SAFETY AND EFFICACY OF THE PTERYGIUM EXCISION WITH LIMBAL CONJUNCTIVAL AUTOGRRAFT SURGERY IN PTERYGIUM MANAGEMENT

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ABSTRACT

Aims

To determine the efficacy and safety of limbal-conjunctival autograft in the management of symptomatic pterygium and also to determine the best corrected visual acuity and to know the pterygium recurrences.

Materials and Methods

The surgical excision of pterygium and limbal-conjunctival autograft were done in 70 eyes with pterygium. Autologous limbal-conjunctival graft of the same eye was used to cover the bare sclera after pterygium excision, while we had maintaining the limbus to limbus orientation. All patients were followed up to 8 to 20 months.

Result

The study observed that a low recurrence rate of pterygium and Minimal complications. Astigmatism reduced with significant improvement of visual acuity (P<0.01). All confounders and related parameters of pterygium excision were found to be statistically significant (p<0.01) with respect to age and sex matched frequency. The incidence of post operative complications is very minimal and found to be significantly associated with the PTE and LCA (P<0.01).

Conclusion

The present study demonstrated a low recurrence rate from pterygium excision with Limbal-conjunctival autografting among rural population to whom the pterygium is more prevalent due to ultraviolet light exposures. This technique is free from sight threatening complications (unlike topical chemotherapy or radiotherapy) and also the study could not found manifested deleterious effect on visual acuity (unlike lamellar grafting).

KEYWORDS: Pterygium Excision, Limbal Conjunctiva, Autograft, Bare Sclera, Complications

INTRODUCTION

The pterygium is a wing-shaped fibro vascular dysplasia of the bulbar conjunctiva and is usually located in the nasal than in the temporal horizontal part of the limbus. It has invasive and high rate of recurrences. The main histopathology changes were made in primary pterygium, elastotic degeneration of conjunctival collagen are seen 1. Among several risk factors reported, limbal stem cells damage due to UV light is a major risk factor 2, 3. The prevalence rate ranges between 0.70% to 31.0% in various heterogeneous populations around the world and the condition is more common in warm, dry and humid climatic changes 4.

In South Indian perspective many study have been reported that, the prevalence rate of pterygium is high. The study has reported in Andhra Pradesh the prevalence rate of pterygium was 11.7% 5 and Tamil Nadu the prevalence was 9.5% 6 respectively. Pterygium is more frequently in Indian rural areas, as a "pterygium belt"
described by Cameron et al.\textsuperscript{7}.

The indications for pterygium surgery—visual impairment, recurrent inflammation, motility restriction were seen in many patients. The treatment of pterygium is a surgical, recurrence after pterygium excision with bare sclera is appears frequently and aggressive defined characters.\textsuperscript{8,9} An indication for surgical excision includes an impending or decreased visual acuity for the involvement of central cornea, irregular astigmatism, restriction of ocular motility, recurrent inflammation \textit{etc}. The pterygium excision with bare sclera has found high recurrence rate of disease progression. For reduction of recurrence, the adjunctive therapies could be considered for the assessment of the patients and implementation of new surgical extended techniques. The different techniques include the conjunctival or conjunctivo-limbal and amniotic graft, application of antimitotic agents, radiotherapy \textit{etc}\textsuperscript{10}. Comparatively surgical results are better in excision with conjunctival auto grafting but as techniques are more delicate and time consuming, therefore many advises it for recurrent pterygium only. The present study was done to determine the recurrence rate, complications, visual acuity improvement and astigmatic changes after pterygium excision with limbal conjunctival autografting.

**MATERIALS AND METHODS**

A prospective based study was carried out from September 2012 to October 2014 which involved 70 eyes (64 patients) having symptomatic pterygium. Before surgery the best corrected visual acuity, refraction, intraocular pressure and detailed slit-lamp examinations were recorded. Patients with other ocular pathology were excluded from this study. Characteristics of pterygium including location, size and extent across the cornea were recorded. The demographic profile viz., age, sex, past ocular, medical and surgical history, visual acuity, refraction before and after surgery, surgical technique and complications, postoperative medications, postoperative complications and recurrences were considered for the study. Depending on corneal encroachment Grading was done, as Grade 1- from limbus to a point between limbus and pupillary margin, 2- between a point between limbus and pupillary margin and Grade 3- crossing pupillary margin.

The present study has adopted the definition of recurrence used by Sebban and Hirst the growth of fibrovascular tissue at excised pterygium with the apex beyond the limbus and progressing to the cornea. Recurrences were further classified as symptomatic or asymptomatic. All the operations were performed under peribulbar anesthesia. To improve exposure, 6/0 silk traction sutures were placed in the episcleral-limbal area at 11 and 7 o’clock positions. The excision was done starting from neck to the head of pterygium with crescent knife up to limbus. Tooks corneal knief was used to shave the cornea which was covered by pterygium. The body of pterygium with involved tenon’s capsule was excised. Conjunctival graft including a limbus which contains stem cells was prepared in the same eye. Size of the graft was 1-2 mm bigger than the recipient bed. Conjuctiva was dissected towards the cornea upto 0.5-1 mm from limbus with a scalpel blade to which contains limbal stem cells. A gentle dissection was started from fornix to limbal direction in the supertemporal quadrant. Care was taken not to include Tenon’s capsule. Autgraft was slowly slided into the recipient bed keeping epithelal side upwards. Care has taken to position harvested limbal stem cells on the limbus of the recipient bed. After confirming the proper positioning and orientation the graft was sutured with 8/0 Vicryl. The exposed host area was left bared. Postoperatively the patients were treated with a tapering dose of topical oflaxacine with dexamethasone drops 6 times/day for two weeks and then tapered weekly, 2% hydroxy propyl methyl cellulose gel 3 times a day for 2 weeks, exocine eye ointment at bed time for 2 weeks. Patients were examined on 1st postoperative day, at 1 week, 2 weeks, 1 month, and every 2 months for one year and then every 6 months thereafter. Analysis was done for pre and postoperative
A cohort of 70 eyes from 64 patients with primary or recurrent pterygium was analysed. Among these patients, 35 were men (54.68%) and 29 were women (45.31%). The pterygium was classified on the extent encroachment into three types. The mean age of the patients at the time of surgery was 54 years (range, 34–72 years). The mean follow-up period was 14 months (range, 8–24 months). Primary pterygium was found in 66 eyes (94.28%), whereas 3 eyes (4.28%) had undergone at least 1 previous pterygium surgery. The regrowth of fibrovascular tissue was observed in 4 cases (5.71%).
this one case (14.28%) showed clinically significant recurrence and remaining 2 cases were asymptomatic. The clinical characteristics of cases are summarized in Table 1. The donor site was epithelialized without any significant scarring. No epithelial inclusion cysts, granulomas or dehiscence were seen. Ocular movements were not affected. No significant (p>0.00) intraoperative complications were noted. Peripheral corneal scarring at the site of pterygium occurred in 3(4.28%). Suture cut through with retraction of conjunctival graft noticed in two eyes, no active treatment was done and the exposed area epithelialized adequately on follow up without compromising surgical or cosmetic results. The upper lid developed giant papillary conjunctivitis due to irritation of suture in 1 eye which was resolved after suture removal. These complications are shown in Table 3. The preoperative astigmatism was 1.5+/- 2.25 Diopters, which was reduced to postoperatively to 0.75+/- 1.10 Diopters. Statistically this reduction was found to be significant. The most common postoperative complaint was irritation followed by photophobia, foreign body sensation, and hyperemia. All these complaints decrease and resolve over a period of 2-4 weeks.

DISCUSSIONS

High recurrences of 30% to 70% was observed in Pterygium excision without graft. Different procedures are evolved, to minimise the recurrences, like use of antimitotic agents (Mitomycin C and Thiotepa), amniotic graft, beta radiations and others. Antimitotic agents are associated with risk of uveitis, thinning of sclera and corneal perforations. Amniotic membrane contamination is a major complication that cannot be neglected inspite of low recurrences11. On reviewing the published literature, we feel that surgical technique is the single most important factor in influencing the recurrence. Various studies have described the inclusion of limbal tissue in the graft and have demonstrated low recurrence rate Table 4. The importance of limbal graft in preventing recurrences has been stressed by Figueirado et al12. The importance of limbal stem cell in this condition is highlighted by work of Dushkh et al. We have reviewed many studies about success rates in conjunctival autografting. In our study we have noticed that recurrence rate is significantly low when limbal tissue is included in graft. But major drawback for limbal conjunctival autograft transplantation is that it is technically more time consuming and so many surgeons advise this procedure for the treatment of recurrent Pterygium only. We have conducted this study on limbal conjunctival autograft as an effective procedure in treating primary as well as recurrent pterygium. In our study, recurrence was seen in two eyes (2.85%) in primary pterygium and one eye (1.42%) in recurrent pterygium. All recurrences occurred in patients aged below 48 years, also corroborates earlier reports of increased recurrence rates in younger patients13,14. Using different procedures to prevent recurrence other studies have shown varying degrees of recurrence rate that ranges from 0 to 15%. While in the conjunctival autografting without inclusion of limbal tissue in the graft, recurrence rate were noted 14% and 35% in three studies (Table 4). None of the donor sites in this study developed vascularisation of cornea or conjunctival fibrosis.

CONCLUSIONS

The visual acuity could be maintained same or improved in all cases. We also observed a significant reduction in astigmatism which resulted in the significant improvement in the visual acuity. Considering the deficiency or absence of the stem cells in the pathogenesis of the pterygium and its recurrences, several techniques were developed to include the limbal tissue which contains stem cells. So that stems cells help in the regeneration of normal tissue and reducing the recurrences. Inclusion of limbal tissue along with conjunctival auto graft is a technique we followed. Limbal conjunctival autograft appeared to be an effective procedure in preventing recurrence in both primary and recurrent pterygium. So we should consider limbal conjunctival autografting as procedure of choice for the surgical management of pterygium.
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