Pterygium excision with conjunctival advancement technique: A clinical study

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Abstract
Aim: To assess the stability of overlying conjunctiva and recurrence of pterygium following subconjunctival pterygium excision with conjunctival advancement technique.
Materials and Methods: A prospective interventional study was done on 16 patients with progressive nasal pterygium. The pterygium was excised, separating it from the overlying conjunctiva. The overlying conjunctiva was secured at limbus with 10-0 nylon sutures. Patients were followed up for a period of 6 months following surgery.
Results: Good stability of conjunctiva was seen in all patients. Recurrence was seen in 2 patients and persistence of redness in the excised area in 4 patients.
Conclusion: This procedure helps to save the superior conjunctiva for future glaucoma surgery. Less number of sutures reduces the time required for surgery and improves patient comfort factor.

Keywords: Conjunctival advancement, Glaucoma surgery, Pterygium, Recurrence, Subconjunctival excision.

Introduction
Pterygium is a dysplastic condition affecting the bulbar conjunctiva[13] where there is a wing shaped, ocular surface lesion which extends from bulbar conjunctiva onto the cornea. The word pterygium was originated from a greek term 'pterygion' that means 'small wing'.[1] The etiology and pathogenesis of pterygium is still not fully understood, many etiological factors are attributed to its causation among which exposure to UV radiation is a widely accepted trigger factor. Exposure to UV radiation induce a complicated cascade of inflammation, proliferation of fibrous tissue and angiogenesis.[2] Histopathologically, pterygium consists of an epithelium which may be normal or may show minimal goblet cell hypertrophy except at the head of pterygium where it can have various altered morphology. The stroma of pterygium shows fibroblast proliferation, inflammatory cells, neovascularisation, remodelling of extracellular matrix and altered limbal epithelial cells at the head.[3] Patients with pterygium mainly have cosmetic complaint due to the growth and in addition to that there can be ocular irritation and foreign body sensation which is due to the irregularity to the ocular surface produced by the pterygium.[13] Management of pterygium is a topic of controversy and research as none of the procedures are proved to be gold standard with absences of a recurrence. Surgery is the primary treatment modality for pterygium surgical procedures for pterygium has undergone various modifications. Initially the procedure was to excise the pterygium and leaving the area of excision as bare sclera is no longer advocated as it is associated with high recurrence later various techniques were introduces to cover the bare sclera like grafting with amniotic membrane or with a conjunctival limbal autograft. Conjunctival autograft can be done either with or without the adjuvant use of antimetabolite agents like Mitmycin C.[4] Even with all these modalities, recurrence of pterygium is still a major problem with perygium excision.[5] The presence of wide variety of treatment modalities for pterygium management itself suggest the fact that no single modality is universally successful and the ideal treatment for pterygium is not still unmasked. Among the above mentioned procedures, conjunctival limbal autografting is the procedure that carries a lesser recurrence rate.[6] Conjunctival limbal autografting is done at the cost of excision and grafting of a considerable portion of normal healthy conjunctiva and limbal cells which is retrieved usually from the superior part of bulbar conjunctiva which is the preferred site of glaucoma filtration surgery like trabeculectomy and the presence of a normal superior conjunctiva is a very important factor determining the success of a glaucoma filtration surgery.

The aim of our study is to find the effectiveness of subconjunctival excision of pterygium tissue with conjunctival advancement technique to treat the Pterygium and hence saving the normal conjunctiva for the future glaucoma surgery if needed.

Objectives of the Study
1. To study the stability of the extended conjunctiva following subconjunctival excision of pterygium with conjunctival advancement technique
2. To study the recurrence rate of pterygium following this procedure

Materials and Methods
This was prospective interventional study conducted on 16 eyes of 16 patients with primary nasal perygium. The study was conducted in the department of Ophthalmology, Hassan Institute of Medical Sciences. Hassan. Study period was from January 2017 to August 2017. Prior approval from the institutional ethical committee was obtained. Patients were enrolled into the study using following inclusion and exclusion criteria.

Inclusion Criteria

1. Patients with progressive pterygium in the nasal quadrant of the bulbar conjunctiva, requiring pterygium excision surgery

Exclusion Criteria

1. Patients with pseudo pterygium
2. Recurrent pterygium
3. Pterygium in the Temporal quadrant
4. Other conjunctival masses mimicking pterygium.
5. Conjunctival lesion with a suspicion of ocular surface squamous neoplacia (OSSN)

Patients fulfilling the above inclusion and exclusion criteria were included in the study. Patients were explained about the procedure and an informed written consent was obtained from the patients. After a brief history, A detailed ocular examination was performed that included Best corrected visual acuity (BCVA), slit lamp examination of anterior chamber, Dilated fundoscopy and refraction. Measurement of intraocular tension. Size of the pterygium and the extent of corneal invasion was recorded and clinical grading of pterygium proposed by T H Tan was used to classify the pterygium.

Base line investigations for surgery that included Complete Hemogram, random blood sugar, HIV, HBsAg, ECG were done and a fitness for surgery was obtained. The procedure was done under peribulbar block. The eye was painted and draped and eye speculum inserted. The body of Pterygium was meticulously excised beneath the overlying conjunctiva taking care not to damage the underlying medial rectus. Head of the pterygium was separated from underlying corneal stroma and excised upto limbus. Haemostasis was obtained. The overlying conjunctiva was then dragged over the bare sclera and was secured at the limbus with two 10-0 nylon sutures. Following the procedure, patients were advised to administer antibiotic steroid eye drops (Moxifloxacin with Dexamethasone eye drops) 6 times daily in the first week tapered gradually over 4 weeks. Lubricating eye drops (Carboxymethylcelllulose eye drops) 4 times daily and HPMC eye ointment ointment at night for 4 weeks. Residual sutures if present was removed after 4 weeks.Patients were followed up at the end of 1 week, 1 month, 3 months and 6 months, during follow up visits, Stability of overlying conjunctiva and evidence of recurrence were recorded.

Results

16 patients underwent subconjunctival pterygium excision with conjunctival advancement technique, out of the 16 patients 12 patients (75%) were female and 4 patients (25%) were male (Fig. 1). Majority of the patients were more than 40 years. Six patients were more than 60 years, six were between 40-60 years and four were below 40 years (Fig. 2). The pterygiums were classified According to TAN staging preoperatively and based on that 10(62.5%) patients were belonging to T2 stage (intermediate). four patients (25%) were in T3 (fleshy pterygium) and two (12.5%) were T1 stage (atrophic pterygium) (Fig. 4).

During the 6 months follow up all 16 patients showed good stability of conjunctiva. (Fig. 6a) Four patients (25%) complained of persistent redness for a longer duration without any evidence of recurrence (Fig. 6b) and two patients (12.5%) showed recurrence.

Statistical analysis was done by descriptive statistics.

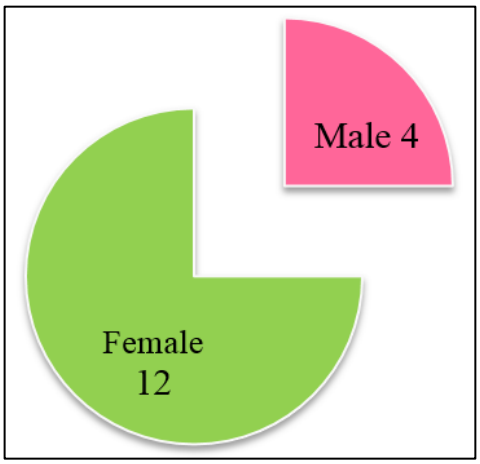

Fig. 1: Sex distribution

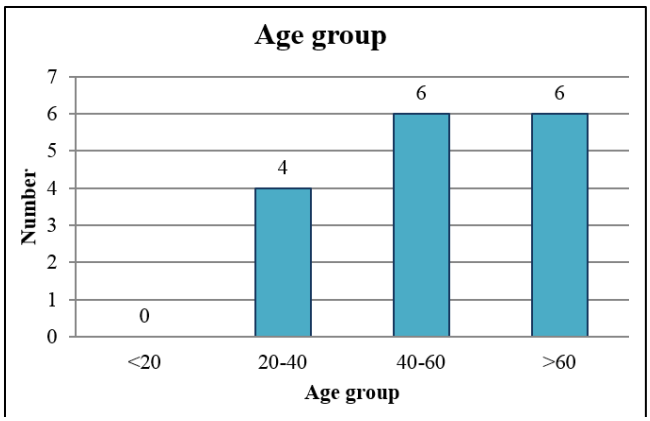

Fig. 2: Age distribution

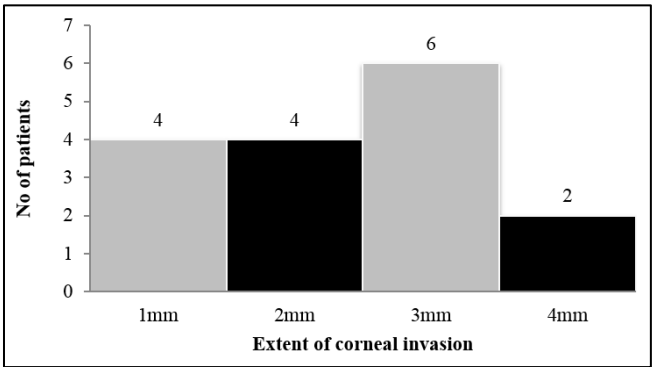

Fig. 3: Extent of corneal invasion

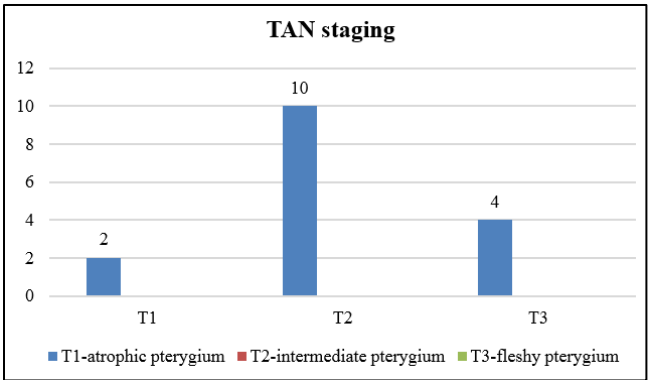

Fig. 4: TAN staging of pterygium

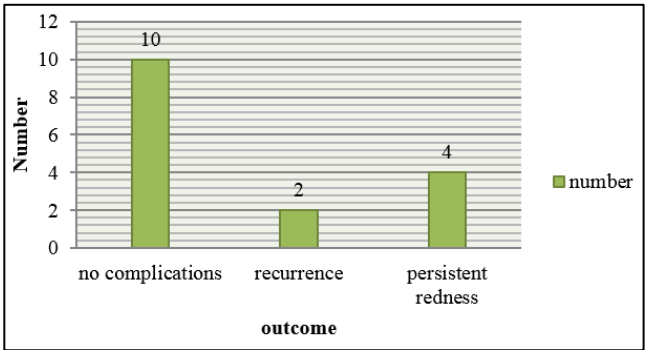

Fig. 5: Surgical outcome

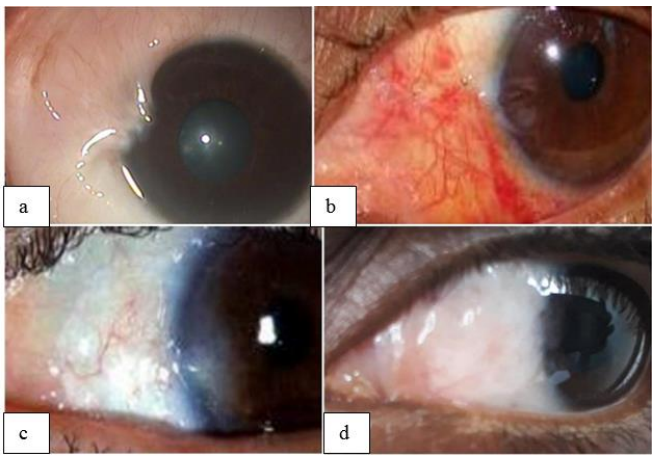

Fig. 6: Showing the surgical outcome in an uncomplicated case; 6a: Pre-operative; 6b: First post-operative day; 6c: First month post-operative; 6d: 3 month post-operative

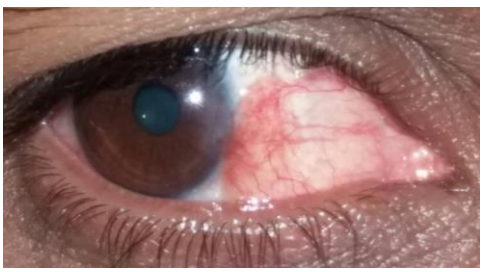

Fig. 7: Showing a patient with persistent redness following pterygium excision

Discussion

According to our study pterygium is more common among people older than 40 years with 75% patients more than 40 years in the study and majority were females this result is similar to that of a study conducted by Chen CL et al.[13] according to their study incidence of pterygium was higher in age more than 40 years with the risk increasing as the age increases also there was a female preponderance with 64% being female. Management of perygium is a topic of controversy as none of the surgical techniques available for Pterygium surgery is without the risk of recurrence, as in the study conducted by Toker E et al.[7] The recurrence following conjunctival limbal autograft with fibrin glue is 5.4% and in amniotic membrane grafting its around 13.8% and also these procedures are associated with complications like graft retraction, graft folding and graft loss.[8]

Soo Hyun Kwon et al.[9] in their study regarding the recurrence pattern following pterygium excision with conjunctival autografting found a recurrence rate of 12.1% with 3 different morphologic patterns of recurrence.

1. Regrowth over the epithelial defect
2. Transformation of the conjunctival graft into the pterygial tissue
3. Regrowth from unexcised pterygial tissue.

The recurrence rate with conjunctival autografting as per the study is comparable to ours.

Pterygium consist of epithelium which shows minimal abnormality except at the head of pterygium where there can be stratified squamous change, the main pathology is at the level of stroma where the connective tissue shows fibrinoid changes.[10] Hence to preserve the epithelium over the pterygium doesn't contribute to recurrence as it is histologically normal and a meticulous removal of the sub epithelial connective tissue and stroma almost eliminates the pathology.

Conventional pterygium excision with superior conjunctival grafting has the major disadvantage of utilising the conjunctiva from the site of glaucoma filtration surgery. Presence of a normal superior conjunctiva is a key factor in the success of a glaucoma filtration surgery and in that setting, excision of the normal superior conjunctiva for grafting the bare sclera after a pterygium excision is a disadvantage. Various methods are being explored to spare the superior conjunctiva, in view of preserving the glaucoma filtration site so that if the patient develop glaucoma in future, the treatment will not get compromised. One such method is to take graft from the inferior conjunctiva. various studies have been conducted on the same and found it effective.[11,12] However the drawback is obtaining healthy conjunctiva from elsewhere can lead to conjunctival scarring, risk of symblepharon etc. subconjunctival excision of pterygium with conjunctival advancement prevents such donor site related complications and moreover the superior conjunctiva is left intact so as to preserve the glaucoma filtration site untouched.

Conclusion

Subconjunctival pterygium excision with Conjunctival advancement – is an effective technique to treat pterygium. It is mainly aimed to save the glaucoma filtration site as well as surrounding normal conjunctiva. The recurrence rates are comparable to the current management methods like conjunctival autografting.Reduction in surgical time and less number of sutures are additional advantages. However small sample size and persistent redness following surgery are limitations of the study. Hence further studies on the same with bigger sample size is warranted.

Conflict of Interest: None.

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