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Research Article

Pterygium

Surgical management of pterygium: comparing various techniques

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Aim: The study aims to compare the various technique of pterygium surgery like bare sclera, conjunctival autograft with autologous blood and conjunctival autograft with sutures. **Method and Material:** A Prospective observational study was conducted at a tertiary centre in central India from the period of July 2019 to March 2021. A total of 50 patients were enrolled for the study after taking consent. Three technique was used while performing pterygium excision Group 1- Bare sclera (3 patients) Group 2- Conjunctival autograft with autologous blood (24 patients) Group 3- Conjunctival graft with sutures (23 patients) All the surgeries were performed by a single surgeon. Patients were followed up for 18 months. Postoperative complaints and recurrence were noted on every subsequent visit. **Result:** We found that post-operative complaints (watering, foreign body sensation) were higher among group 3 as compared to group 2. However, graft loss was found in 3 patients in group 2. Recurrence was found in 2 patients belonging to group 2. **Conclusion:** Autologous blood and sutures both are good alternatives to attach the conjunctival autograft. Postoperative discomfort is more experienced with sutures although sutures have certain advantages of fewer chances of graft loss thereby reducing recurrence.

Keywords: Pterygium excision, Conjunctival autograft, Autologous blood

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Introduction

Pterygium word derived from "pterygion" (ancient Greek for wing), is a wing-shaped, fibrovascular overgrowth arising from subconjunctival tissue over the cornea. It proliferates as vascularized granulation tissue by destroying superficial layers of stroma and Bowman's membrane to invade cornea, the whole being covered by conjunctival epithelium[1,2]. Pterygium also known as a surfer's eye is now accepted as a dysregulated cell proliferation disease and distorted wound-healing response rather than a degenerative lesion [3].

Pterygium is generally managed conservatively unless any of the following circumstances arises: loss of visual acuity due to encroachment onto the visual axis, induced astigmatism, marked discomfort and irritation, marked cosmetic deformity, limitation of ocular motility secondary to restriction. In such conditions, surgical intervention is required by simply excision of pterygium leaving bare sclera which reported 25%–45% rates of recurrence [4]. To prevent recurrence of pterygium either glue or suture is being used for conjunctival autografting [5,6]. Use of sutures in conjunctival autograft led to various complications, i.e., discomfort, increased lacrimation, and at times suture-related granuloma or abscess [7]. which is halted by alternatives such as fibrin glue, is a blood-derived product, associated with the risk of blood-related diseases transmission. Recently autologous blood is used during surgery which offers many advantages like easy availability, low cost, less postoperative discomfort. the only exception of patients who are on aspirin or who suffer from a coagulation factor deficiency [8]. The purpose of this study is to compare the simple excision leaving bare sclera and currently used techniques.

Materials and Method

This study was conducted at the tertiary care centre in central India from a period of July 2019 to March 2021. In this prospective observational study 50 eyes of 50 patients who were presented with primary pterygium were included after taking consent. All procedures and post-operative evaluations were done by the same surgeon. All the patients underwent complete slit-lamp biomicroscopic examination. Patients with bi-headed pterygium, recurrent pterygium,

Pseudo- pterygium and other ocular surface disorders were excluded from this study. The patients received topical moxifloxacin (0.5%) drops (QID) preoperatively one day before surgery. 47 patients (3 patients underwent simple excision with bare sclera in **Group 1**.) were divided into two groups on alternate basis **Group 2**- includes patients who received conjunctival autograft with autologous blood (24 patients) while patients in **Group 3**- received conjunctival autograft with sutures (23 patients).

Surgical Technique: Under all aseptic precautions after painting and draping of the eye, a wide speculum was applied. And local infiltration (lignocaine hydrochloride 2% with adrenaline bitartrate (1:200000) of pterygium done. Pterygium was lifted with lim's forceps at the neck of pterygium and iris repositor was passed beneath the neck of pterygium. Pterygium head was held with lim's forceps at the superior edge and pulled in a circular fashion, similar to capsulorhexis, to detach it from the cornea. Residual tissue over the cornea was scraped off with the help of taking's knife. Pterygium was excised with a corneoscleral Scissor. Meticulous dissection of subconjunctival tissue was done and excised with corneoscleral Scissor while taking care of medial rectus muscle. For harvesting, the conjunctival autograft eyeball was rotated downward and inward. The bare sclera was marked with Castroviejo calliper and a graft of the same size was taken from the superotemporal bulbar conjunctiva. Blunt dissection of the conjunctiva was done by corneoscleral scissors. The graft of the conjunctiva was dissected up to the limbus and reflected over the cornea. Autograft was cut near the limbus and gently slid onto the place over the bare sclera in correct anatomical orientation. In group-2 autograft was placed over the oozed blood collected after excising the pterygium. Autograft was ironed with the help of iris repositor to properly adhere the graft over the bare sclera. Fibrin in the oozed blood acts as glue for securing the graft. In group-3 the graft was secured over the bare sclera with the 4 interrupted 8-0 vicryl sutures at the four corners of graft and the end of surgery eyes were patched with one drop of moxifloxacin (0.5%)– dexamethasone (0.1%) and 3 patients were operated on by bare sclera method. At the end of the surgery, eyes were patched with one drop of moxifloxacin (0.5%)– dexamethasone (0.1%) and chloramphenicol eye ointment and were bandaged for 24 hours.

Post-operative Evaluation: Patients were post-operatively assessed by the same surgeon on day 1, day 7, 2 weeks,1 month**,**3 months after that every 6month follow-up period until 18 months. All the patients were examined on a slit lamp to assess the signs of congestion and chemosis. Patients were asked to describe the discomfort and finding were noted. Post-operatively in group2 and 3 patients received topical moxifloxacin +Dexamethasone (0.5%) 6 times per day for 15 days and then tapered to 4times per day for 15 days. Carboxymethylcellulose (0.5%) eye drops were given 4 times per day for 2months. In group, 1 patient received topical moxifloxacin +Dexamethasone (0.5%) 6 times per day for 15 days and then tapered to 4 times per day for 15 days. Carboxymethylcellulose (0.5%) eye drops were given 4 times per day for 2 months and chloramphenicol eye ointment twice for 15 days and then HS for the next 15 days.

Result

The age of the patient ranged from 24 to 74 years with an average age of 47.48 years. In group 2 there were 14 male patients and 10 female patients. In group 3 there were 12 male patients and 11 female patients. In group 1, three patients underwent pterygium excision with the bare sclera technique. The average surgical time taken in group 2 was 45.6 minutes and in group 3 was 57.2 minutes. The mean surgical time was least for group 1 (33 minutes) followed by group 2 and maximum for group 3.

Table 1- shows Postoperative discomfort in both groups.

	Postoperative day 1		Postoperative day 7	
	Group 2	Group 3	Group 2	Group 3
No discomfort	------	-----	15 (62.5%)	-----
Mild discomfort	17 (70.8%)	-----	7 (29.1%)	13 (56.5%)
Moderate discomfort	7 (29.1%)	9 (39.1%)	2 (8.3%)	10 (43.4%)
Severe discomfort	------	14 (60.8%)	-----	-----

Postoperative complaints (watering, foreign body sensation, pain) were seen in patients. On the first postoperative day in group 2, 70.8% of patients had mild discomfort and 29.1% of patients had moderate discomfort. Whereas in group 3, 39.1% and 60.8% had moderate and severe discomfort respectively. On the 7th postoperative day, 62.5%,29.1% and 8.3% of patients had No, mild, moderate symptoms in group 2. However, in group 3, 56.5% and 43.4% of patients had mild and moderate symptoms. These complaints decreased progressively over 2 weeks and got fully relieved at the 10th postoperative day upon removal of sutures. In group 1 patient experienced foreign body sensations for 5 days. Graft loss was seen in 3 patients in group 2 and none in group 3. Pterygium recurrence was seen in 2 patients both belonging to group 2.

Discussion

Excision of pterygium is the only effective method for treatment. The challenge in pterygium surgery is the prevention of recurrence. Various modalities have been proposed to reduce recurrence rates like antimetabolite, radiotherapy, conjunctival flap rotation and conjunctival autografting [9]. The maximum chance of pterygium recurrence occurs in the first 6 months of excision [10]. Previously ***Bare sclera*** technique was performed which involves removal of head and body of pterygium leaving the scleral bed to re- epithelise. This technique is associated with a high recurrence rate (30-70%). This technique was further improvised with the use of Mitomycin C as an adjuvant. But various sight-threatening complications (glaucoma, cataract, scleral melting, necrotising scleritis) were reported with the use of Mitomycin C [11]. The use of Mitomycin is simple and time-consuming, nevertheless, it has dose-dependent complications which can occur at any time demanding a long follow up [12]. Since the 1940s, rotational conjunctival flaps have been advocated to cover the bare sclera [13]. This technique carries minimal to no complications apart from flap retraction and cyst formation [14]. Suat Hyari et al found a recurrence rate of 33.3% with the conjunctival flap rotation technique. They also observed that the formation of fold over conjunctiva due to rotation of flap was the most common symptom. But after a certain time conjunctiva appears at an acceptable level cosmetically [15].

Conjunctival autograft had been done along with pterygium excision to reduce the recurrence rate. Autograft can be secured in place with help of sutures, fibrin glue and autologous blood. Sutures result in post-operative discomfort, granuloma formation, papillary conjunctivitis. Fibrin glue use to secure conjunctival autograft

Results in less post-operative inflammation, less surgical time but it has the potential risk of transmission of infection such as HIV, Hepatitis B and Parvovirus [16]. Autologous serum can also be used as a bioadhesive to adhere to autograft at the excision site. It is less costly than fibrin glue and does not contain the risk of transmission of infection. However, graft retraction and graft displacement are commonly seen in patients of autologous serum.

In the present study, we compared the postoperative outcome between patients receiving sutures and autologous blood. On postoperative day 1, the discomfort was more in patients treated with sutures as compared to autologous blood. On postoperative day 7, 56.5% of patients had mild symptoms with sutures and 62.5% had no symptoms with autologous blood. Similar findings were observed by Harpal et al [16], who concluded that graft fixation by autologous blood is associated with less discomfort. Kumar P et al documented less discomfort with autologous blood as compared to sutures. Most of the patients belonging to both groups were comfortable after 1 week [17].

In our study, graft loss was seen in three patients belonging to the autologous blood group and none in the suture group. Singh et al [18]. reported graft displacement to be 5% in patients treated with autologous blood while Nisha Dulani et al found a displacement rate of 3.39% [19]. The recurrence rate in our study was 4% and it was observed in patients belonging to the autologous blood group. A study done by Elwan et al showed an 8% recurrence rate in the suture group and 6% in the autologous group [20]. Harpal et al found a higher recurrence rate in the suture group (22.7%) as compared to the autologous group (3.6%) [16].

Conclusion

In our study, autologous blood is an effective alternative as compared to sutures as it is cost-effective, does not contain a risk of disease transmission and was associated with less post-operative discomfort. However, the chances of graft displacement are higher with autologous blood.

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