



## Original Research Article

# Comparation of intraoperative triamcinolone and Bevacizumab with conjunctival autograft alone in pterygium surgery

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## ABSTRACT

Pterygium is a degenerative condition of subconjunctival tissue that undergoes elastotic degeneration and proliferates as vascular granulation tissue under the epithelium. This ultimately encroaches the cornea destroying its epithelium, superficial stroma and the Bowman's membrane.<sup>1</sup> It occurs more commonly on the nasal side than the temporal side, but it can occur on both sides (double pterygium).<sup>2</sup> Pathogenesis is mainly implicated to ultraviolet radiation exposure. It has highest prevalence and in the tropical areas near the equator and to lesser and milder degree in cooler climates. The increased levels of proangiogenic factors like basic fibroblast growth factor (BFGF), transforming growth factor Beta (TGF- $\beta$ ), vascular endothelial growth factor (VEGF) and platelet derived growth factor (PDGF) are responsible for formation and recurrence of Pterygium; however the most important of this growth factor is VEGF.<sup>3</sup>

**Aim:** To compare the efficacy of intraoperative subconjunctival injection of Triamcinolone and Bevacizumab with conjunctiva autograft alone in primary Pterygium surgery.

**Materials and Methods:** Total 150 patients divided in three groups (50 patients of each group), underwent primary Pterygium surgery between MAY 2016 to APRIL 2017. In group A, Conjunctival auto graft alone was done while in groups B & C, it was combined with Intraoperative Subconjunctival Injection of Triamcinolone<sup>4</sup> (0.2mg/ml) and Bevacizumab<sup>5,6</sup> (2.5mg/0.1ml).

**Result:** Recurrence rate at 12 month was more in auto graft alone (group A) than in the auto graft in combination with Triamcinolone (group B) and Bevacizumab (group C) respectively.

**Conclusion:** Subconjunctival injection of Triamcinolone & Bevacizumab can be combined with Conjunctival auto graft intraoperatively to prevent but Triamcinolone may prefer due to more cost effectiveness.

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## 1. Introduction

Pterygium is a fibro vascular growth of bulbar conjunctiva, growing upon cornea on either side, usually from nasal part of the limbus within the palpebral aperture. It is a common ocular surface disorder in hot tropical climate. The exposure to ultraviolet radiation is thought to be a major risk factor, as the pathogenesis is unclear. The common Pterygium related symptoms are redness, foreign body sensation, irritation, lacrimation, reduced visual acuity, cosmetic disfiguration and difficulty in contact lens fitting.

Treatment of the pterygium is vertical excision of pterygium with living bare sclera, but the recurrence of pterygium is very common which about 55.9% to 89% is. The recurrent pterygium is very difficult to manage as there is thinning of underlying cornea and extensive scarring.

Various method used to prevent the recurrence of pterygium are beta radiation mitomycin, thiotepa, 5 fluorouracil. These agents are tried intraoperatively in addition to surgical excision now the recent trend is Conjunctival autograph which shows less recurrence. Further recurrence is reduced by intraoperative Triamcinolone and Bevacizumab (avastin). Factors responsible for recurrence of Pterygium are postoperative inflammation and fibro vascular growth

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angiogenesis the action of Triamcinolone is to suppress inflammation and, the role of Bevacizumab is to suppress angiogenesis thus prevents the recurrence.

## 2. Materials of Methods

The present study design was randomized blind study. Total 150 patients of primary nasal pterygium were included in the study. The selection of patients done at EYE OPD of Eye department, Patna Medical College, Patna from MAY 16 to APRIL 17. The inclusion criteria- only primary pterygium. The Exclusion criteria-recurrent pterygium, infection, ocular surface disorder, diabetes, chronic dacryocystitis. Total 150 eyes of 150 patients having primary nasal pterygium were selected for the study who met the all criteria for inclusion. The informed consent was taken for the study. The complete ocular examination such as visual acuity, slit lamp examination, funduscopy, Applanation tonometry was done before and after surgery. On the basis of systemic random sampling all 150 eyes of 150 patients divided into three groups i.e groups A, B, and C. The first patient of study are put in group A, second in group B, and third in group C irrespective of grading and stages of pterygium.

**Group A:** surgical excision of pterygium with Conjunctival autograft alone.

**Group B:** Conjunctival auto graft with subconjunctival injection of Triamcinolone intraoperatively.

**Group C:** with Bevacizumab intraoperatively a long with conjunctival autograft.

All surgery was done by single surgeon. After taking all aseptic precaution all 150 eyes were subjected to surgery under local anesthesia of xylocaine 4% topically and xylocaine 2% local infiltration. In all 150 eyes the pterygium were dissected and peeled off from underlying cornea, 4.5mm of conjunctiva covering head and body of pterygium was excised leaving behind bare sclera. Then conjunctival auto graft was put on bare sclera and secured by suturing.

**Group A:** Only conjunctival autograft done

**Group B:** Conjunctival autograft + subconjunctival Triamcinolone 12mg given in lower fornix

**Group C:** Conjunctival autograft + subconjunctival Bevacizumab 2.5mg/0.1ml given subconjunctival in lower fornix.

### 2.1. Postoperative Care

Antibiotics drops (Moxi+Ketorolac) one drop thrice daily, steroid drops (Predforte) one drop thrice daily. Tear substitute one drop four times in a day.

All the sutures were removed after 2 weeks, Postoperative follow up was done on day 1, 1<sup>st</sup> week, 2<sup>nd</sup> week, 1<sup>st</sup> month and 3<sup>rd</sup>, 6<sup>th</sup>, 12<sup>th</sup> month after surgery. Recurrence is defined as- if the size of pterygium is more than 1.5mm across the

limbus over cornea.

## 3. Results

The relevant data obtained from the study were put on master chart and analyzed with the help of software SPSS (version 15). Since it was small sample study so student 't-test' were used to analysed the data the result were tabulated in form of mean +/- SD and analyzed on the basis of 't-test' and role of significance was determined by using its P value, P value < 0.05 was taken as statistically significant. The mean age of the patient was 39 +/- 10 years ranging from 24 to 59 years. All the patients were followed up completely for 12 months. The recurrence was seen in 17 patients in Group A, 8 patients in Group B & 7 patients in Group C. All recurrences occurred within 5 to 9 months of surgery. It further observed that recurrences were more common in younger age group. All 150 patients had at least 12 months of follow up. Average age of the patients was 39.2 +/- 10.4 years (range 24-56 years). Pterygium with grade T1 were seen in 17 patients, grade T2 were seen in 84 patients, grade T3 were seen in 39 patients. There were 50 patients in each Group A, B & C. Table 1 shows mean age of patients in the groups. Table 2 shows pterygium grade of eyes. There were no statistically significant differences in age between the three study groups. No complication noted during the study.

The main objective was focused on postoperative recurrence of pterygium in each group. It was 17 patients in group A, 8 patients in Group B and 7 patients in Group C. So, the recurrence rates in Group A, B & C were 34%, 16% and 14% respectively. This difference in recurrence of pterygium were statistically significant (p<0.05) in Group A & C and were statistically insignificant (p>0.05) in Group B. The average month of recurrence of pterygium was 6.5 months. Younger age group showed more recurrence than the older age group. Intraocular pressure was raised in two eyes in group B (which were given Triamcinolone subconjunctivally), was controlled by topical medications. No complication was seen in the study groups through the follow up period.

## 4. Discussion

The objective of this prospective, randomized study was to evaluate the outcome and safety of triamcinolone and bevacizumab, and its recurrence.

The recurrences observed were actually less in group B (16%) and C (14%), which had received triamcinolone and bevacizumab respectively, while it was higher in group A (34%) which had undergone only conjunctival autograft.

Having known the etiopathogenesis, adjunct therapies like Conjunctival autograft application of metomycin C<sup>1</sup>, Use of cyclosporine, sub-Conjunctival Triamcinolone and Bevacizumab along with excision of Pterygium were tried

**Table 1:** Mean age of patients in the groups

Group	N	Mean	SD	Pair	T	P	Significance
A	50	41.25	10.56	AB	1.17	>0.05	NS
B	50	38.71	11.21	BC	0.67	>0.05	NS
C	50	40.33	12.72	CA	0.39	>0.05	NS

**Table 2:** Pterygium grade of eyes

Group	N	T1	%	T2	%	T3	%
A	50	10	20.0	29	58.0	11	22.0
B	50	9	18.0	25	50.0	16	32.0
C	50	8	16.0	30	60.0	12	24.0

Note: Proportions of T1, T2, and T3 grade of eyes in each pair of groups i.e AB, BC & CA are not statistically significantly different

**Table 3:** Recurrences of disease in the groups

Group	N	R	%	Pair	T	p	Significance
A	50	17	34	AB	2.12	<0.05	S
B	50	8	16	BC	0.25	>0.05	NS
C	50	7	14	CA	2.41	<0.05	S

Note: NS= not significant at 5% level ( $p>0.05$ ). S= significant at 5% level ( $P<0.05$ ), R= Recurrence

to prevent recurrences.

Thus it was seen that the recurrences were less in group B & group C i.e. auto graft<sup>7</sup> with Triamcinolone/Bevacizumab given intraoperatively than group A i.e only conjunctival autograft. This study was undertaken to explore the role of subconjunctival injections after surgical excision of primary pterygium with conjunctival autograft. Triamcinolone acetonide is an intermediate acting medium potency steroid. It is five times more potent than hydrocortisone. Intraoperative injection of triamcinolone reduces postoperative inflammation thereby reducing the chance of recurrences. Currently the role of anti-VEGF agent such as bevacizumab as an adjunctive to pterygium excision with conjunctiva auto graft has no effect on recurrence rate as stated by Razeghinejad et al.<sup>8,9</sup> Various workers evaluated the role of Bevacizumab as adjunctive therapy in intraoperative pterygium surgery. It failed to produce any definite results.

But in this study the single dose of subconjunctival injection of Triamcinolone and Bevacizumab can combined with conjunctival autograft intraoperatively to prevent recurrence of pterygium. However we found no added advantage between Triamcinolone and Bevacizumab but in our setup Triamcinolone is more cost effective. However more studies with larger study groups are desired to establish the promising role of anti-VEGF in treatment of primary pterygium and its recurrence.

## 5. Source of fFunding

None.

## 6. Conflict of Interest

None.

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