



TO STUDY THE EFFICACY OF AUTOLOGOUS SERUM IN FIXING CONJUNCTIVAL AUTOGRAFT IN A DIFFERENT TYPES AND VARIOUS SIZES OF PTERYGIUM.

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ABSTRACT

Background and Aims: To determine the efficacy of Autologous serum for securing adhesion of CAG and observe complication after pterygium excision in various sizes and different types of pterygium. **Setting & Design:** Prospective interventional study **Materials & Methods:** A study conducted at tertiary care centre from January 2023 to January 2024. Total 89 patients with grade 1-4 Pterygium who were willing for pterygium excision with CAG surgery were included. Graft sizes were divided in to three group- Small (5-6*5 mm), Medium (7-8*5mm), Large (>8*5mm). Type of pterygium divided in to two group progressive and non-progressive. Cases were observed for complications like Sliding of graft, Graft Retraction, Graft Dislodgement & Graft Oedema/ SCH. Post surgery complication observed on post operative day 1,7 &15. **Statistical Analysis Used:** chi-square test was used for calculation of p value at significance level of 0.05. **Result:** Medium size of graft shows less complication as compare to large and small size of graft. In small graft size commonly observed complication were graft oedema in 6 cases (18%), Sliding of graft in 4 cases (12%). In large size of graft more complication 80% (n-16) were observed as compare to small and medium size of graft in which most commonly seen complication was retraction 25% (n-5). Sliding of graft in progressive and non-progressive types pterygium was significant with $p < 0.0004$ and $p < 0.0006$ respectively. **Conclusion:** Pterygium excision with CAG using Autologous serum is very efficacious, less time consuming & cosmetically better procedure.

KEYWORDS : Conjunctival autograft, Autologous serum, Subconjunctival haemorrhage

INTRODUCTION

Pterygium is wing shaped triangular encroachment of vascularized granulation tissue covered by conjunctiva. It is a degenerative disease with 9.5% to 13% prevalence in India and most commonly seen in dry, sunny climate with extensive exposure to UV radiation particularly in rural area.¹

Anti-inflammatory and lubricants can reduce discomfort. As medical management is ineffective, surgical excision is the only option available. Pterygium needs to be treated when they encroach upon the visual axis, induce significant regular or irregular astigmatism, or become cosmetically bothersome.² Foreign body sensation, recurrent inflammation, visual impairment are the main indications for surgery. Cosmesis is also one of the indications for its surgical removal.

Surgical techniques have evolved from the bare sclera technique, autorotation of conjunctival flap, usage of amniotic membrane graft, or conjunctivo-limbal autograft. Conjunctivo-limbal autograft is considered gold standard surgery.¹

Conjunctival autograft fixation is done using various techniques like suture, fibrin glue, autologous serum.

The main aim of this study to find out the effectiveness of autologous serum in fixing CAG and related complication like Sliding of graft over cornea, Retraction of graft, Dislodgement, Graft oedema and subconjunctival haemorrhage.

METHODS AND MATERIALS

It is a prospective interventional study conducted in the ophthalmology department at tertiary care centre from January 2023 to January 2024 after approval from the institutional ethics committee. Total 89 eyes of 89 patients with grade 1-4 pterygium included in study. Patient presented with symptoms like foreign body sensation, watering, redness or asymptomatic patients with grade 1 pterygium who were willing for pterygium excision with CAG surgery, were included in study. Patients who denied for consent, infective

ocular pathology and any bleeding disorder were excluded from this study.

After written and valid informed consent, complete ocular examination including visual acuity, best corrected visual acuity, slit lamp examination, dilated fundus examination, keratometry were done in each case to rule out any other ocular disease or condition.

Type of pterygium like progressive (FIGURE 2) or non-progressive pterygium (FIGURE1) were noted preoperatively on slit lamp examination. Highly vascularised and inflamed looking fleshy pterygium consider as progressive type. Poorly vascularised and atrophic like pterygium consider as non-progressive type. We divide the Graft size in to three category-small, medium and large size based on different graft size observed intraoperatively which was measured with Castroviejo callipers.

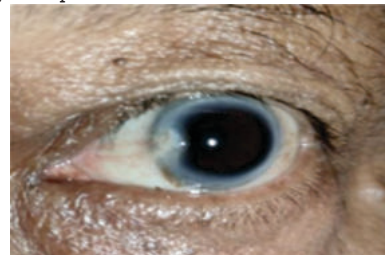


Figure 1- Non-progressive Pterygium

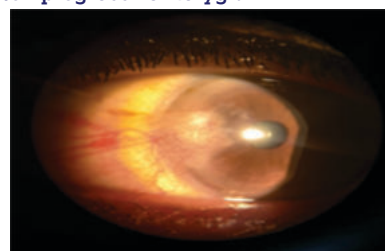


Figure 2- Progressive Pterygium

The eye was anesthetised with peribulbar lignocaine and bupivacaine block. Surgery was performed under aseptic precautions, after proper draping, eyelids were separated with speculum. Neck of pterygium tissue excised with curved scissor. Head of pterygium tissue was excised with tooth forceps and scrapped off the remnant tissue from the cornea with No.15 blade. Pterygium tissue was dissected subconjunctivally and excised. Measured bare scleral area with Castroviejo callipers for graft placement. Conjunctival graft was taken from superior or superotemporal quadrant of conjunctiva. Size of graft was 1mm larger than bare scleral measurement.

Graft was placed over the bare sclera with limbus -to -limbus contact, edge of graft tucked inside the conjunctiva, make sure that no bare sclera was left exposed. Proper milking out the graft with gentle pressure applied over the graft, removing excess blood from graft site. Wait for 7-10 minutes gives proper time for graft adhesion. Patch the eye for 24 hours.

In our study for securing the graft we are using the autologous serum which is oozing out from episcleral vessels and look for the adhesiveness of graft and observed complication in respect to different size of graft.

Post operative complications like graft sliding over cornea (figure 3), graft retraction (figure 4), graft dislodgement, sub conjunctival haemorrhage/oedema (figure 5) observed on post operative day 1, DAY 7 & DAY 15.

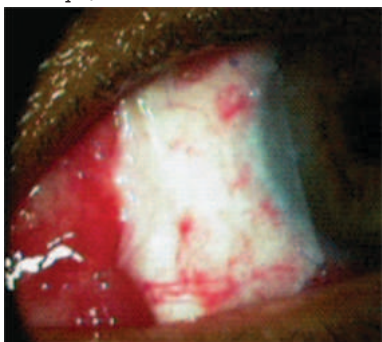


Figure 3- Sliding Of Graft Over Cornea



Figure 4- Retraction Of Graft

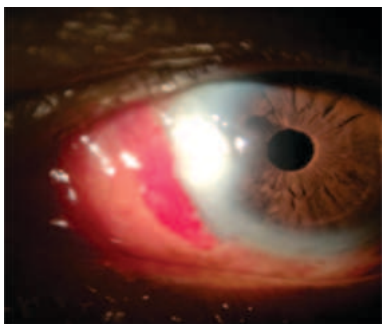


Figure 5- Graft OEDEMA/SCH

RESULT

A total 89 eyes from 89 patients were included in the study. Among these 89 patients, 52 were female and 37 were male.

Graft size divide in to three category- small size (5-6*5 mm), medium size (7-8*5 mm), large size (>8*5 mm). Table 1 shows out of 89, 33 patients have small size graft in which 15 patients (45.4%) shows complication. Similarly, 36 patients have medium size graft in which 11 (30.5%) patients shows complication and 20 patients have large size graft in which 16 (80%) patients shows complication.

Table 1- Division Of Graft Size And Complication Observed

Graft size	Division of grafts	Complication observed	In percentage
Small	33	15	45.4%
Medium	36	11	30.5%
Large	20	16	80%

As shown in table 2 Complication observed in small graft size were Sliding over cornea 12% (n-4), Retraction 9% (n-3), Dislodgement 6% (n-2), oedema 18% (n-6).

In medium size graft complication were sliding of graft in 5.55% (n-2), retraction 11% (n-4), dislodgement 2.70% (n-1) and oedema in 11%(n-4).

In large size of graft more complication 80% (n-16) were observed as compare to small and medium size of graft, sliding 20% (n-4), retraction 25% (n-5), dislodgement 15% (n-3) and oedema 20% (n-4). (table 2)

Table 2- Complication Observed In Different Size Of Graft

	Sliding	Retraction	Dislodgement	Oedema/SCH
Small	12% (n-4)	9% (n-3)	6% (n-2)	18% (n-6)
Medium	5.55% (n-2)	11% (n-4)	2.70% (n-1)	11% (n-4)
Large	20% (n-4)	25% (n-5)	15% (n-3)	20% (n-4)

In our study most common complication observed in pterygium excision with graft adhesion with autologous serum irrespective of graft size were oedema (33%) and Retraction of graft (29%) shown in Figure 6.

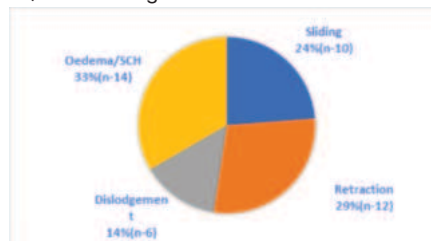


Figure 6- Observed Complication Irrespective OF Graft Size

Type of pterygium divided in to two category progressive type (40 pt) and non-progressive type (49 pt). out of 40 patient 25 patients shows complication in progressive type of pterygium and 17 patients shows complication out of 49 patients in non-progressive type of pterygium.

As shown in table 3 the chi-square test was used for calculation of p value at significance level of 0.05.

Table 3- Complication Observed In Type Of Pterygium

	Sliding	Retraction	Dislodgement	Oedema/SCH
Progressive	6 (5.95) p value <0.0004	5 (7.14) p value =0.64	1 (3.57) P value > 1.85	13 (8.33) p value >2.6
Non-progressive	4 (4.05) p value <0.0006	7 (4.86) p value =0.95	5 (2.43) P value >2.71	1 (5.67) p value >3.84

The chi-square statistic is 12.6198. The p-value is .005535. The result is significant at $p < .05$. Graft sliding over the cornea in progressive and non-progressive types pterygium was statistically significant with $p < 0.0004$ and $p < 0.0006$ respectively.

DISCUSSION

Out of 89 patients 42 patients (47.19%) shows complications and remaining 47 patients (52.80%) were cosmetically better and shows no complication.

In our study graft oedema/SCH (33%) and Retraction (29%) was the most commonly observed complication irrespective of type of pterygium and size of graft. Similar to our study, Dr. Nirmal Kumar B et al² in 2022, reported that among 30 patients, SCH in 14 patients (46.7%), oedema in 10 patients (33.3%), Retraction in 7 patients (23.33%), graft loss in 1 patient (3.33%). Asritha B et al³ in 2019, published that among 50 patients, graft oedema in 4 cases (8%), retraction in 1 case (2%), SCH in 2 cases (4%).

We found that post operative complication of graft was higher with large graft size and very small graft size. Commonly observed complication in large size graft were Retraction of graft in 5 patients (25%). Larger the size of graft larger the fibrous contraction post operatively may be the reason for graft retraction. Sub conjunctival haemorrhage in 4 patients (20%) was found in large size of graft may be due to more blood vessels get involved due to larger scleral bed. A study by Thatte S et al¹ in 2019, among 46 patients of large graft size group, SCH in 7 patient, graft oedema in 6 patients, Retraction of graft in 9 patients, dislodgement of graft seen in 1 patient.

In small size of graft most commonly seen complication was graft oedema in 6 patients (18%) which gets reduced with medication within 5-7 days. Sliding of graft in (12%) of patients which may be due to less area available for adhesion and less serum available due to small size graft. Thatte S et al¹ in 2019, published that among 72 patients of small graft size group, SCH in 6 patients, oedema in 10 patients & no graft dislodgement & retraction. A study by Teena Agrawal et al⁴ in 2020, graft oedema was noted in 13 cases (32.5%) with small size graft (5*5 mm) which is comparable to own study.

Graft dislodgement was equally seen in small and large size of graft- 2 and 3 cases respectively, may be due to giving very less time for adhesion after putting graft to scleral bed or excessive oozing of blood.

In this study we observed that medium size of graft shows less complication compare to small and large size of graft.

Progressive pterygium having more vascularity and inflammatory changes so they have more complication like graft oedema and SCH.

In non-progressive, dry looking atrophic pterygium having more chances of graft dislodgement and graft retraction.

On follow up, we noted that there was no graft dislodgement, sliding or SCH. patient had graft oedema and SCH which was resolved within 15-20 days.

Graft fixation with fibrin glue takes less operating time compared with autologous serum, but the cost of surgery is more with fibrin glue.²

Sutures have disadvantages of long surgical time, risk of complication like granuloma formation and significant patient discomfort. On the other hand, the technique of graft fixation with commercial fibrin glue has the potential risk of transmission infection and high cost.⁶

This study concludes that autologous serum for fixation of CAG is a safe, efficient and cost-effective method for pterygium surgery. The suture less and glue-less approach of the graft with utilization of oozed serum from the scleral bed gives a promising result and less financial burden to the patient.

Conflict Of Interest– Nil

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CONCLUSION