ORIGINAL ARTICLE

Autologous Blood Versus Suture Conjunctival Limbal Graft as Pterygium Surgery Treatment

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ABSTRACT

Introduction and Objective:
A Pterygium is an elevated, superficial, external ocular mass that usually forms over the perilimbal conjungtiva and extends onto the corneal surface. A Pterygium can cause a significant alteration in visual function in advanced cases. It become inflamed, resulting in redness and ocular irritation. Pterygium excision surgery has been using many methods. There are three choices of method to attach the graft: by suturing, fibrin glue or autologous blood. The purpose of this study is to learn about the efficacy of autologous blood versus suturing conjungtival limbal graft (CLG) on pterygium excision surgery
Methods:
Retrospective study of 18 patients underwent Pterygium excision surgery with autologous blood gluing compared to suturing the graft. Six patients underwent CLG surgery with suturing and 12 patients were treated with autologous blood gluing. Suturing process was done with nylon 10-0 and the suture was released 7 days after surgery, whereas the graft on the patient with autologous blood CLG was placed and left there for about 10 minutes. Both groups were evaluated after day 1, 1st week, 2nd week and 1st month. Any report of irritating sensation, graft loss, and healing process were recorded thoroughly.
Result:
Patients with sutured CLG were complaining of uncomfortable sensation on their cornea until one week before suture was released, all grafts were attached until a month. Out of 12 patients with autologous blood CLG method, there were no complain of irritability on cornea until a week, 4 patients lost the graft on the first day, two patients grew granuloma on the second week, 10 patients start healing on the second week.
Conclusion:
There are still limitations to pterygium excision with autologous blood CLG compared to pterygium excision with CLG suture technique.

Keywords : Pterygium excision, suturing CLG, autologous CLG

A Pterygium is a triangular or wing-shaped fibrovascular that overgrowth of abnormal conjunctiva to the cornea[1]. It is a progressive disease that leads an advanced stages to visual impairment, restriction of ocular motility, chronic inflammation and cosmetic concerns. Surgical removal is the treatment of choice, but recurrence can be a problem. Currently

the best surgical option in terms of recurrence is conjunctival autograft. Nowadays, the most common surgical methods of attaching conjunctival autografts to the sclera are through suturing or fibrin glue. Each method presents its own advantages and disadvantages.[2]

Recurrence is the most common complication of pterygium surgery. Several techniques have been advised to reduce the recurrence rate. These include bare sclera excision, conjunctival limbal autograft and the use of amniotic membrane. Kenyon et all introduced the surgical technique of using Conjunctival autograft in the management of primary and recurrent pterygium. Suturing the conjunctival autograft is a standard surgery. In this method the graft are stable and recurrence rate is around 15 %. Pterygium Extended

Removal Followed by Extended Conjunctival Transplant is described by Dr. Hirst. He reported only one recurrence in series of 1000 cases. Suture related problems like post-operative discomfort, chronic inflammation and granuloma formation and long surgical period around 20 to 40 minutes are disadvantages of suturing the auto conjuctival grafts.[3,4]

Suture required considerable skill from the surgeon and can be associated with a prolonged operation time, postoperative discomfort, whereas fibrin glue may give a decreased operation time, improve postoperative comfort, but expensive. The latest approach is fixation of the graft with autologous blood, a technique also known as suture and glue free autologous graft. Patient's own blood is used as a bio-adhesive or fixative. Autologous is natural, has no extra cost, no associated risk and can overcome post-operative irritation, redness, and foreign body sensation. Surgical time is very less when compared to suturing technique.[5]

Jean SW, reported presentation Poster of Dr Mitra at the Annual Meeting of the AAO at Oct, 22nd and 23rd 2011, in Orlando, about autoblood as Tissue Adhesive for Conjunctival Autograft Fixation in Pterygium Surgery, and famous with term: No Suture, No Glue. The study reported 19 patients with autoblood graft fixation. The mean surgical period was 11 minutes, no graft were lost, and none of the pterygia recurred in the study on six months of follow up.[3] conclude that, autologous in-situ blood coagulum is a useful method for graft fixation in pterygium surgery with shorter operating time and less postoperative discomfort. [6]

Some author reported of dislodged (loss) of the graft after pterygium excision with autologous blood conjunctival limbal graft. Sophie et all reported 6 from 20 eyes dislodged of graft[7], Gaayathri et all reported 16 from 62 eyes dislodged[8]. Sushuban et all reported 2% from 60 graft dislodged. [9]

The purpose of this study were to learn the problem of pterygium excision technique with autologous blood conjunctival limbal graft, and compared with conjunctival limbal graft suture.

METHODS

Retrospective study of 18 patients underwent pterygium excision surgery with autologous blood gluing and graft suture. The sample of the study is all population patient with pterygium whom underwent the surgery. Six patients underwent CLG surgery with suture technique and 12 patients were treated with autologous blood gluing. Suturing process was done with nylon 10-0 and the suture was released after 7 days after surgery, whereas the graft on the patient with autologous blood CLG was placed and left for about 10 minutes. Both groups were evaluated after day 1, 1st week, 2nd week and 2nd month post operation. Any report of surgical period, graft did not attach during surgery, graft loss, complication granuloma and recurrence were recorded thoroughly.

The data was gathered from medical record from March 2016 to February 2018

at Sanglah, Kasih Ibu and Balimed Hospital Denpasar.

The patient sample included patients between 30 to 70 years old, Pterygium stadium II - IV, primer pterygium, nasal side, agreed with informed concern and agreed to follow up until one month. Patients were excluded from this study if pterygium recurrent, temporal side, active infectioun or inflammation, symblepharon, did not agreed with informed concern and follow up until a month.

Pterygium excision procedure with autologous blood gluing or suture were done after 0,5 ml Lidocain 2 % was injected sub-conjunctival and subpterygial, the neck of pterygium was lifted up with the help of fine toothed forceps, while the head of pterygium was gently avulsed from the cornea by placing closed tips of a curved cornea scissors or the repository underneath the neck of the pterygium mass. Gentle dissection was then carried out between the conjunctiva and the sclera with the help of crescent knife, to resect at least 4-5 mm the pterygium mass that include both superior and inferior border. Now, approximately 0,5 ml lidocain 2 % was used to balloon up superior conjunctival flap. Corneal scissor was used to make a fine film of 0,5 mm oversized, free conjunctival graft, the graft was then laid over the bare sclera ensuring same limbus to limbus orientation. We waited for 10 minutes for hemostasis to occur. If until 10 minutes the graft did not attached, the graft was sutured by nylon 10.0 at 5 area. The eye was patched for 24 hours with Gentamycin ointment. Follow up at the day 1, 7, 14 and 28, month 2 after operation to evaluate the fixation of graft (loss), granuloma (late infection) and recurrence of the pterygium.

RESULT

From 18 patients whom underwent pterygium excision surgery, 6 patients underwent CLG surgery with suture and 12 patients were treated with autologous blood gluing. Most patients were found between 41-50 years old, whom were 7 patients (38,89 %) than 51-60 years old whom were 7 patients (38,89 %).

Table 1. Age distribution

Age (year)	Number	%
31-40	2	11,11
41-50	7	38,89
51-60	7	38,89
61-70	2	11,11
total	18	100

Table 1. 18 patients whom underwent pterygium excision surgery, 6 patients underwent CLG surgery with suture and 12 patients were treated with autologous blood gluing. Most patients were found between 41-50 years old, whom were 7 patients (38,89 %) than 51-60 years old whom were 7 patients (38,89 %), with mean age 44,41 year old.

Table 2. Sex distribution

Sex	Number	%
Male	7	38,89
Female	11	61,11
total	18	100

Table 2 showed that from 18 patients whom underwent pterygium excision, male were 7 patients (38,89 %) and female were 11 patents (61,11 %).

Table 3. Grade of pterygium

Grade Pterygium	Number	%
Grade 1	0	0
Grade 2	4	22,22
Grade 3	10	55,56
Grade 4	4	22,22
total	18	100

Table 3 showed that from 18 patients whom underwent pterygium excision mostly were grade 3 which were 10 patients (55,56 %), then grade 2 and 4 which were 4 patients each (22,22 %).

Table 4. Characteristics of pterygium cases

No.	Type of graft affix	Time of surgery (min)	graft attach/ loss	complica-tions/ remark
1	Suture	35	Attached	-
2	Autologous	18	Attached	-
3	Autologous	18	Attached	-
4	Autologous	21	Loss	Granulome at 3rd week
5	Autologous	21	Attached	-
6	Autologous	20	Attached	-
7	Autologous	18	Attached	-
8	Suture	30	Attached	-
9	Suture (first autologous)	45	Attached	Not affix during surgery
10	Suture	35	Attached	-
11	Autologous	20	Loss	Granulome at 3rd week
12	Autologous	18	Loss	Reccurence at 2nd month
13	Autologous	20	Attached	-
14	Suture	35	Attached	-
15	Suture (first autologous)	45	Attached	Not affix during surgery
16	Suture	18	Attached	-
17	Autologous	20	Loss	-
18	Autologous	20	Attached	-

Table 4 showed that from 18 patients whom underwent pterygium excision, autograft with autologous blood were done in 12 patients, and fixated with suture in 6 patients. Surgery period for autograft with autologous blood were 18-21 minutes, and fixation with suture were 35-45 minutes. Loss of graft in this study were occur in 2 (12,67%) patients that excised with autologous blood during surgery and were continued to fixation with suture, and loss of graft at first day post operation were in 4 patients (33,33%).

DISCUSSION

The most common complication of pterygium surgery is postoperative recurrence. Simple surgical excision has a high recurrence rate approximately 50-80% with the use of conjunctival/limbal autografts or amniotic membrane transplants at the time of excision.[1]

Indication of Pterygium surgery were : Pterygium that causing foreign body sensation, severe symptoms of irritation, the risk of involvement of the visual axis, Pterygium grade III or IV, cosmetics indication, intolerance or diplopia due to interference with ocular movement. [5, 10] In this study we surge 10 patients (55,56 %) with pterygium grade III, and each 4 patients (33,33%) with pterigium grade II and IV.

Some author report recurrence after pterygium excision with conjunctival autuograft: Hirst L. (2012) reported recurrence rate of 0,1 % (1 of 1000 patients) in 25 years study [3], Gaayathri et all (2017) reported recurrence rate of 14 % (7 from 120 eyes) [8], Natarajah et all reported recurrence in 5 of 62 patients (10,6%)[11], Soshuban et all (2016) reported recurrence rate of 2 % (1 from 60 eyes)[3]. Hirst L, recommended the use of a large incision for pterygium excision and large graft and has reported a very low recurrence rate.[4]. In this study one case found recur in the 2nd month evaluation after excision with autologous blood autograft.

Conjunctival graft not affix during surgery, Soshuban et all (2016) reported one eye from 60 eyes conjunctival graft not affix on bare sclera during surgery and continue to resurge after pterygium excision conjungtival graft with autologous blood.[3]. In this study, we found two patients with graft that were not affix during surgery with autologous blood graft, and then continued to fixate with conjunctival graft suture with nylon 10-0.

In this study, we found 4 patients (0,33%) with loss of conjunctival graft (dislodged) at the first day follow-up (4 from 12 patients). Somnanth et all (2015) founded graft loss (failure) in 12,5 %.[6] Sophie B et all (2016) founded 6 of 20 eyes graft loss, 3 of 20 eyes graft retraction,[7] and Soshuban et all founded 2% graft dehiscence from 60 patients pterygium excision[3].

Granuloma (cyst) or late infection is a complication of pterygium excision. Sophie B et all (2016) founded one patient develop granuloma on the 1st follow up after Pterygium excision[7], and Hirst L. (2015) reported one granuloma (cyst) in 400 patient after pterygium excision with conjunctival auto graft with suture.[4] . In this study we found two patients whom undergone autograft with autologous blood with loss of graft, developed granuloma at 3rd week evaluation.

Surgery period of pterygium excision in this study were 20 minutes in autograft with aotulogous blood and about 30-40 minutes with nylon 10-0 nylon suture. Somnannth et all. reported 19 patients with autoblood graft fixation done in 15 minutes of mean surgical period[9], dr Hirst L (2015) reported time surgery autograft with suture can run for 30 to 40 minutes, suture-related problems included postoperative discomfort, chronic inflammation and granuloma formation[4]. In this study we found surgery period of autograft with suture were 35-45 minutes and autograft with autologous blood were 18- 21 minutes.

Limitation of this study were less sample, there were no comparative study statistically and less time for follow up.

CONCLUSION

There are still limitations to pterygium excision with autologous blood CLG compared to pterygium excision with CLG suture technique.

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