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To Evaluate the Recurrence of Pterygium with Conjunctival Autograft Alone Compared with Adjunctive Use of Intraoperative Triamcinolone and Bevacizumab in Cases of Primary Pterygium Surgery

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ABSTRACT

Background: Aim: To evaluate the efficacy of conjunctival autograft alone compared with adjunctive use of intraoperative subconjunctival triamcinolone and bevacizumab in cases of primary pterygium surgery in prevention of recurrence of pterygium. **Methods:** A prospective comparative clinical study was done in 39 eyes of 32 patients with primary nasal pterygium at the Regional Institute of Ophthalmology, IGIMS, Patna. Patients were randomly divided into 3 groups- group-I, group-II, group-III containing 13 cases each. After pterygium dissection up to around 4 mm of conjunctiva covering head and body of pterygium leaving bare sclera near the limbus, a conjunctival flap devoid of tenon's capsule was fashioned from the adjacent superior conjunctiva, placed over bare sclera and sutured with 8-0 vicryl suture. Group- I patient were left alone with conjunctival autograft, while Group-II patients were injected with 12 mg of Triamcinolone acetonide and Group-III patients with Bevacizumab (Avastin) 2.5mg/0.1ml subconjunctivally. **Results:** The mean age of patients in our study was 39.55+-10.05 years and the age group ranged from 25-58 years. Pterygium grade >2 was found in 25 patients and>3 was seen in 14 patients. Recurrence was defined as any fibro vascular growth of conjunctival tissue extending more than 1.5 - 2 mm across the limbus over the cornea. Recurrence was seen in 5 patients of group-I, 2 patients each in group II and III; all of them between 4-6 months after surgery. The average month of recurrence was 5.56 months. All patients were followed up completely up to 6 months post-operatively. **Conclusion:** The present study showed a reduced recurrence rate of pterygium when conjunctival autograft is combined with a single subconjunctival dose of bevacizumab(2.5mg/0.1ml) or Triamcinolone acetonide (12 mg) intraoperatively. The results between triamcinolone and bevacizumab groups were comparable. However, longer follow up and a large study group will mandate the use of adjuncts in preventing the recurrence of pterygium.

Keywords: Pterygium, Triamcinolone, Bevacizumab.

INTRODUCTION

Pterygium is a very common ocular surface disorder specially in our part of the world, as it is more prevalent in people living in hot tropical climate. It is a wing shaped fibro vascular growth of bulbar conjunctiva and a degenerative condition of subconjunctival tissue, in which there is an elastic degeneration and proliferation of vascular granular tissue under the epithelium, ultimately encroaching the cornea and destroying the corneal epithelium, superficial stroma and Bowman's membrane.[1] It is usually seen growing in the nasal part of the limbus within the palpebral aperture but can be seen on either side of limbus. Though the exact etiopathogenesis of pterygium is not well understood, but exposure to ultraviolet radiation is supposed to be a major risk factor for its occurrence. Further recent studies suggest that immunological dysfunction leading to angiogenesis stimulated by ultraviolet radiation plays an important role. It has also been found that increased levels of pro angiogenic factors like basic fibroblast growth factor(BFGF), transforming growth factor(TGF- β), vascular endothelial growth factor(VEGF) and platelet derived growth factor are responsible for formation and recurrence of pterygium, VEGF being the most prominent of these growth factors.

Pterygium causes a number of symptoms like redness of eye, foreign body sensation, irritation, lacrimation, reduced visual acuity, restricted movement of eye causing diplopia but the most prominent one is cosmetic disfigurement and problem in fitting contact lenses. The treatment is essentially surgical. Excision of pterygium with bare sclera is the most widely practiced method in India, but the recurrence of pterygium at the site of excision is very common unacceptable complication with various workers reporting post operative recurrence rate in the range from 55.5%- 89%. Recurrent pterygium is more difficult to manage due to thinning of underlying cornea and extensive scarring. Various methods like application of Beta irradiation, use of Mitomycin- C,

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5- Fluorouracil and thiotepa intraoperatively or post operatively have been tried as an adjunctive therapy with varying success to prevent recurrence of pterygium. Furthermore recently conjunctival autograft is being extensively used as an adjunctive procedure, with less recurrence rate. Use of amniotic membrane grafts have also been studied in comparison with conjunctival autografts.[13-15]

Post operative conjunctival inflammation and fibro vascular growth is one of the major factors responsible for recurrence of pterygium after surgery. It has been reported that persistent conjunctival inflammation around the surgical site after pterygium surgery is present in about 15% of cases of conjunctival autograft. As the role of corticosteroid in the prevention of post operative inflammation is well understood, it was thought to use steroid injection (Triamcinolone acetonide) subconjunctivally at the site of surgery to suppress post operative conjunctival inflammation responsible for recurrence of pterygium. Vascular endothelial growth factor (VEGF) is another factor supposed to be responsible for recurrence of pterygium after surgery with its increased level in response to several stimuli including ultraviolet radiation by angiogenesis, causing an increase in pterygium epithelium and vascular endothelium. Thus it has been suggested that antiVEGF therapy may induce regression of blood vessels in pterygium or prevent its recurrence after surgical removal. Bevacizumab (Avastin) is a humanized monoclonal antibody that inhibits VEGF, the main stimulant of angiogenesis and is being used in ocular disorders to inhibit corneal, retinal neovascularization with a good success rate.[8]

Aim:

To evaluate the efficacy of conjunctival autograft alone compared with adjunctive use of intraoperative subconjunctival triamcinolone and bevacizumab in cases of primary pterygium surgery in prevention of recurrence of pterygium

MATERIALS AND METHODS

A prospective comparative clinical study was done in 39 eyes of 32 patients with primary nasal pterygium at the Regional Institute of Ophthalmology, IGIMS, Patna between July 2011- October 2012 after the approval by ethics committee. Patients complaining of decreased visual acuity and cosmetic blemish with an extension of pterygium up to 2mm over the cornea were included in our study. After obtaining an informed consent from all the patients with a detailed explanation of the nature and consequences of the study, a complete ocular examination including visual acuity, slit lamp biomicroscopy, applanation tonometry and fundoscopy, were performed in each patient before surgery. Patients were randomly divided into 3 groups- group-I, group-II, group-III containing 13 cases each. Patients with recurrent pterygium, preexisting glaucoma, dacryocystitis, ocular surface disorders, infections, any history of previous ocular surgery, diabetes mellitus, pregnancy and lactating mothers were excluded from our study. Conjunctival autograft alone was done in Group- I whereas it was supplemented with subconjunctival injection of Triamcinolone acetonide and Bevacizumab (Avastin) in Group II and Group III respectively.

SURGICAL TECHNIQUE: All the surgeries were performed by a single surgeon. After antiseptic dressing, the eyes were anesthetized by using 4% xylocaine with adrenaline drops topically and subconjunctival injection of 2% xylocaine in the area of pterygium to be excised. The pterygium was dissected from the underlying cornea and excised in all the 39 cases up to around 4 mm of conjunctiva covering head and body of pterygium leaving bare sclera near the limbus. Gentle cautery was applied for homeostasis to prevent scleral shrinkage and future scleral necrosis. A conjunctival flap devoid of tenon's capsule was fashioned from the adjacent superior conjunctiva, placed over bare sclera and sutured with 8-0 vicryl suture. Group- I patient were left alone with conjunctival autograft, while Group-II patients were injected with 12 mg of Triamcinolone acetonide and Group-III patients with Bevacizumab (Avastin) 2.5mg/0.1ml subconjunctivally. Subconjunctival injections were given in inferior fornices in all cases of Group II and Group III to prevent flap contraction. Routine postoperative regimen with a topical antibiotic moxifloxacin0.5%, steroid drop0.1% betamethasone and preservative free artificial tear (hydroxymethylcellulose) each 4 times a day was given and steroid was tapered over a period of 4 weeks. All sutures were removed cautiously after 2 weeks in post operative period in each group. Post operative follow up was done on day-1, 1st week, 1 month, 3 months and 6months after surgery. Recurrence was defined as any fibro vascular growth of conjunctival tissue extending more than 1.5 - 2 mm across the limbus over the cornea. The results were analyzed for outcome.

RESULTS

This prospective study was done in 39 eyes of 32 patients, of which 23 were males and 16 females. The mean age of patient was 39.55+-10.05 years. [Table 1] The age group ranged from 25-58 years. Pterygium grade >2 [Figure 1] was found in 25 patients and>3 [Figure 2] was seen in 14 patients [Table 2]. No major intraoperative complication was noted in any group in any eye apart from bleeding in

3 patients which was controlled intraoperatively (2 from Group I and 1 from Group III) [Table 3]. All patients were followed up completely up to 6 months post-operatively. The main outcome of the study was focused on postoperative recurrences. The recurrence of pterygium was seen in 5 patients of group-I, 2 patients each in group II and III; all the recurrences had been between 4-6 months after surgery. The average month of recurrence was 5.56 months. It was further observed that recurrence was more in younger age group. Moreover, the recurrence rate was same in group II and III where subconjunctival injection of Triamcinolone and Bevacizumab was given with the conjunctival autograft, while it was more in group-I where only conjunctival autograft was performed.

Table 1: Gender distribution in different groups

Sex distribution	GroupI	GroupII	GroupIII	Total
Male	8	7	8	23
Female	5	6	5	16
Total	13	13	13	39

Table 2: Grades of pterygium in different groups

Grade of Pterygium	Group I	Group II	Group III	Total
Pterygium grade >2	8	10	7	25
Pterygium grade >3	5	3	6	14

Table 3: Occurence of complications in different groups

Complications	Group I	Group II	Group III
Recurrence	5	2	2
Bleeding	2	0	1

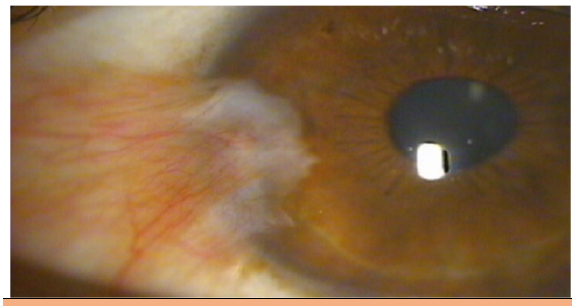

Figure 1: Grade>2 Pterygium

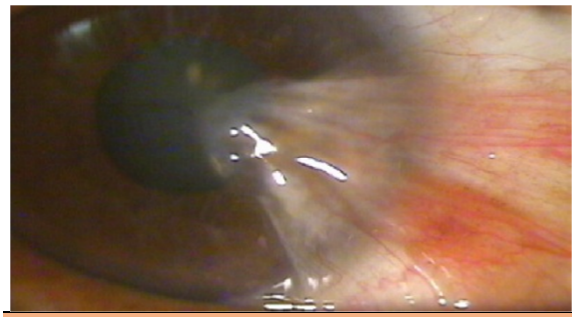

Figure 2: Grade>3 Pterygium

DISCUSSION

The treatment of pterygium by the commonly employed surgical excision with bare sclera technique results in a significant recurrence leading to a cosmetic blemish with an unhappy patient. Several adjunctive therapies like conjunctival autograft, application of mitomycin-C, use of cyclosporine drug, subconjunctival injection of triamcinolone acetonide and bevacizumab along with excision of pterygium has been tried to prevent recurrence rate.[6,9] A number of factors such as exposure to ultraviolet rays, environment factors, surgical trauma, and type of pterygium are responsible for recurrence. The present study has been undertaken to explore the role of adjuncts (subconjunctival injection of triamcinolone and bevacizumab) in the prevention of recurrence and any undesirable side effects where used as an adjunctive to primary excision with conjunctival autograft. All the surgeries in the present study were performed by a single surgeon to standardize the surgical outcome. Triamcinolone acetonide is an intermediate acting medium potency steroid, which is five times more potent than hydrocortisone having duration of action for 15-20 days in conjunctiva. Intraoperative injection of triamcinolone reduces the post operative conjunctival inflammation thereby reducing the rate of recurrence of pterygium. Currently the role of antiVEGF agents such as bevacizumab as an adjunctive therapy for pterygium surgery has been evaluated by different workers. Several reports show the use of bevacizumab, topical or subconjunctival, use by different routes with various doses at different time interval. However, results obtained in different studies are controversial. Razeghinejad et al found that subconjunctival injection of bevacizumab as an adjunctive pterygium excision with a conjunctival autograft has no effect on recurrence rate. The present study, showed a reduced recurrence rate when single subconjunctival dose (2.5mg/0.1ml) of bevacizumab was given intraoperatively along with conjunctival autograft.

CONCLUSION

The present study showed a reduced recurrence rate of pterygium when conjunctival autograft is combined with a single subconjunctival dose of bevacizumab(2.5mg/0.1ml) or Triamcinolone acetonide (12 mg) intraoperatively. The recurrence rate between triamcinolone and bevacizumab groups were comparable. However, longer follow up and a large study group will mandate the use of adjuncts in preventing the recurrence of pterygium.

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