

Triple technique for treatment of pterygium

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Abstract: Purpose: To evaluate the outcomes of primary pterygium excision one week after sublesional Bevacizumab (Avastin®) injection and intraoperative mitomycin C application with subtenon triamcinolone injection (triple technique). **Patients & Methods:** In an interventional prospective study, 25 patients with primary pterygia underwent sublesional injection of bevacizumab (Avastin®) (1.25mg\0.1ml) one week later surgical excision was performed with mitomycin C application and the end of surgery triamcinolone acetate (10 mg\ml) was injection subtenon in Ophthalmology department of Sohag University Hospital and the eyes were operated on by a single surgeon. All cases were followed up for one year and the results were evaluated in terms of recurrent pterygium growth and complications. **Results:** Twenty-five eyes of 25 patients (14 males and 11 females) with mean age 45±8.8 years were operated. The pterygia extended onto the corneas for 4.1±1.2 (range 3-5.5) mm. during the 12 months follow up no recurrence was detected and no complications were reported. **Conclusion:** this triple technique is safe and effective surgical technique with no recurrence rate but longer follow up period is mandatory. [AlAhmady H. Alsaman. **Triple technique for treatment of pterygium.** *J Am Sci* 2013;9(11s):95-98]. (ISSN: 1545-1003). <http://www.jofamericanscience.org>. 15

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1. Introduction

A pterygium is a fibrovascular growth of actinically damaged conjunctiva extending across the limbus and invading the cornea. It is a common external eye condition, affecting different populations especially in tropical and subtropical regions with a reported prevalence of 2% to 7% worldwide. The primary indication for surgical removal of a pterygium is decreased visual acuity, which can be the result of encroachment of the lesion onto the visual axis, induced irregular astigmatism, or breakup of precorneal tear film. Other indications for surgical intervention include discomfort and irritation unresponsive to conservative therapy, restricted ocular motility and difficulty with contact lens wear, anticipated keratorefractive surgery and unacceptable appearance.

In pterygium surgery a variety of surgical procedures are in use. The baresclera technique is still common because of its simplicity. Sliding or rotational conjunctival flaps are also popular. Today, there is overwhelming evidence that the sole use of the baresclera technique is associated with a high risk of local recurrence.^{1,2}

Adjunctive therapies, as beta-irradiation and antimetabolic drugs, like mitomycin C (MMC) are used^{3,4} to decrease the recurrence rate.

MMC is an antineoplastic agent which alkylates and cross-links DNA, resulting in an inhibition of the cellular proliferation for a long time.⁵ It has proved to be safe and beneficial in glaucoma surgery.⁶

Postoperative MMC has been reported to decrease the recurrence rate to 2.3%–39% whereas the recurrence rate after conjunctival autograft has been reported to 2%–35%. However, the risk for significant side-effects following beta-irradiation^{7,8} and postoperative MMC^{9,10} is substantial. Therefore, to reduce the risk of the complications, application of a single dose intraoperative MMC after the excision of the pterygium has been advocated by some authors.¹¹⁻¹³

On the other hand, pterygium excision combined with transplantation of a free conjunctival Autograft appears safe and effective, but was usually used only for recurrent lesions.¹⁴

2. Patients and Methods

This interventional study was conducted in ophthalmology department of Sohag University Hospital during the period from December 2011 to August 2012. 25 eyes of 25 patients with primary pterygia extending at least 3mm into the cornea were included in this study. Individuals with major systemic conditions such as abnormal ocular surface, collagen vascular disease, pregnant women and monocular patients were excluded. A complete ophthalmologic examination including measurement of visual acuity, slitlamp biomicroscopy, intraocular pressure measurement and funduscopy was performed to rule out dry eye, previous refractive surgery, cicatricial pemphigoid, glaucoma or vitreoretinal disease. All patients had minimum follow up of 12 months after surgery. Informed consent was obtained from all subjects.

Surgical Procedure:

Sub-ptygium or sublesional injection of Bevacizumab (Avastin®) (1.25mg\0.1ml) was performed in all cases (Figures 1,2). One week later surgical excision of the pterygium was performed with a # 15 surgical blade from the apex toward the base, then mitomycin C 0.1% was applied for 2 minutes and the end of surgery triamcinolone acetate (8 mg \0.2 ml) was injection subtenon (Figure 3). The eye was patched. All procedures were performed by a single surgeon under subconjunctival anesthesia with 2 % lignocaine (Xylocaine) containing 1:10,000 adrenaline (epinephrine) in all patients.

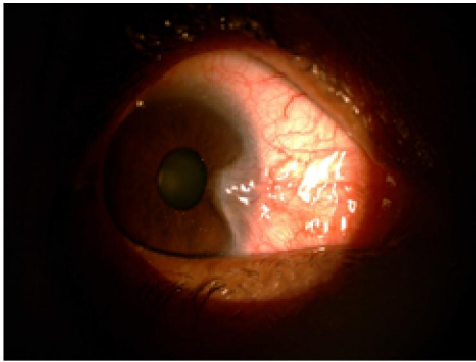
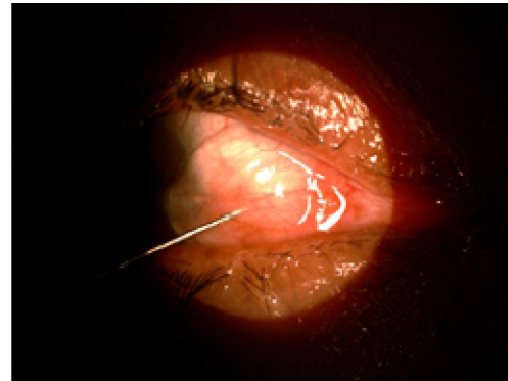


Figure 3: Immediately after excision of the pterygium and suntenon triamcinolone acetate injection (arrow pointed to the triameinolone under the Tenon)

Twenty five eyes with primary pterygia of patients including 14 male and 11 female subjects with mean age of 45 ± 8.8 years were operated. Sixteen (64 %) patients had occupations with considerable exposure to actinic damage. Preoperative refractive errors consisted of spherical component from -0.75 to $+3.25$ D (mean of 1.2 D) and cylindrical component from -1.00 to $+2.50$ (mean of -0.3 D). The extent of pterygium invasion

Follow-up Postoperatively, gatifloxacin 0.3 % (Zymer, Allergan) Prednicinlone acetate 0.1 % (Predforte, Allergan) eye drops were given 5 times daily for one week then twice for 2 weeks.

Patients were examined 1 day, 1 week and 1 month postoperatively then monthly for one year. Complications such as pyogenic granuloma, epithelial defects and excessive photophobia were recorded. Recurrence was defined as any fibrovascular growth of conjunctival tissue extending more than one mm across the limbus.



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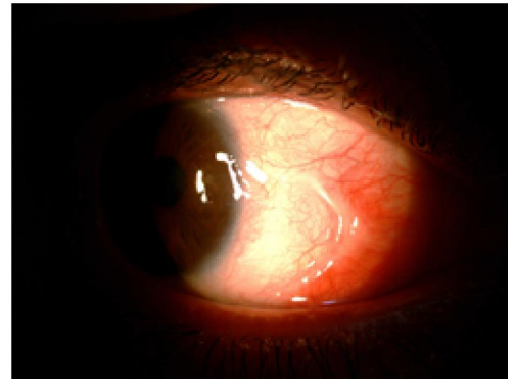


Figure 4: Two weeks after surgery

beyond the limbus ranged from 3 to 5.5 mm (mean 4.1 ± 1.2 mm).

On the first postoperative day, all patients had corneal epithelial defects. By one week, all epithelial defects healed completely and there was no conjunctival staining with fluorescein. Two weeks postoperatively, one patient developed pyogenic granuloma which was excised. Two patients suffered from excessive photophobia persisting for one month then resolved by increase frequency of topical steroid

and systemic steroid (1mg/Kg/day) for one week. None of the patients had any significant change in intraocular pressure any time during the follow up period. Preoperatively, best-corrected visual acuity for most patients was between 6/9 and 6/18. Two or more lines of visual improvement occurred in 3 patients, visual improvement was less than 2 lines in 12 patients. No significant change in BCVA was seen in the remaining cases.

The recurrence rate was 0 % as no recurrent case was detected over a minimum follow-up period of 12 months. No other adverse effects or complications occur throughout the study period.

4. Discussion

A pterygium is a multifactorial degenerative corneal disorder. Different procedures have been proposed for treatment of this condition the main complication common to all is recurrent disease which is more difficult to control.¹⁵ It is believed that surgical trauma and postoperative inflammation activate subconjunctival fibroblast and vascular proliferation, and deposition of extracellular matrix proteins, all of which contribute to recurrence of the lesion.

Vascular endothelial growth factor VEGF has been shown to be increased in pterygium and is suggested to be either directly or indirectly involved in its pathogenesis.¹⁷⁻²¹ Immunohistochemistry studies have shown that VEGF levels are more expressed in pterygium than in normal conjunctiva.^{16,20} Decreased antiangiogenic factors, together with increased stimulators, have been hypothesized in the formation and progression of pterygia.²⁰ The findings of abundant expression of VEGF in pterygium may lead to the development of anti-VEGF therapy aimed at inducing regression of blood vessels and size of pterygium. To the best of our knowledge, this is the first study that has used an anti-VEGF agent as neoadjuvant for Pterygium surgery.

MMC acts as an alkylating agent and causes irreversible damage to the DNA structures of the cell.^{22,23} In pterygium surgery, single intraoperative use of a variety of MMC doses have been reported.^{3,24-26}

However, the safest dosage of MMC that can prevent the recurrence of pterygium without causing complications is still unknown. Postoperative use of topical MMC is not recommended because of a possible drug misuse, which may cause severe ocular complications such as scleromalacia, corneal perforation, glaucoma, iritis, pain, and punctate keratopathy.^{3,10,25,26} Single intraoperative use of MMC is safer than postoperative topical daily application.^{12,27,28}

To avoid severe ocular complications, all patients with abnormal ocular surface who are at greater risk for a delay of epithelialization or excessive inflammation, such as patients with immune disorders, blepharitis, or dry eyes, were excluded from this study. Furthermore, postoperatively, the patients were closely observed until the epithelialization of the ocular surface is complete.

Regarding triamcinolone acetate, Paris, et al reported that postoperative use of subconjunctival triamcinolone seems to benefit patients at increased risk of pterygium recurrence. It is relatively safe and is accompanied by few complications.²⁹ Kheirkhah *et al.* reported that intraoperative triamcinolone injection did not significantly reduce postoperative conjunctival inflammation or pterygium recurrence.³⁰ However, in their study triamcinolone was injected subconjunctival not subtenon and the follow up period was like this study 12 months so longer follow up studies are needed.

Conclusion: this triple technique is safe and effective surgical technique with no recurrence rate but longer follow up period is mandatory.

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