



PRIMARY PTERYGIUM EXCISION WITH AUTOGRAFT – WHY WASTE TISSUE

Ophthalmology

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ABSTRACT

AIM : To describe a modified technique of using conjunctival tissue graft from the pterygium itself in patients with primary pterygium and to measure the outcome.

METHODS : 40 patients with primary pterygium were included in this prospective observational study from December 2018 to December 2019. Conjunctival layer was separated from the underlying pterygium and cut to get a rectangular graft. Pterygium tissue then excised completely. Cornea scraping done. Graft was placed over the bare sclera and was taken up by autologous blood. Follow up was done on POD 1, 1 week, 1st, 3rd & 6th month.

RESULTS: 12 out of 40 patients (30%) had graft oedema on POD 1, 8 out of 40 patients (20%) had graft retraction. Granuloma was seen in 2 out of 40 patients (5%). None had recurrence. Cosmetic acceptance was good in all cases.

CONCLUSION: This method is useful to prevent recurrence, in circumstances to cover the large size defect and in glaucoma patients to preserve the superior bulbar conjunctiva for future glaucoma surgeries if needed.

KEYWORDS

Pterygium, surgical management, recurrence.

INTRODUCTION:

The risk factors for the pterygium, triangular fibrovascular growth of subconjunctival tissue encroaching over the cornea include dry, hot, windy, dusty environment and chronic exposure to ultraviolet rays. Ultraviolet rays is the single most important factor which activates the proinflammatory cytokines, growth factors, matrix metalloproteinase by the phenomenon of peripheral light focusing at the location of limbal stem cells [1]. It originates from a specific zone of Limbal stem cell deficiency [2]. On histopathological examination, pterygium shows characteristic altered limbal epithelial basal cells with squamous metaplasia and remodelling of extracellular matrix and proliferating fibroblasts in the stroma with progressive elastotic degeneration of conjunctival collagen [3,4].

Most important complication following Pterygium surgery is recurrence; Bare Sclera technique is associated with high recurrence rates whereas Pterygium excision with conjunctival autograft carries low recurrence rates [5]. The major limitation of conjunctival autograft technique is that it cannot be performed in patients with double Pterygium where the superior bulbar conjunctiva is not adequate to cover both the bare sclera defects, known Glaucoma and Glaucoma suspect because of the inability to preserve the superior bulbar conjunctiva for filtration surgeries [6]. To overcome this drawback, the conjunctival tissue from the pterygium is used to cover the bare sclera defect in primary pterygium.

METHODOLOGY:

This prospective observational study was conducted from December 2018 to December 2019 among 40 eyes of 40 patients after obtaining institutional ethics committee approval. This study is conducted according to the tenets of Declaration of Helsinki.

Inclusion and exclusion criteria:

Patients with primary Pterygium encroaching into Cornea were included in this study. Patients with recurrent and atrophic pterygium, and patients with bleeding and coagulation abnormalities were excluded from the study.

Preoperatively, a detailed history was taken regarding their age, sex, occupation, location, ocular complaints, and systemic illness. All participants underwent complete ophthalmic examination including visual acuity testing, anterior segment examination using slit-lamp bio-microscope, grading of Pterygium, intraocular pressure measurement and fundus examination.

Grading of pterygium was done depending on the extent of corneal involvement: Grade 1: crossing the limbus; Grade 2: midway between the limbus and pupil; Grade 3: reaching up to the pupillary margin; and Grade 4: crossing the pupillary margin.

Surgical technique:

Under peribulbar / topical anesthesia (based on patient's co-operation), superficial incision was made at the limbus over the pterygium using conjunctival scissors and thin conjunctival layer was separated meticulously from the underlying fibrovascular tissue of the pterygium and it was cut to obtain a rectangular conjunctival graft. Subconjunctival fibrovascular tissue was excised completely and scraped the residual tissue with crescent blade. Graft was kept stretched over the bare sclera maintaining the limbus-to-limbus orientation, where it got fixed with autologous blood. Chloramphenicol eye ointment was applied and eye patched overnight.

Postoperatively, Topical Ofloxacin 0.3% and Dexamethasone 0.1% combination eye drops was administered and tapered gradually over four weeks. Eye drops Flurbiprofen 0.03% and artificial tear substitute Hydroxypropyl Methylcellulose 0.7% was also given for 1 month. Figure 1a shows preoperative photograph of nasal pterygium. Postoperative review was conducted on day 1, 7th day, at the end of 1st month (Fig.1b), 3rd month and 6th month to look for graft recurrence. Recurrence was defined as fibrovascular tissue growth of 1.5 mm or more beyond the limbus after 1 month of primary pterygium excision [7]. Other complications observed are graft edema, graft retraction and formation of granuloma.

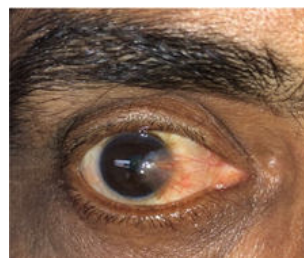


Figure 1a) Preoperative image of nasal pterygium.

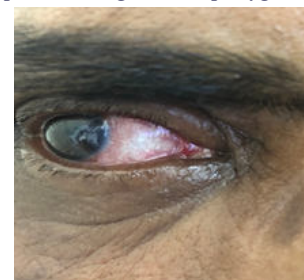


Figure 1b) Postoperative image of nasal pterygium excision at the end of 1st month.

STATISTICAL ANALYSIS:

Data were entered in Microsoft excel and frequency of different variables were calculated and analysis was done using chi-square test by using SPSS version-17.0.

RESULTS:

A total of 40 eyes with primary pterygium were operated by this technique. The mean age of the patients was 55.82 ± 8.11 years. There were 16 (40%) male patients and 24 (60%) female patients (Table 1). Out of 40 patients, 2 (5%) had grade 1 pterygium, 12 (30%) had grade 2, 18 (45%) had grade 3 and 8 (20%) had grade 4 pterygium (Table 2).

TABLE 1: AGE-SEX DISTRIBUTION OF PATIENTS WHO HAD PTERYGIUM SURGERY

AGE GROUP (years)	MALE	FEMALE	TOTAL
40-50	7	5	12
50-60	6	10	16
>60	9	3	12
TOTAL	22	18	40

TABLE 2 : GRADE OF THE PTERYGIUM

GRADE	NO OF PATIENT
I	2
II	12
III	18
IV	8

The primary outcome looked for was graft recurrence which was not observed in any of the study patients at the end of 6 months follow-up and the minimum follow-up period was 1 month in all cases [8].

12 eyes (30%) had graft edema on postoperative day 1. Graft retraction was seen in 8 (20%) eyes which was noted on the postoperative day 1. At the end of 1 month follow-up, 2 (5%) patients were presented with graft granuloma. Table 3 shows the percentage of post-operative complications of this study.

DISCUSSION:

Pterygium surgery techniques should preferably have a low recurrence rate and be cosmetically acceptable with minimal complications. Among the various techniques like amniotic membrane grafting, use of adjunctive agents (mitomycin C), conjunctival autografting is widely accepted with minimal recurrence rate. In this study, graft oedema (30%) was the most common complication and resolved spontaneously within 1 week. Mutlu et al suggested that graft oedema could be due to excessive handling of the graft [9]. Out of 40 eyes, Graft retraction was noted in 8 eyes. It is thought to be due to difficulty in obtaining adequate sized graft from the pterygium conjunctival tissue which is in accordance with Kodavoor et al [10]. Graft granuloma was noticed in 2 (5%) out of 40 eyes at 1st month follow-up, which may be due to inadequate excision of tenon's tissue [11]. Our study showed excellent cosmetic results with no recurrence at 6 month follow up.

Various studies stated that, limbal stem cells act as a barrier between the conjunctiva and corneal epithelium and destruction of this barrier leads to growth of conjunctival tissue on to the cornea [12,13]. However, adequate sized graft was enough to cover the bare sclera defect which still had lower recurrence rate comparable to other studies.

Jap et al studied on 51 eyes with primary and recurrent pterygium used conjunctival tissue from the pterygium itself with 180° rotation, reported recurrence rate of 4 [14]. In our technique, limbus to limbus orientation was maintained. Kodavoor et al, included 98 eyes with primary pterygium used conjunctival tissue graft from the pterygium itself without rotation with fibrin glue, reported recurrence rate of 4.08% which formed the basis of our technique without rotation using autologous blood. On comparison with fibrin glue, usage of autologous blood is cost effective and no risk of transmission of infections.

CONCLUSION:

This method can be recommended as the treatment option for double-headed pterygium patients with limited tissue availability to cover both the bare sclera defects and patients with primary pterygium in glaucoma and glaucoma suspects and those with filtering bleb wherein

the need of normal conjunctiva preservation is required or may need future filtration procedure. This method with shorter surgical time is safe and effective with no recurrence reported.

TABLE 3 : POST-OPERATIVE COMPLICATIONS

Follow up	% Graft oedema	% Graft retraction	% Graft granuloma	% Graft recurrence
POD 1-2	30%(12/40)	20%(8/40)	0	0
POD 1 st week	0	0	5%(2/40)	0
POD 1-6 months	0	0	0	0

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