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SUTURELESS AND GLUE FREE CONJUNCTIVAL AUTOGRAFT (CAG) IN PTERYGIUM SURGERY WITH AUTOLOGOUS BLOOD SERUM VS BARE SCLERA TECHNIQUE.

Ophthalmology

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ABSTRACT

Introduction: Pterygium is a common ocular surface disorder. The pathognomonic feature is elastotic degeneration of conjunctival stroma, and, an excessive fibro-proliferative reaction.
Aim: To compare and analyze the surgical outcome of pterygium excision followed by sutureless glue-free CAG with autologous blood serum vs bare sclera technique.
Study Design: Prospective, Randomized control study**.**
Materials & Methods: 32 eyes of 32 patients with primary Pterygium were selected. Ptrygium excision with Conjunctival autograft and in other group bare sclera was done and results were compared. Post-operative course were followed for 12 months after surgery.
Inclusion Criteria: We included patients of all ages and gender with primary pterygium of different grades viz. grade 1, grade 2 and grade 3.We did not included temporal pterygium in our research study, as it is rare to occur.
Exclusion Criteria: Glaucoma, recurrent pterygium, retinal pathology requiring surgical intervention, patients with history of previous ocular surgery or history of scleritis, Pseudo-pterygium, HIV/hepatitis B.
Discussion: The standard treatment for pterygium is; excision followed by CAG.
Results: Pterygium excision followed by CAG with autologous blood serum is better and recurrence rate is nil to minimal than with bare sclera technique**.**
Conclusion: Sutureless, glue-free pterygium excision with CAG is effective, safe and cosmetically better option for management of primary pterygium also, it showed lesser recurrence rate.

KEYWORDS

Pterygium, Sutureless glue-free pterygium Surgery, Conjunctival autograft (CAG),

INTRODUCTION

A Pterygium is a fleshy, wing shaped, triangular fibro-vascular tissue growth; from the conjunctiva in the palpebral fissure; crossing over the limbus onto the cornea. It involves sub-conjunctival degeneration. Pterygium is usually bilateral. It may be asymmetrical with involvement of one eye more than the other. The lesion Is more frequent on nasal side of limbus i.e nasal pterygium is more common than the temporal pterygium. Indications of pterygium surgery are: 1.Visually significant induced astigmatism, 2.Threat of involvement of visual axis, 3.Severe symptoms of ocular irritation, 4.Cosmesis.

MATERIALS AND METHODS

In this study, 32 patients were selected for pterygium surgery. Out of which, 16 patients were selected for conjunctival auto grafting and, the results were compared with those obtained with bare sclera technique in another 16 patients. The study was conducted in a tertiary setup in Government Medical College in Bihar, from January 2019 to February 2020. Patients, who required surgical excision of Pterygium, were divided in two groups by random selection; keeping 16 patients in each group.(*Table*-1)

Table – 1general Details

Study Groups (n 32)	SurgicalProcedure done
A (n 16)	Sutureless glue free technique
B (n 16)	Bare Sclera Technique

DISCUSSION:

Pterygium is an enigma and many theories have been proposed to its pathogenesis. It was hypothesized that a Pterygium might represent a region with a localized limbal stem cell deficiency, resulting in a conjunctive invasion of the adjacent cornea. [1] The various known risk factors are immune mechanism, genetic predisposition, and chronic environmental irritation. The most common is the increased time of exposure to UV rays of the sunlight, followed by chronic eye irritation from dry and dusty conditions.[4]

Pterygium can be classified based on its presentation. *Tan et al*. gave a morphological classification of pterygium based on its transparency under the microscope.[7]

- Grade T1: atrophic pterygia, whose episcleral blood vessels which are present under the body of pterygium.
- Grade T2: intermediate pterygia, has characteristic between atrophic and fleshy pterygium.
- Grade T3: fleshy pterygia with episcleral vessels completely obscured.

According to *Sejal Maheswari*, the pterygium grading is as follows:[5]

- Grade I: Pterygium between the limbus and a point midway between the limbus and the papillary margin.
- Grade II: Head of the pterygium is present is present between a point midway between limbus and pupillary margin.
- Grade III: Pterygium that crosses the pupillary margin.

The standard treatment for pterygium is; excision followed by CAG. The use of CAG following pterygium excision was first described by Kenyon et al. in 1985.[2] CAG initiated by them significantly affected the recurrence rate, which dropped from 89% in case of bare sclera technique to 2% [6] and has since been considered as the best method of treatment.

Surgical Technique:

[Part-I] Process of pterygium excision:

Injection of local anesthetic (Oculan) was injected locally in the pterygium body and with cotton bud swabs, anesthesia is spread by gently sweeping movement on pterygium. After a few seconds, a nick is made half thickness on the neck of pterygium, and made sure only to cut the conjunctiva and not the sub-conjunctival degenerative tissue. A blunt dissection was done by a conjunctival scissors to separate tenon's capsule from the overlying healthy conjunctiva. It causes exposure of full pterygium body, that was cut first on the site distal to limbus i.e 4mm away from limbus in the palpebral fissure. Pterygium excision along with tenotomy was performed. Avulsion of head by pterygium rhexis was done in clockwise or anti-clockwise direction. Cornea and, sclera was made sure to be cleared of any strands of fibrous degenerative tissue. The bare sclera technique was completed here.

[Part-II] Process of harvesting and positioning of conjunctival autograft:

For this, Oculan was injected subconjunctivally at the **supero-temporal area**, to form a generous bleb. I prefer this site over infero-temporal or superior to harvest a tenon-free graft for the ease of doing it and for sparing superior conjunctiva, for future use of glaucoma surgery, if, the patient required ever. Then, size of recipient bare sclera was measured with the help of Castroviejo caliper. Donor graft was harvested from supero-temporal area by careful dissection to avoid taking any tenon's capsule with the conjunctival graft or to keep it to the minimal. Care should be taken to not harvest too thick or too thin a graft, as it will cause graft-related problem viz. button-holing, kinking,

graft loss, or sometimes, suturing. Optimum sized or ½ mm undersized graft was harvested and, used as it is better manageable and, grows over time. I preferred, 1 to ½ mm smaller size graft than bigger graft. It grows over time and, gives a cosmetically better look and less graft related problem. Now, the recipient bed of bare sclera was wiped out of any blood, and, with the tip of 26" gauze needle scleral artery and bare sclera is lightly nicked at multiple areas just to make oozing out of fresh blood. Graft was carefully flipped and placed on recipient blood filled bed keeping limbal side towards limbus and sub-conjuctival side down on recipient bed. Graft was ironed out with the help of a flat spatula and is left as such for few seconds. Fibrin in the fresh blood acts as bio-adhesive for the graft, and no suturing is required. Patient's eyes were carefully closed. Antibiotic ointment on closed lids and pad and bandage was applied for 24 hours.

In all the patients, from day one, post-op topical steroid eye drops were prescribed, to be continued for one month in tapered dosing. The patients were followed up after 7 days, after 1 month, after 6 months and after an year of sutureless glue free Pterygium surgery with CAG with autologous blood serum and bare sclera.

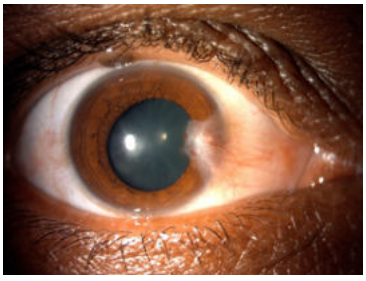

Figure 1: **Primary Nasal Pterygium.**

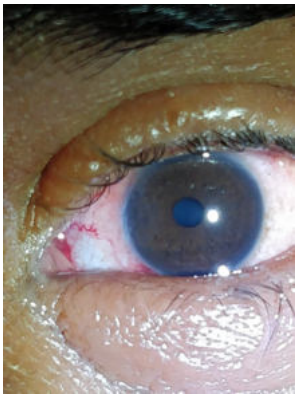

Figure 2: First Post-Op day One.

Just after Opening pad and bandage, after 24 hours. Conjunctival autograft (CAG) can be seen well placed at nasal side. Giving a cosmetically nice look like nothing has been done.

RESULTS:

Primary Pterygium is more common in males than females. Similar results were also found by *Liu L et al, 2013.* In our study, there were 20 males and 12 female patients. Most common age of presentation was between 20 years to 65 years old.

In present study, results were seen under slit-lamp biomicroscope after 24-hours, just after removing the pad and bandage. Results were cosmetically better in group A patients. Recurrence was not reported in any of our patients who undergone Pterygium excision with CAG. In group A, out of 16 only one patient had graft loss. In group B patients, recurrence was reported. Similar results were also found by *Salagar KM et al.* 2013. In group B, Few cases were also presented with granuloma post-operatively, which needed resection along with topical steroid eye drops again.

CONCLUSIONS:

Conjunctival autograft by using autologous blood serum is best treatment modality available till date for managing primary pterygium of any grade. Being sutureless and glue free gives additional benefits to patients in terms of acceptability, no recurrence which is common in bare sclera technique, cosmetically better appearance and economic in comparison to CAG with glue.

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