

Research Article**Suture less and Glue less Limbal Conjunctival Auto grafting in Pterygium Surgery****Arvind Kumar Morya*¹, Arunendu Shekhar Thakur², Samia Rahman Khan³**¹Associate Professor, ²Professor, ³Junior-Resident, Department of Ophthalmology, Teerthanker Mahavir Medical College Hospital and Research Centre, Moradabad, U.P., India***Corresponding author**

Dr. Arvind Kumar Morya

Email: bulbul.morya@gmail.com

Abstract: Foreign elements like sutures used in ocular surface surgery can lead to many local complications like irritation, scarring, infection or vascularization. Whereas plasma-derived products like fibrin glue can produce hypersensitivity reactions along with the risk of viral transmission. Prospective, multicentric study in which a simple method of achieving limbal conjunctival auto graft adherence during pterygium surgery avoiding many complications related with the use of fibrin glue or sutures in 24 young patients. After proper pterygium excision the autologous limbal conjunctival graft is placed over the recipient bare-scleral bed and is allowed to attain natural haemostasis and relative desiccation before graft placement. A total of 24 patients (13 Male and 11Female) with primary progressive nasal pterygium with age group 23 Yrs with SD 2.5 Yrs underwent SGF limbal conjunctival auto grafting after pterygium excision. Cosmesis was excellent in all the cases with only 1 recurrence after a follow up period of 9 months with SD of 2.3 months. SGF limbal conjunctival auto grafting can be the surgery of choice with very little or no adverse effects as seen in this study of 24 young patients with comparable results to all other such studies.**Keywords:** SGF (suture – glue- free), limbal conjunctival auto graft, fibrin-glue, ocular- surface.

INTRODUCTION

The pterygium [1] is chronic inflammatory kerato conjunctivitis –cum–hypertrophic, degenerative process of the conjunctiva, in which a triangular portion of the bulbar conjunctiva encroaches upon the cornea. It's origin, development and tendency to relapse and recur, all offer problems, which are yet to be solved by the ophthalmic-surgeons.

We conducted a multi centric, prospective study of the management of pterygium by a very simple technique of SGF limbal conjunctival auto grafting after bare sclera excision of pterygium to find the following objectives:

1. Any complications
2. Any recurrence
3. Demographic- Profile

METHODS

The study was conducted at two clinical ophthalmological centers but by same surgeon and

using the same technique. Patients were properly counseled about the nature, outcome, long follow –up period and all possible complications along with the recurrence[2,3,4] possibility and proper consent was also taken.

Selection of Cases

24 eyes with primary pterygia were included in the study –group. All cases were operated under retro bulbar plus facial-block. The patients suffering from ocular problems like corneal ulceration, corneal edema, superficial or deep keratitis, scleral ulceration, and uveitis and raised IOP were not included in this study [7, 8, 9, 10]. After surgery, topical tobramycin-fluoromethalone ointment was instilled and the eye bandaged for 48 hours, followed by topical instillation of tobramycin –fluro methalone eye drops along with decongestant and 1.0% CMC eye drops for 6 –8 weeks. All the patients were called on postoperative days 7, 15, 30, 90, 120 and 180.



Fig 1: Pre-op Nasal Pterygium

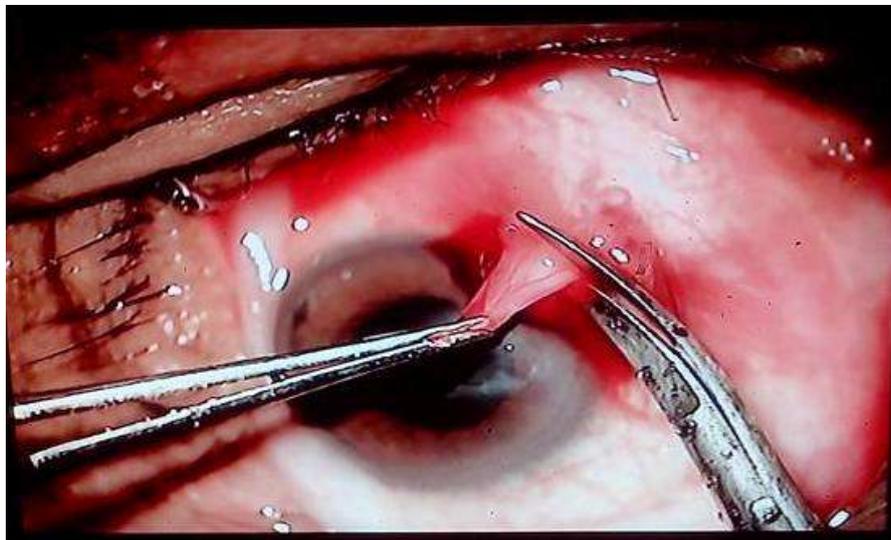


Fig 2: Excision of Pterygial-Tissue



Fig 3: Bare Sclera and placement of Limbal Conj. Auto graft at Nasal Limbus



Fig 4: Placement of Limbal Conj. Auto garft At Bare-Sclera without any Suture or Glue

Routine Examination

At each follow –up visit both gross and slit-lamp examination was done to look for:

- Cosmesis
- Any complication
- Any recurrence

RESULTS

Between Oct. 2014 to Feb. 2015, 24 patients with primary pterygium were operated in this study at 2 clinical sites and were followed for 8 months to 11

months. Age group was between 23± 2.5years. Mean graft area was 26(±1.5) mm².The mean surgical time was 24(±1.4) mins.

There was no transplant misplacement. There were no intra- or post-operative complications requiring further treatment except recurrence in 1 case. Visual acuities were not affected in the majority of patients. This is a very cost-effective and safe surgical method in developing country like India.

Table 1: Results of suture and glue-free limbal conj. autografts for pterygium

No. of Eyes	24	OD 14 OS 10
Location	24 nasal	
Gender	13 female/11 male	
Age	mean±SD 23.0±2.5 years	
Follow-up	mean±SD 9.0±2.3 months	
Follow-up	range 8 to 11 months	
Operation time	mean±SD 24±1.4 min	
Mean graft size	mean±SD 26±1.5 mm ²	
Recurrence	One	
Complications	None	
Cosmesis and Healing	Excellent	

DISCUSSION

There are many surgical procedures to prevent pterygium recurrence which includes conjunctival autograft, limbal and limbal–conjunctival auto graft, conjunctival flap and conjunctival rotation auto graft surgery, use of Mitomycin-C, amniotic membrane transplant, cultivated conjunctival transplant and the use plasma-derived fibrin glue [11, 12, 13]. All of these procedures involve the use of sutures or fibrin glue and are therefore vulnerable to associated

complications. The presence of sutures may lead to prolonged wound healing, infection and fibrosis[4,6]. Subsequent local ocular-surface complications like pyogenic granuloma formation are easily treated; others like symblepharon formation, forniceal contracture, ocular motility restriction, diplopia, scleral necrosis, and infection are much more difficult to manage and can end up in sight-threatening lesions[14,15,16].

Although generally considered safe, fibrin glues are currently manufactured from human plasma and therefore carry the theoretical risk of transmissible disease [12, 17, 18] as well as they are very costly for the patients in a developing country like India. Although Virus removal and inactivation procedures are included in the manufacturing process but they are of limited value against non enveloped viruses like hepatitis A virus and parvovirus B19 [15,19]. New equipments, like the Cryo Seal FS System eliminate the possible risks associated with pooled plasma. They are not currently in widespread use because of cost-factor and however the time taken to obtain the fibrin may be prohibitive in day case pterygium surgery [16]. Fibrinogen compounds may also be susceptible to inactivation by iodine preparations like beta dine used for conjunctival disinfection before pterygium surgery [17]. In this study their superiority versus naturally occurring fibrin in the bare scleral wound site has not been directly compared.

The apposition of the both eyelids to the bulbar conjunctiva provides a natural biological dressing and produces a unique wound-healing environment. Along with a physical barrier, the eyelids provide compression, a smooth frictionless surface, and a vascular bed with immune capability in close proximity to the injury site. Conjunctival high healing rates of upto 3.16 ± 0.17 mm² per day have been shown in rabbit models [18] and this in addition to the natural biological dressing afforded by lid closure appears uniquely adequate in allowing the use of suture and glue free conjunctival auto grafts.

Our study has several limitations. It was non-randomized and consisted of a small study population and a relatively short follow-up period of 8 months. Nonetheless, one article comparing four commonly used techniques for pterygium surgery reported mean time for appearance of any complication including recurrence was barely 4 months [19]. Most importantly however, the operating time, post-operative symptoms, recurrence, and complication rate of the above-described technique (SGF) in our series appears to be at par with the conventional suture and glue techniques of a similar follow-up duration [3, 4, 6, 10].

To be very specific, the risk of graft retraction as described by Tan [7] appears to be no greater without suturing or fibrin glue as long as proper and meticulous dissection of the sub epithelial graft tissue is achieved. We postulate that as there is an even tension along the whole of the graft interface and no direct tension on the free graft edges also there is reduced stimulus for sub conjunctival scar tissue to occur. Although surgical time in our small series does not appears prolonged than the other-current published literature [20], the possibility of longer operation times compared to sutures or fibrin glue is quite possible. A prospective randomized controlled trial is required to investigate the long-term

efficacy of this SGF limbal conjunctival auto grafting technique in reducing recurrences.

Conflict of interest: The authors declare no conflict of interest.

Acknowledgements: We thank Suman Morya and Amit Morya for their administrative support.

REFERENCES

1. Kenyon KR, Wagoner MD, Hettinger ME; Conjunctival autograft transplantation for advanced and recurrent pterygium. *Ophthalmology* 1985; 92: 1461–1470.
2. Ayala M; Results of pterygium surgery using a biologic adhesive. *Cornea* 2008; 27: 663–667.
3. Kim HH, Mun HJ, Park YJ, Lee KW, Shin JP; Conjunctivo limbal autograft using a fibrin adhesive in pterygium surgery. *Korean J Ophthalmol* 2008; 22: 147–154.
4. Koranyi G, Seregard S, Kopp ED; Cut and paste: a no suture, small incision approach to pterygium surgery. *Br J Ophthalmol* 2004; 88: 911–914.
5. Koranyi G, Seregard S, Kopp ED; The cut-and-paste method for primary pterygium surgery: long-term follow-up. *Acta Ophthalmologica Scandinavica* 2005; 83: 298–301.
6. Allan BD, Short P, Crawford GJ, Barrett GD, Constable IJ.; Pterygium excision with conjunctival auto grafting: an effective and safe technique. *Br J Ophthalmol* 1993; 77: 698–701.
7. Tan D; Conjunctival grafting for ocular surface disease. *Curr Opin Ophthalmol* 1999; 10: 277–281.
8. Dorfman HS, Kennedy JE, Bird WC; Longitudinal evaluation of free autogenous gingival grafts. A four year report. *J Periodontol*, 1982; 53: 349–352.
9. Sharma A, Moore J; Autologous fibrin glue for pterygium surgery with conjunctival autograft. *Cont Lens Anterior Eye* 2009; 32: 209.
10. Sebban A, Hirst LW; Pterygium recurrence rate at the Princess Alexandra Hospital. *Aust NZJ Ophthalmol*. 1991; 19: 203–206.
11. Prabhasawat P, Barton K, Burkett G, Tseng SC; Comparison of conjunctival autografts, amniotic membrane grafts, and primary closure for pterygium excision. *Ophthalmology* 1997; 104: 974–985.
12. Ang LP, Chua JL, Tan DT; Current concepts and techniques in pterygium treatment. *Curr Opin Ophthalmol*; 2007; 18: 308–313.
13. Solomon A, Pires RT, Tseng SC; Amniotic membrane transplantation after extensive removal of primary and recurrent pterygia. *Ophthalmology*, 2001; 108: 449–460.
14. Vrabec MP, Weisenthal RW, Elsing SH; Sub conjunctival fibrosis after conjunctival autograft. *Cornea* 1993; 12: 181–183.
15. Groner A; Pathogen safety of plasma-derived products F Haemate P/Humate-P. *Haemophilia* 2008; 14(Suppl 5): 54–71.

16. Buchta C, Dettke M, Funovics PT, Hocker P, Knobl P, Macher M; Fibrin sealant produced by the CryoSeal FS System: product chemistry, material properties and possible preparation in the autologous preoperative setting. *Vox Sang* 2004; 86: 257–262.
17. Gilmore OJ, Reid C; Prevention of intra peritoneal adhesions: a comparison of noxythiolin and a new povidone–iodine/PVP solution. *Br J Surg* 1979; 66: 197–199.
18. Zhu X, Beuerman RW, Cheng ZY, Ang LPK, Tan DTH; Kinetic analysis of conjunctival epithelial wound healing in the rabbit model. *Invest Ophthalmol Vis Sci* 2005; 46: 4247.
19. Alpay A, Ugurbas SH, Erdogan B; Comparing techniques for pterygium surgery. *Clin Ophthalmol*, 2009; 3: 69-74.
20. McLean C; Pterygium excision with conjunctival autografting. *Br J Ophthalmol* 1994; 78(5): 421.