Original Research Paper

VOLUME-6 | ISSUE-4 | APRIL - 2017 • ISSN No 2277 - 8179 | IF : 4.176 | IC Value : 78.46

Comparison between sutured limbal conjunctival autograft versus sutureless and glue free in primary pterygium surgery

Ophthalmology

KEYWORDS: Pterygium, Sutureless conjunctival autograft, glue free.

DrVMVRVPRASADAR AO

M.S., PROFESSER OF OPHTHALMOLOGY, GOVT.SIDDARTHA MEDICAL COLLEGE, VIJAYAWADA, A.P.

ABSTRACT

To compare and evaluate the safety and efficacy of two surgical techniques for the management of primary pterygium. Prospective randomized clinical trial using the Consolidated Standards of Reporting TrialsStatement for parallel group randomized trials.Department of Ophthalmology, govt.siddartha medical college, vijayawada. A.P The study included 100 eyes of 100 patients with primary pterygium. The mean age was 40 ± 12 years (range 27–64 years). Simple excision under local anesthesia was performed followed by closure of the bare sclera by suture less and glue free conjunctival autograft in 50 eyes of 50 patients (group 1), versus the conventional method of a sutured conjunctival autograft in 50 eyes of 50 patients (group 2).

The pterygium recurrence rate was 4% for group 1, 6% for group 2.Graft dehiscence occurred in 2 eyes out of 50 (4%) in group 1. Graft retraction occurred in 2 (4%) out of 50 eyes for group 1 versus 3eyes (6%) in group 2. Pyogenic granuloma occurred in2 eyes (4%) out of 50 in group 2. No other serious complications were noted. At the 6 week visit the overall patient satisfaction was significantly higher for group 1 , compared to group 2Sutureless and glue free conjunctival autograft technique is easy, safe, effective, prevents potential adverse reactions encountered with the use of foreign materials. This technique has an acceptable pterygium recurrence rate that is comparable to conventional sutured conjunctival autograft for primary pterygium.

Introduction

Pterygium (derived from *pterygion*, ancient Greek for wing) is a common ocular disease seen mostly in tropical and subtropical areas . Pterygium is an abnormal overgrowth of fibrovascular tissue arising from the subconjunctiva toward the cornea, almost always in the palpebral fissure and thought to be caused by increased UV light exposure, dust, dryness, heat and wind. Although it can be easily excised, it has a high rate of recurrence ranging from 24% to 89%.Recently, with the popularity of conjunctival autograft and use of antimetabolites such as mitomycin C and 5-Fluorouracil the incidence of recurrence has been greatly reduced up to 12% Additionally, the relative benefits and risks are debatable of physiochemical methods to prevent recurrence. For example possible complications of mitomycin C and beta-irradiation include aseptic necrosis of the sclera and cornea, cataract, persistent epithelial defects and visual loss.

Therefore, a simple surgical procedure that can reduce the recurrence rate to an acceptable level with minimal complications and without the use of potentially toxic drugs or radiotherapy would be ideal for the management of pterygium. Recent reports favor the use of fibrin glue above sutures. The use of fibrin glue has been reported to improve comfort, decrease surgical time, reduce complications and recurrence rates.Suture-related complications include infection, prolonged operating time, postoperative discomfort, suture abscesses, buttonholes, and pyogenic granuloma which usually require a second surgery for removal . Plasmaderived fibrin glue has the potential risk of prion disease transmission and anaphylaxis in susceptible individuals.

Suture less grafting has been used successfully in gingival grafts, and represents a similar mucosal membrane tissue environment to the conjunctiva of the eye. In this study, we compare and evaluate the safety and efficacy of suture less glue free limbal conjunctival autograft and conventional sutured autograft for the management of primary pterygium.

Material and methods

The study sample was comprised of 100 eyes of 100 patients with primary pterygium. The patients complained of conjunctival injection, tearing, rapid growth with cosmetic concerns, and encroachment of the pupillary area threatening the visual axis or blurred vision from induced astigmatism , Exclusion criteria were inability to complete the two year follow up period, atrophic pterygium, pseudopterygium, ocular surface pathology, infection, previous limbal surgery or double head pterygium.

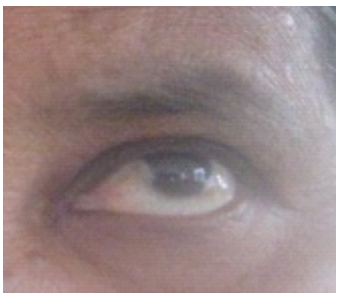

FIGURE 1 pre-operative primary left nasal pterygium.

All patients underwent a comprehensive ophthalmologic examination including visual acuity, refraction, slit lamp biomicroscopy, measurement of intraocular pressure, extraocular muscle movements and dilated funduscopy.

The patients were randomly assigned into one of two groups: group 1 underwent sutureless and glue free limbal conjunctival autograft (n = 50 eyes) and group 2 underwent free limbal conjunctival autograft with suturing, (n = 50 eyes). The technique used in our study is simple randomization technique.This technique maintains complete randomization of patient assignment to a particular group. The goals of pterygium surgery were to remove the pterygium, restore the conjunctival anatomy, leave the cornea as smooth and clear as possible, and prevent recurrence. Simple pterygium excision was performed under peribulbar anesthesia (Xylocaine 2%). . Excision consisted of detachment of the pterygium head using a toocks knife and dissection of the body from the overlying conjunctiva in a smooth clear plane as possible using blunt and sharp dissection. Subsequently, the subconjuctival pterygium tissue and the thickened segment of conjunctiva and adjacent Tenoń's capsule were excised leaving bare sclera. Then the size of bare scleral was measured with calipers and the area documented in mm^2.

The upper bulbar conjunctiva was injected with 1 cc of local anesthesia (Xylocaine 2%) to facilitate separation of the conjunctiva from Tenon's capsule, conjunctival limbal graft to be created 2 mm larger in width and length than the recipient bed. A small opening was created and careful blunt dissection with Wescott scissors was performed until the entire graft was free from Tenons reaching the limbus to include limbal stem cells that act as a barrier to the conjunctival cells migrating onto the corneal surface. Subsequently, the edges of the graft were cut by Vannas scissors. Forceps is used to gently slide the graft to the recipient bed with the epithelial side up and keeping the limbal edge toward the limbus.

In group 1, hemostasis was allowed to occur spontaneously without use of cautery to provide autologous fibrin to glue the conjunctival autograft naturally in position without tension and the scleral bed was viewed through the transparent conjunctiva to ensure that residual bleeding did not lift the graft. Small central hemorrhages were tamponed with direct compression. The graft was held in position for 10 min by application of gentle pressure over the graft with fine non-toothed forceps. The stabilization of the graft was tested with a Merocel spear centrally and on each free edge to ensure firm adherence to the sclera. The eye was bandaged for 48 h.

In group 2, the graft was sutured in position with 10/0 nylon. First the two limbal corners were sutured into the episclera and then into the conjunctiva keeping the limbal edge of the graft on gentle stretch then the posterior corners of the graft were sutured to the bulbar conjunctiva and additional sutures were placed to close the wound edges. Both groups received subconjunctival injection of corticosteroid and antibiotic at the end of the procedure.

Post-operatively a pressure eye patch was applied. Analgesia was prescribed two times daily. Post-operative medication included prednisolone eye drops, four times daily, was used for 1 week then gradual tapering for 3 weeks. The patients were instructed to avoid rubbing their eyes and avoid dust, heat, direct sun exposure. The patients were also advised to wear sun glasses to reduce UVR exposure.

All patients were followed up after 48 h, weekly for one month then for 3, 6, 9, and 12 months postoperatively. Patients completed a questionnaire at each follow-up visit, especially during the visits for the first post-operative month (3 days, 1 week, 2 weeks and 3 weeks) grading pain, foreign body (F.B) sensation, photophobia, hyperemia and chemosis. The two groups were compared for ocular signs and symptoms, and overall satisfaction.

The main postoperative outcomes noted were the recurrence rate which was defined as fibrovascular proliferation invading the cornea more than .5 mm at the site of previously excised pterygium, graft dehiscence, graft retraction. The secondary outcomes were duration of surgery, postoperative pain, foreign body sensation, photophobia, hyperemia, chemosis, overall satisfaction and the complications as, persistent epithelial defect, dellen, inclusion cyst, pyogenic granuloma, conjunctival edema, corneo-scleral necrosis, infective scleritis, keratitis and endophthalmitis.

Results

The pterygium were located nasally in all eyes for both groups. Patient age in both groups ranged from 27 to 64 years (mean, 40 ± 12 years) table 1. There were 50 males and 50 females enrolled in this study. In 55 eyes, pterygium were present in the right eye and 45 in the left eye. (Figs. 2 and 3 present the data for group 1 and group 2, respectively). There was no statistically difference in age between groups . The two groups were clinically similar regarding the size of the pterygium.

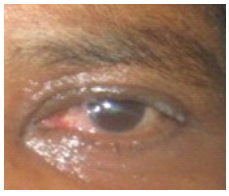

Figure 2 post-operative sutureless and glue free conjunctival limbal autograft in place.

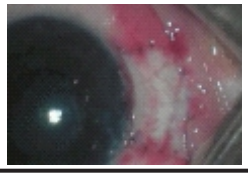

Figure 3 post-operative conventional sutured conjunctival limbal autograft by Nylon 10/0.

	Group 1 (n-50)	Group 2 (n-50)
Range of age	27-64	27-64
Sex		
Males	28	24
Fmales	22	26
Latrality		
Right	30	25
Left	20	25

Table 1 Clinical data.

The main and secondary postoperative outcomes. The recurrence rate was 4% (2 eyes) in group 1. All cases of recurrence in group 1 occurred after 3 months. The recurrence rate was 6% (3 eyes) in group 2. All cases of recurrence in group 2 occurred after 6 months. Graft dehiscence occurred in 4% (2 eyes) in group 1 and there were no cases of graft dehiscence in group 2. In one patient graft dehiscence developed with eye trauma on the third post-operative day. In another patient it occurred following vigorous rubbing of the eye on the fourth postoperative day. In. All 2 patients were treated by suturing the same graft with (10/0 nylon sutures).Early graft retraction with exposure of scleral bed occurred in 2eyes (4%) in group 1 and in 3eyes (6%) in group 2 within the first postoperative week due to conjunctival edema and chemosis. All cases were resolved with conservative management.

Conjunctival edema occurred in 8 eyes (16%) in group 1 and in 3 eyes (6%) in group 2. Most cases of conjunctival edema resolved gradually within the first post-operative week. Faint corneal nebula occurred in two eyes (4%) in group 1 and in 4 eyes (8%) in group 2. Conjunctival granuloma , occurred only in group 2 in three eyes (6%), two of them treated by surgical excision within the first post-operative month and the other one resolved by conservative management.

Discussion

Surgical techniques for the management of pterygium vary, but high recurrence rates after successful excision remain a challenge. The aim of pterygium surgery is to excise the pterygium and prevent its recurrence.. The variety of techniques, range from the bare sclera procedure to more complex approaches, such as amniotic membrane transplantation and lamellar keratoplasty, including conjunctival autograft, and limbal conjunctival transplant, conjunctival flap, conjunctival rotation autograft surgery, cultivated conjunctival transplant (ex-vivo expanded conjunctival epithelial sheet) and use of fibrin glue.

Bare sclera excision (BSE) has an unacceptably high recurrence rate (40–60%) and has become obsolete.Pterygium excision with limbal conjunctival autograft, has been reported to be more effective with low recurrence but it may compromise the corneal stem cell population. Additionally, adjunctive use of amniotic membrane graft results in low recurrence but costly.Fibrin glue has been used as an alternative to sutures for securing the conjunctival grafts.A study has reported recurrence rate of 5.3% for glue versus 13.5% for sutures and suggested that immediate adherence of the graft and lack of postoperative inflammation may inhibit fibroblast ingrowth and reduce the recurrence. The main issue in using commercial fibrin glue, despite viral inactivation techniques, is the transmission of infectious agents. Furthermore, anaphylactic reaction has been reported after the use of fibrin sealant which was due to bovine protein aprotinin. Foroutan et al prepared autologous fibrin glue, though much safer but it is not yet used widely because of the duration it takes to procure the fibrin and lack of laboratory facilities at all centers. Fibrinogen compounds may be susceptible to inactivation by iodine preparations used for conjunctival disinfection before pterygium surgery.In our study we compared the two techniques of sutureless and glue free conjunctival limbal autograft (group1) with the conventional sutured conjunctival limbal autograft (group2) in primary pterygium surgery.

VOLUME-6 | ISSUE-4 | APRIL - 2017 • ISSN No 2277 - 8179 | IF : 4.176 | IC Value : 78.46

The recurrence rate (4%) in group 1 was comparable to group 2 (6%). Massaoutis et al.stated that the concept of surgical success in pterygium surgery can be defined as the provision of a white cosmetic conjunctiva, with no persistent symptoms and a low recurrence rate (less than 10%). The recurrence rate in our study agrees with The Massaoutis et al.'s criteria. Our results confirmed significantly lower post-operative signs and symptoms including pain, FB sensation, photophobia, hyperemia and chemosis at all visits in the first post-operative month as well as significantly higher overall patient satisfaction in group 1 compared to group 2. None of our patients developed serious complications such as scleral necrosis, sclera thinning, graft necrosis, symblepharon, excessive bleeding, medial rectus muscle injury, or globe perforation.

Conclusion

Suture-less and glue free limbal conjunctival autograft is safe, effective, economical, and its surgical outcomes following primary pterygium surgery are comparable to conventional suture limbal conjunctival autograft with lower post-operative suture related complications, less patient discomfort and greater patient satisfaction..

References

1. Coroneo MT, Di Girolamo N, Wakefield D. The pathogenesis of pterygia. Curr Opin Ophthalmol 1999;10:282-8.
2. Schulz K.F., Altman D.G., Moher D. for the CONSORT Group. CONSORT 2010 Statement: updated guidelines for reporting parallel group randomized trials. BMJ. 2010;340:c332.
3. Gupta V.P. Conjunctival transplantation for pterygium. DJO. 1997;5:5–12.
4. Singh G., Wilson N.R., Foster C.S. Mitomycin eye drops as treatment for pterygium. Ophthalmology. 1988;95:813–821
6. Tarr K.H., Constable I.J. Late complications of pterygium treatment. Br J Ophthalmol. 1980;64:496–505.
7. Gans L.A. Focal points: clinical modules for ophthalmologists. American Academy of Ophthalmology; San Francisco: 1996. Surgical treatment of pterygium; p. 2. Vol 14.
8. Ayala M. Results of pterygium surgery using a biologic adhesive. Cornea. 2008;27:663–667.
9. Kim H.H., Mun H.J., Park Y.J., Lee K.W., Shin J.P. Conjunctivolimbal autograft using a fibrin adhesive in pterygium surgery. Korean J Ophthalmol. 2008;22:147–154. -21.
10. Srinivasan S., Slomovic A.R. Eye rubbing causing conjunctival graft dehiscence following pterygium surgery with fibrin glue. Eye. 2007;21:865–867,
11. Malik K.P.S., Goel R., Gupta S.K., Kamal S., Malik V.K., Singh S. Efficacy of sutureless and glue free limbal conjunctival autograft for primary pterygium surgery. Nepal J Ophthalmol. 2012;4(8):230–235.
12. Donaldson K.E., Alfonso E.C. Recent advances in pterygium excision. Contemp Ophthalmol. 2003;2:1–8. in glue. Eye. 2007;21:865–867.