ORIGINAL RESEARCH

Comparison of Fibrin Glue Vs Suture for Conjunctival Limbal Autografting in Pterygiumsurgery

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ABSTRACT

Background:To compare the efficiency and safety of fibrin glue and suturing technique for adherence of conjunctival limbal autograft after pterygium excision.

Materials and Methods: AProspectiveinterventional study conducted from September 2018 to December 2020 in the department of Ophthalmology at KIMS,Narketpally.100eyesof100 patientsoperatedforprimary nasal pterygium.Autologousconjunctival grafttakenfromthe superotemporal limbu was used to cover the scleraafter pterygiumexcision.In50 eyes,thetransplantwasattached tothesclerawitha fibrin tissue adhesive (BeriplastP),in 50 eyeswith10-0Vicrylsilksutures.Outcome measures included graft position and stability,recurrence of pterygium, Postoperativepatient discomfort(pain,watering)andbio microscopic findings(hyperemia,edema).Patientswere followedupatleastforsixmonths.

Results: Subconjunctival haemorrhage occurred underthe graftingonepatientinFibrin glue group.Granuloma was seen in one patient in suture group,which resolved after suture removal. Inferior Graft dislodgement was seen in one patient in suture group.Symptoms like pain, watering, Foreign body sensation were significantlylessandbiomicroscopicfindingswerebetterin Fibrin glue group.Average Surgery Cost Was Higher (<0.05)andsurgerytimewasshorter (<0.05)infibrin group.

Conclusion: Fibrin glue is a safe and effective method for attaching conjunctival limbal autografts.Usingfibringlueforgraft fixation pterygium surgery causes significantly less postoperative pain,watering,foreign body sensation and shortenssurgerytimesignificantly.

Keywords: Pterygium,Conjunctival autograft,Fibrin glue, Sutures.

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INTRODUCTION

Pterygium is a fibrovasular growth arising from the conjunctiva and extending onto the cornea.Surgical excision of the pterygium is the standard treatment,but the outcomes are compromised by postoperative recurrence. Many studies have been done in the last decade about treatment of pterygium like bare sclera technique,antimitotic agents,[1]amniotic membrane transplantation and autologous conjunctival transplantation.[2] In autologous limbal conjunctival autograft technique,bulbar conjunctiva including limbal tissue is fixated on the exposed scleral bed after pterygium excision using either sutures or fibrin glue. Reported recurrence rates with this technique are between 2% -9%. Fibrin glue is a biological glue.[3]It is absorbable and easy to use.It is blood derived product.

MATERIALS & METHODS

Study was done in the department of Ophthalmology at the Kamineni institute of medical sciences, after approval from the institutional ethical committee. Hundred eyes of the 100 patients with primary nasal pterygium were included into the study. A comprehensive medical and ocular history was obtained, including patients age,gender, family, medical and ocular history. Snellen's visual acuity measurement, Fundoscopy, applanation tonometry, slit lamp examination, anterior segment photography was performed preoperatively. Patients with ocular pathology other than refractive errors, with a history of previous ocular surgery or trauma,narrow occludable angles,ocular hypertension,known hypersensitivity to any component of Fibrin glue were excluded.Informed consent was obtained from all the patients.Autologous Conjunctival grafttakenfromthe superotemporal limbu was used to cover the sclera after pterygium excision.In 50 eyes,thetransplantwasattached tothesclerawithafibrin glue adhesive(BeriplastP), in 50 eyeswith 10-0Vicrylsilksutures.

All surgeries performed by a single surgeon under local anaesthesia.Surgical site and lashes were cleaned with povidone iodine and sterile drapes was put in place. After insertion of wire speculum,pterygium head was dissected from cornea with a surgical blade. Sub conjunctival fibro vascular tissue was carefully dissected and removed with tenotomy scissors.Dimensions of the bare sclera bed was measured with a calipers. A free conjunctival limbal graft of same size was harvested from super temporal conjunctiva.Limbal side of graft was placed on the limbus of host scleral bed. Infibrin glue group, a drop of fibrinogen solution was placed on the bare sclera and spread out with a needle cannula.Thrombin solution was applied to activate the sealant.The graft was then immediately transferred onto the bare sclera and left there for 10 minutes. For suture group,the graft was placed onto the bare sclera,and its 4 corners were anchored to the episclera with 10-0 vicryl sutures.Care was taken to maintain the spatial orientation of the graft in relation to the limbus.The side of the graft was fixed to the limbal area with horizontal mattress sutures.The sides of the graft were then attached to the surrounding conjunctiva at interval of 1 to 1.5mm with simple interrupted sutures. The sutures were removed one month postoperatively.

Study procedure:

Operating time was measured starting from placement of the lid speculum to its removal at the end of surgery.The patients were followed up on the first day after surgery and then on weeks 1,2,4,8, and 12.Snellen's visual acuity testing and tonometry were tested during each visit. A slit-lamp examination was performed at every visit to monitor autograft integrity and development of complications such as corneal defect, symblepharon formation, giant papillary conjunctivitis, granuloma formation. Graft success was defined as intact graft by 4th week after surgery,graft failuredefined as absence of the graft by 4th week.Recurrence was defined as any growth of conjunctiva into the cornea.Subjective sensations of pain,foreign body sensation, watering and discomfort were evaluated on the 1st postoperative day and on weeks 1,2,4.

RESULTS

A total of hundred eyes included,and all had primary nasal pterygia.No eyes were lost to follow up over the 6 months. In the Fibrine glue group,28(56%) patients were males and 22(44%) patients were females.In the suture group,27(54%) patients were males and 23(46%) were females. The mean duration of operating time was significantly shorter in Fibrine glue group compared to suture group(p 0.001).Subjective symptoms of pain,foreign body sensation,watering and discomfort were present and disappeared more rapidly in Fibrin glue group than suture group. Intensity of these symptoms were significantly more in suture group than Fibrin Glue group on all follow up days (p 0.001).All patients treated with Fibrin glue

group were asymptomatic after 2weeks.One patient in the suture group had partial graft dislodgement developed inferiorly and a conjunctival defect that resolved after 2 weeks.One patient in fibrin glue group had extensive sub conjunctival haemorrhage under the graft,which resolved after 3 weeks.Granuloma was seen in one case in suture group, which resolved after suture removal.No recurrence was seen in both the groups.

Figure 1: Pterygium before surgery

Figure 2: Conjunctival grafting with fibrin glue

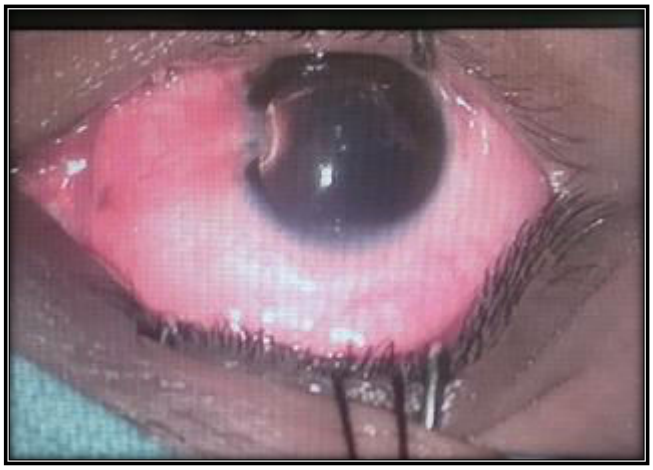

Figure 3: Pterygium before surgery

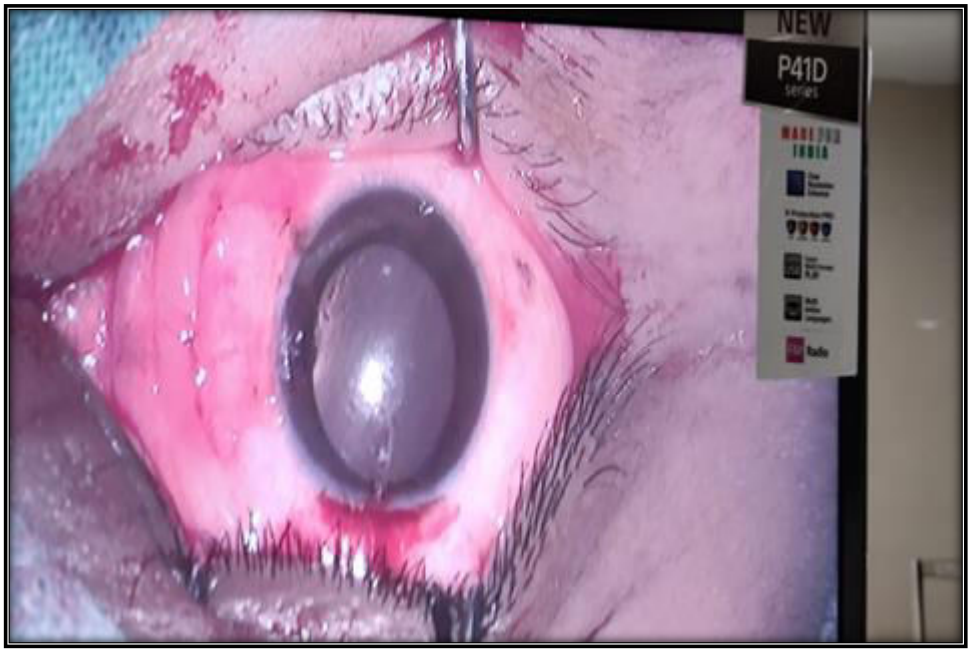

Figure 4: Conjunctival grafting with sutures

Table 1: Comparison of mean surgery time,complications in suture and fibrine glue group

	Fibrin glue	**Suture**
Mean surgery time	20-+4.15 mins	30+_5.30mins
Haemorrhage under graft	1	0
Granuloma	0	1
Graft dislodgement	0	1

DISCUSSION

Recurrence is the most common complication of pterygium surgery and is a frequent source of frustration for patients and surgeons. Compared with other pterygium excision techniques, such as bare sclera excision,primary closure, and amniotic membrane grafts, the conjunctival autograft approach is associated with lower recurrence rates and fewer complications.Although conjunctival autogafting technique is safer and clearly more effective than bare sclera resection in preventing pterygium recurrence,a greater amount of surgical expertise is needed to attach autograft using sutures. Suture use is associated with patient discomfort and minor complications such as granuloma formation, dellen ulcer,symblepharon and graft dehiscence. Biological tissue adhesives such as FG offer an alternative method of conjunctival graft attachment that may produce fewer complications and postoperative discomfort.

Koranyi et al,[4] compared 7-0 vicryl sutures to fibrin glue in their study. They assessed postoperative patient complaints and operative time.They found that patient discomfort was less and operation time was shorter in fibrin glue group.They also reported pterygium recurrence was significantly less in fibrin group.Uy et al,[5]compared 10-0 nylon sutures to the fibrin glue intheir study and they concluded that all the complaints were significantly less in fibrin group and mean surgical time was found significantly shorter in fibrin group.Cohen and MacDonald have used an organic tissue adhesive to reduce number of sutures needed for attaching conjunctival graft.[6] Bahar et al,[7] combined intraoperative mitomycin C application with 7-0 vicryl and fibrin glue use in their study. Postoperative patient satisfaction was found as significantly better and operation time as significantly shorter in fibrin group.Farid et al,[8] compared fibrin glue with 8-0 vicryl,Srinivasan et al,[9] and Jiang et al

with 10-0nylon and they all reported same results. Bora et al,[10] compared 8-0 silk sutures with fibrin group in their study and they concluded that postoperative complaints and hyperaemia were more in suture group. Ti et al,[11] showed that postoperative inflammation increases the risk of pterygium recurrence.Hongwei et al,[12] conducted a meta-analysis comparing the fibrin glue vs sutures and concluded that use of fibrin glue reduces recurrence rate without increasing complications.

In this study, we found that the advantage of using fibrin glue is shorter operating time, more postoperative comfort and less postoperative complications compared to 10-0 vicryl suture group.No recurrence occurred by the end of 3 months observation period inboth the treatment groups.Short follow up period is a limitation of this study,and longterm study is being planned to determine the recurrence rates and longterm effects of FG in securing conjunctival autografts.

There are some concerns regarding the safety of fibrin glue use,including potential for anaphylactic reaction and disease transmission. None of the patients in this study had anaphylactic reactions. Adherence to good manufacturing process can help avoid transmission of pathogens.

CONCLUSION

Fibrin glue is an effective and safe method for attaching conjunctival autograft during pterygium surgery.The use of Fibrin glue can significantly shorten operating timeand produce less postoperative symptoms and discomfort.Long term studies are needed to determine the rate of pterygium recurrence by the use of FG instead of suture.

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