by bare sclera technique recurrence rate is higher as compared to CAG i.e. 20 %. Most of the recurrences were occurred between 3-4 months after surgery. According to (Adamis AP, Stark T, Kenyon KR et al)<sup>11</sup> and (Markovska Celeva V. et al)<sup>12</sup>, the recurrence of pterygium after surgical treatment remains a problem. The simple excision of the pterygium (bare sclera) has the highest recurrent rate in our study. This study demonstrate a low recurrence rate of pterygium after excision with conjunctival autografting.

#### CONCLUSION

Pterygium causes significant "with-the-rule" Astigmatism. After pterygium excision, the astigmatism reduces significantly. Thus high grade Astigmatism can be considered as indication of pterygium excision either by simple excision (bare sclera) or conjunctival autografting method as both reduces pre-operative astigmatism significantly.

Bare sclera technique is associated with high incidence of recurrence; conjunctival autografting is safe, simple and fast procedure. It does not involve loss of tissue and is effective in preventing recurrence.

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