

A study on success rates in no glue no suture technique of pterygium excision with conjunctival autograft in rural population of Chittoor district, Andhra Pradesh, India

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Abstract

Background: Pterygium is a fibroelastotic degeneration of the subconjunctival tissues which proliferate as vascularized granulation tissue to invade the cornea. Symptomatic pterygium needs to be excised. But pterygium surgery remained an enigma through ages. As Bare scleral excision has a disadvantage of recurrence, conjunctival autografting is done nowadays. **Materials and Methods:** The present study is a retrospective study conducted at the teaching hospital, Chittoor district during the period of November 2018 to November 2019. The study included 107 patients with Progressive Pterygium, who underwent surgery for the same. Data were collected from the hospital records. **Results:** Out of 107 patients, who underwent surgery, 76 (71%) were female and 31 (29%) were male. Most of the patients were aged between 41-50 years (39.3%). Nasal pterygium was seen in 100 (93.5%), Temporal pterygium was seen in 7 (6.5%) patients. Of 107 patients only 5 (4.6%) patients had bilateral pterygium whereas unilateral pterygium was seen in 102 (95.4%) patients. During postoperative follow-up, post-op complications were seen in only 10 (9.4%) patients, which included Graft displacement in 5 (4.7%) patients during the first week following surgery, Granuloma formation in 2 (1.9%) patients after 2 weeks of surgery, recurrence of pterygium in 3 (2.8%) patients during 2 months postoperatively. Graft rejection was not observed in any of the patients. **Conclusion:** Conjunctival autografting with Autologous serum was found to be a more effective method following pterygium excision. The main advantage we observed is the chance of Graft rejection and transmission of diseases like HIV and Hepatitis B were not there. This Technique got an easy learning curve for any Ophthalmic surgeon. It demands no extra cost but provides all the benefits of fibrin glue without its drawbacks and without suture related postoperative complications. It is very economical to use Autologous serum for conjunctival autografting following Pterygium excision for all the patients irrespective of their affordability.

Key Word: pterygium excision.

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INTRODUCTION

Pterygium, is a wing-shaped, fibrovascular overgrowth arising from subconjunctival tissue extending across the limbus onto the cornea, destroying superficial layers of stroma and Bowman's membrane, the whole being covered by conjunctival epithelium^{1,2}. The prevalence rate of primary pterygium varies from 0.7% to 31% in various populations around the world³ Although exact etiology is not known, working outdoors increase the risk 1.5-fold and the other risk factors include genetic predisposition, chronic environmental irritations such as dust, dryness, heat, and ultraviolet rays.^{4,5} The excision of pterygium

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with no added therapy (Bare sclera technique) was widely practiced because it was believed to be safe and simple. However, with time it became apparent that the recurrence rate was unacceptably high ranging from 32% to 88%⁶. Several methods were implemented with the aim of improving the success rates, among them conjunctival autograft was one of the recently recommended techniques. Conjunctival autografting can be done by using either Sutures or Fibrin glue or Autologous serum. This study concerns itself to the success rates in pterygium excision with Conjunctival autografting without using any sutures and Fibrin glue but using patients' autologous serum for attaching the graft to bare sclera following pterygium excision.

MATERIALS AND METHODS

The present study is a retrospective study conducted at a Teaching hospital, Chittoor district during the period of November 2018 to November 2019. The study included 107 patients with progressive Pterygium, who were operated for the same. The data was collected from hospital records. The diagnosis of Progressive pterygium was done clinically. A thorough clinical assessment of these patients was done by taking a brief history of presenting complaints, family history, and then thorough examination was done, which included Assessment of visual acuity through Snellen's chart, slit-lamp examination. Fundus evaluation, as a routine was done by direct and indirect ophthalmoscopy. At the time of surgery, Consent was taken from the patients for surgery as well as special consent was taken from the patient for using the data for future publications.

Inclusion criteria:

1. All the patients who were diagnosed as having Primary Pterygium and underwent surgery for the same with their consent for surgery and for the study
2. Patients who were willing for the study.

Exclusion criteria:

1. Patients with age above 60 years
2. Patients with Recurrent Pterygium
3. Patients with Pseudo Pterygium
4. Patients with Atrophic Pterygium

A written informed consent explaining the complications and possibility of recurrence was obtained from all patients. And special consent was taken regarding their acceptance for publication in any journal in the future.

Preoperative preparation:

Patients were started on,

1. Ciprofloxacin eye drops 0.3% 6th hourly in the eye to be operated, one day prior to surgery.

2. Injection Lignocaine 2% test dose was given subcutaneously to look for any signs of drug sensitivity.

Surgical Procedure followed was:

1. Peribulbar anesthesia was given with 2% Lignocaine and 0.5% bupivacaine.
2. Cleaning and wrapping of the operating eye were done with Betadine and sterile drapes.
3. Universal eyelid speculum was used to separate the lids and expose the surgical field.
4. Bridle suturing was done to expose the superior portion of bulbar conjunctiva for taking autograft.
5. The body of the pterygium was grasped gently with fine-toothed forceps and was cut by using Wiscott scissors along its margins and dissected from the underlying tissue
6. The Dissection was continued towards the limbus and the head of the pterygium was dissected off from the cornea with a crescent blade.
7. By using Tooke's knife, remnants of Pterygium tissue adherent to the corneal surface were removed.
8. The globe was turned inferiorly by tightening the Bridle suture and lignocaine 2% was injected subconjunctivally in the superotemporal quadrant to form a bleb and to separate it
 1. from underlying Tenon's Capsule.
9. By using Castroviejo's calipers, the extent of the conjunctival flap to be taken for grafting was measured. Usually, a conjunctival flap of size 1mm more than the size of the receiving scleral bed was taken
10. Venna's scissors were used to cut a conjunctival flap for grafting
11. The exact limbus-to-limbus orientation and epithelium of the conjunctival graft upside were maintained over the receiving Scleral bed.
12. The graft was kept in place and waited for 3-5 min. The serum from bleeding spots in the bare sclera helps in sticking the graft to it.
13. Injection Gentamycin and Dexamethasone were given subconjunctivally in the inferior fornix at the end of the procedure and the eye was closed and padded. Post-operatively the patients were evaluated for the condition of the graft (retraction, chemosis, hemorrhage, congestion) and the condition of the donor site was also evaluated. Post-operatively the patients were started on,
 1. Topical antibiotic-steroid combination eye drops (Ciplox- D eye drops) 6 times a day and was tapered slowly for 3 weeks.

2. Tear substitutes (Lacrigel) 4 times a day was continued for 2 weeks. Patients were then evaluated with respect to visual acuity, Graft rejection, graft displacement, Granuloma formation, presence or absence of recurrence at 1 week, 1 month, 3 months, 6 months postoperatively.

RESULTS

Out of 107 patients, who underwent surgery, 76 (71%) were female and 31 (29%) were male. Most of the patients were aged between 41-50 years (39.3%). Nasal pterygium was seen in 100 (93.5%) patients, whereas temporal pterygium was seen in only 7 (6.5%) patients. Of 107 patients, only 5 (4.6%) patients had bilateral pterygium whereas unilateral pterygium was seen in 102 (95.4%) patients. During postoperative follow-up, post-op complications were seen in only 10 (9.4%) patients of which Graft displacement was noted in 5 (4.7%) patients during the first week following surgery, Granuloma formation was seen in 2 (1.9%) patients after 2 weeks of surgery, recurrence of pterygium was seen in 3 (2.8%) patients during 2 months postoperatively. Graft rejection was not observed in the patients during 6 months of postoperative follow up

TABLE 1: GENDER DISTRIBUTION

Gender	Number of patients	Percentage %
Female	76	71%

Male	31	29%
Total	107	

TABLE 2: AGE OF PRESENTATION

Age of presentation	Number of patients	Percentage %
20-30 years	12	11.2%
31-40 years	26	24.3%
41-50 years	42	39.3%
51-60 years	27	25.2%
Total	107	

TABLE 3: LOCATION OF PTERYGIUM

Location	Number of patients	Percentage %
Nasal	100	93.5%
Temporal	07	6.5%
Total	107	

TABLE 4: LATERALITY OF PTERYGIUM

Laterality	Unilateral		Bilateral	Total
	Right eye	Left eye		
Number of patients	51	51	5	107
Percentage%	47.7%	47.7%	4.6%	

TABLE 5: POSTOPERATIVE COMPLICATIONS

Postoperative complications	Number of patients	Percentage %
Graft displacement	05	4.7%
Graft rejection	00	0.0%
Recurrence of Pterygium	03	2.8%
Granuloma	02	1.9%
Total	10	9.4%



Figure 1: Conjunctival autografting with Autologous serum (Nasal Pterygium before surgery, 1 week Post-op, 1 month Post-op)



Figure 2: Conjunctival autografting with Autologous serum



Figure 3: Conjunctival autografting with Autologous serum

DISCUSSION

Pterygium is a fibroelastotic degeneration of the subconjunctival tissue which proliferates as vascularized granulation tissue to invade the cornea. If not treated it may encroach the entire pupillary axis and thus cause a significant decrease in the visual acuity. The contractile forces of pterygium on the peripheral horizontal cornea leads to significant flattening of the horizontal meridian (with the rule astigmatism), which is proportional to the size of the pterygium^{7,8,9} Other symptoms being redness, foreign body sensation, diplopia, cosmetic disfigurement. There are several surgeries for pterygium of which Bare scleral excision is the basic and simple method of pterygium excision. But it is no longer acceptable in the treatment of pterygium as the chances of recurrence are more common^{10,11}. The reported rates of recurrence are 39%¹². So, Pterygium surgery remained an enigma through ages. Several studies were conducted to modify the bare sclera excision to conjunctival autografting. This has an acceptable low recurrence rate, good cosmesis, and no gross post-operative complication^{11,13,14,15} Conjunctival autografting can done following Pterygium excision in 3 different ways. One way is by suturing the graft to the bare sclera by using either 10-0 Nylon or 7-0 vicryl suture material. Another way of securing conjunctival autograft is by using Fibrin glue. Another way of conjunctival autografting is by using Autologous serum. Sutures may cause patient discomfort, chronic inflammation, granuloma formation symblepharon formation^{16,17}, ocular motility restriction, diplopia, scleral necrosis, and infection^{18,19}. The presence of sutures may lead to prolonged wound healing and fibrosis²⁰. Grafting by using Fibrin glue is easier with less surgical time and short postoperative recovery time and fewer chances of postoperative complications and recurrence. But Fibrin glues are currently manufactured from human plasma and therefore carry the theoretical risk of transmissible diseases like prion disease, HIV, Hepatitis A virus and parvovirus B19^{14,21}. It carries the potential risks of anaphylaxis. Another drawback with Fibrin glue is due to its higher cost and difficulty in availability. Fibrin glue is bio-degradable within 3 hours of preparation, which demands a certain amount of quick positioning and alignment of the graft. Securing the conjunctival autograft to bare sclera using autologous blood is a new approach, also known as “suture and glue-free autologous graft.” This procedure has excellent results without any complications associated with sutures and fibrin glue. Recurrence rate following this technique was around 2.6%²², with the mean surgical time of 11 min, no graft rejections were noticed, and none of the pterygium recurred²³ Following conjunctival autografting with autologous serum, the apposition of the lids to the bulbar conjunctiva provides a natural biological dressing

and confers a unique wound-healing environment. Apart from a physical barrier, the lids provide compression, a smooth frictionless surface, and avascular bed with immune capability in close proximity to the injury site

CONCLUSION

The main advantage we observed through this technique is the absence of Graft rejection, less surgical time, low recurrence rate and less postoperative complications. Unlike Fibrin glue, chances of transmission of diseases like HIV and Hepatitis B are less. This Technique got an easy learning curve for any Ophthalmic surgeon. It demands no extra cost but provides all the benefits of fibrin glue without its drawbacks and without suture related postoperative complications. It is very economical to use Autologous serum for conjunctival autografting following pterygium excision for all the patients irrespective of their affordability.

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