



TECHNIQUES FOR PTERYGIUM EXCISION: BARE SCLERA TECHNIQUE, AUTOLOGOUS CONJUNCTIVAL GRAFT AND AMNIOTIC MEMBRANE GRAFT

Ophthalmology

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ABSTRACT

Aim Of The Study- To evaluate the efficacy, safety and recurrence rates of conjunctival autograft technique, bare sclera technique and amniotic membrane graft in treatment of primary pterygium. **Materials And Methods-** A prospective observational study that involved 60 patients with primary pterygium who all underwent pterygium excision to study for the efficacy, safety and recurrence rates of different types of pterygium excision post-operatively between 10th May 2022 and 10th May 2023. **Results-** Total 60 patients were examined. Age group range from 20-70 years taken. The mean age was 44 years .60% unilateral and 40% bilateral. 65% are male patients, 35% are females. Out of 60 cases, 40 cases are Grade 2 and the remaining 20 cases are Grade 3. Satisfactory Post Operative cosmetics obtained in Group 2 and 3 with Conjunctival transplantation and Amniotic membrane after pterygium Excision. **Summary-** The main challenge to successful surgical treatment of pterygium is recurrence, evidenced by fibrovascular growth across the limbus onto the cornea. The bare sclera technique involves excising the head and body of the pterygium while allowing the bare scleral bed to re-epithelialize. It has high recurrence rates. Conjunctival autograft technique involves obtaining an autograft, usually from the superotemporal bulbar conjunctiva, and suturing the graft over the exposed scleral bed after excision of the pterygium. Amniotic membrane grafting has also been used to prevent pterygium recurrence. Most researchers have suggested that it is the basement membrane that contains factors important for inhibiting inflammation and fibrosis and promoting epithelialization. By comparing the three said and studied techniques in our prospective study it was found that the recurrence rate is very less in CAG technique than in AMG and high in Bare sclera technique.

KEYWORDS

INTRODUCTION

A pterygium (from the Greek, *pterygos*, "little wing") is a wing-shaped, vascular, fleshy growth that originates on the conjunctiva and that can spread to the corneal limbus and beyond. A pterygium consists of three distinct parts: the cap, the head and the body/tail.

The cap or leading edge is a flat zone on the cornea that consists mainly of fibroblasts that invade and destroy Bowman's membrane. **The head** is a vascular area that lies behind the cap and is firmly attached to the cornea. **The body/tail** is the mobile area of the bulbar conjunctiva, which can be easily dissected from the underlying tissue.^[1]

Stocker's line, which is iron deposition in the basal layer of corneal epithelium anterior to the cap, indicates that the pterygium is chronic.

A leading theory proposes that the increased prevalence of pterygium among people in equatorial regions is due to the damaging effects of ultraviolet radiation, specifically UV-B radiation. The working hypothesis is that this radiation causes mutations in the p53 tumour suppressor gene, thus facilitating the abnormal proliferation of limbal epithelium.^[2]

Histologically, the subepithelial tissue shows senile elastosis (basophilic degeneration) of the substantia propria with abnormal collagen fibres. There is dissolution of Bowman's membrane, followed by invasion of the superficial cornea.

MATERIALS AND METHOD

This was a prospective observational study that involved 60 patients with primary pterygium. Patients were recruited from the OPD of MLB MEDICAL college, Jhansi, Uttar Pradesh and were followed from 10th May 2022- 10th May 2023 . It was performed under the Helsinki Declaration of 1975, as revised in 2000. The necessary permission from the Ethical and Research Committee was obtained for the study.

Treatment Allocation:

60 patients were randomly allocated pterygium excision surgery with

20 patients each for bare sclera technique/autologous conjunctival graft/amniotic membrane graft techniques. After full assessment of the case and proper consent, patients were informed about the surgical procedure.

Inclusion Criteria:

- 1) Age > 18 years
- 1) Clinically significant symptoms related to pterygium
- 2) Visual morbidity related to pterygium.
- 3) Corneal encroachment of 2mm or more (grade 2 or grade 3 pterygium)

Exclusion Criteria:

- 1) Single eyed patients.
- 2) Recurrent pterygium.
- 3) Active ocular surface disease and glaucoma.
- 4) Patients not giving consent.
- 6) Patients < 18 years

Preoperative Evaluation:

Patient data includes age, sex, past ocular medical and surgical history, visual acuity and refraction before and after surgery. Characters of pterygia includes location, size and extent across cornea, signs of inflammation and previous treatment were recorded. Surgical technique and medications, post-operative complications, recurrence and final cosmesis were noted.

Patients were requested to come for repeated follow up biweekly.

They were divided into 3 groups, 20 each:

- Group 1- pterygium excision with bare sclera technique.
- Group 2- pterygium excision with autologous conjunctival graft
- Group 3- pterygium excision with amniotic membrane graft.

Results are compared.

RESULTS

Total patients examined are 60 with age group range from 20-70 years taken The mean age was 44 years with 60% unilateral involvement and 40% bilateral involvement. 65% are male patients, 35% are females.

Out of 60 cases, 40 cases are Grade 2 and the remaining 20 are Grade 3.

Satisfactory Post Operative cosmetics obtained in Group 2 and 3 with Conjunctival transplantation and Amniotic membrane after pterygium Excision.

Complications

COMPLICATIONS	BARE SCLERA (GROUP 1)	CONJUNCTIVAL AUTOGRAFT (GROUP 2)	AMNIOTIC MEMBRANE GRAFT (GROUP 3)
HEMATOMA	2	0	1
GRANULOMA	2	0	0
LOSS OF GRAFT	0	2	4
RECURRENCE	6	2	3

Recurrence:

Recurrence was noted in

6 patients out of 20 cases (in Group 1)

2 patients out of 20 cases (in group 2)

3 patients out of 20 cases (in group 3)

Early recurrence is noted in Group 1 patients in 2nd month, whereas late recurrence is noted in Group 2 and 3 in third and fourth month.

DISCUSSION:

In this prospective observational study, pterygium surgeries like bare sclera technique conjunctival autograft transplantation and amniotic membrane graft were conducted in Maharani Laxmi Bai Medical College, Jhansi. A total of 60 patients were taken, and each group comprised of 20 patients each.

Group 1. Bare sclera technique

Group 2. Conjunctival autograft transplantation

Group 3. Amniotic membrane graft technique.

Most common population involved included agricultural laborers and out-door workers who are constantly exposed to sun light (UV-B radiation). Most common presenting symptom is foreign body sensation and watering of the eyes. Total patients examined are 60. Age group range from 20-70 years was taken.

The mean age was 44 years with 60% unilateral and 40% bilateral involvement. 65% are male patients and 35% are females.

Out of 60 cases 40 are Grade 2 and the remaining 20 are Grade 3. Satisfactory Post Operative cosmetics obtained in Group 2 and 3 with transplantation and Amniotic membrane after pterygium Excision.

Recurrence was noted in 6 patients out of 20 (in Group 1), 2 patients out of 20 cases (in group 2), 3 patients out of 20 cases (in group 3). Early recurrence is noted in (Group 1 patients) in 2nd month, whereas late recurrence is noted in Group 2 and 3 in third and fourth month. In recurrent pterygium, restriction of ocular motility and diplopia are reported and recorded. Fleshy pterygia are seen more common in younger age groups and atrophic and flat pterygia are seen in the older group in our study which accounted for recurrence, more common in younger age group with fleshy pterygia regardless of which procedure followed for the surgical treatment of pterygium. No intra-operative complications like globe perforation and medial rectus damage is noted in our study as was reported in Krachmer, Mannis, Holland "CORNEA" Vol 3^[1]. Limbus to limbus approximation is obtained while grafting done in all cases of CAG and AMG technique for the rectification of limbal cell deficiency by grafting Limbal cells through this procedure. Complications are infrequent, and for optimal results Stark and coworkers^[3] stress the importance of careful dissection of Tenon's tissue from the conjunctival graft and recipient bed, minimal manipulation of tissue and accurate orientation of the graft. Lawrence W. Hirst, MBBS, from Australia recommends using a large incision for pterygium excision and a large graft and has reported a very low recurrence rate with this technique.^[4]

Though the time consumed for AMT and CAG was more and surgeons skill is involved, the bare sclera technique is proved to be inferior in preventing recurrences though it is easy and less time consuming.

CONCLUSION

The clinician should recommend that patients with early-stage pterygia use proper protective eyewear as UV radiation is believed to

be an important risk factor. If the lesion grows, surgical intervention becomes more compelling. If aggressive pterygium behavior is common in a patient's locale, a more aggressive surgical approach is appropriate. A pterygium larger than 3 mm may induce some astigmatism, and intervention may be warranted in such a case. Lesions larger than 3.5 mm (more than halfway to the center of the pupil in a typical cornea) are likely to be associated with more than 1 D of astigmatism and often cause blurring of uncorrected vision. However, it is unclear from the scientific literature how effective surgical intervention is in correcting astigmatism.

Indications for surgery include visually significant induced astigmatism, threat of involvement of the visual axis, severe symptoms of irritation, cosmesis.

By comparing the three said and studied techniques in our prospective study it was found that the recurrence rate is very less in CAG technique than in AMG and high in Bare sclera technique. Hence The CAG can be adopted for all types of pterygia instead of AMG and bare sclera.

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