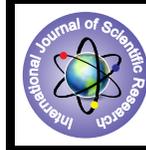


## Sutureless and Glue-Free Conjunctival Autograft in Pterygium Surgery: A Case Series



### Medical Science

**KEYWORDS :** pterygium; sutureless; autograft

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### ABSTRACT

*Aim: A simple method of to achieve conjunctival autograft adherence during pterygium surgery and avoiding potential complications associated with the use of fibrin glue or sutures. Methods: A total of 17 eyes of 15 patients having pterygium underwent pterygium excision and fashioning of the autologous conjunctival graft, the recipient bed is encouraged to achieve natural haemostasis and relative desiccation before graft placement. Graft adherence and positioning is examined 20 min after surgery. Results: A total of 17 eyes of 15 patients (mean (SD) age 73.7 (11.2) years), 9 females and 6 male underwent SGF autologous conjunctival graft post-terygium excision. Mean graft area was 24(1.5) mm<sup>2</sup>. Mean follow-up time was 9.2 (2.2) months. Cosmesis was excellent in all cases and visual acuity improved in two patients. There were no intra- or post-operative complications requiring further treatment. Conclusion: This simple technique for pterygium surgery may prevent potential adverse reactions encountered with the use of foreign materials and in this small series provided safe and comparable results to current methods*

### Introduction:

In 1985, Kenyon et al proposed that a conjunctival autograft of the bare sclera could be used in treatment of recurrent and advanced pterygium. Recent reports favour the use of fibrin glue<sup>2, 3, 4, 5</sup> above sutures with improved comfort, decreased surgical time, reduced complication and recurrence rates have been reported. Suture-related complications include infection, granuloma formation, and chronic inflammation,<sup>6, 7</sup> whereas plasma-derived fibrin glue has the potential risk of prion disease transmission and anaphylaxis in susceptible individuals. Sutureless 'laissez-faire' grafting has been used successfully in gingival grafts<sup>8</sup> and represents a similar mucosal membrane tissue environment to the conjunctiva of the eye.

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Purpose: To achieve uncomplicated pterygium grafting .

Design of Study: prospective, intervention case series

Method: A total of 17 eyes of 16 patients (mean (SD) age 73.7 (11.2) years), 10 females and 6 male underwent SGF autologous conjunctival graft post-terygium excision.

### Surgical technique

The body of the pterygium is dissected 4 mm from the limbus, down to bare sclera, and reflected over the cornea.

The pterygium head and cap is avulsed using artery forceps followed by careful beaver blade (Hockey stick; Grieshaber, Fribourg, Switzerland) excision of corneal remnants.

Only the thickened portions of the conjunctiva and the immediate adjacent and subjacent Tenon's capsule showing tortuous vasculature are excised. Care is taken to avoid conjunctival plica excision and extensive dissection of tenons is avoided. Where possible, haemostasis is allowed to occur spontaneously without the use of cautery.

If no blood is available to provide autologous fibrin, small perforating veins and capillaries are purposely fractured (Figure 1b) (though seldom required) to encourage a thin layer of fresh blood to cover the bare sclera. The size of the defect (mm<sup>2</sup>) is measured with Castoviejo callipers (Bausch & Lomb Storz; Storz Instruments, St Louis, MO, USA).

Careful dissection between donor graft conjunctiva and Tenon's layer is used while fashioning the 1 mm oversized conjunctivo-limbal graft from the superior bulbar conjunctiva. The limbal

edge of the graft is carefully positioned at the host limbal tissue edge as previously described.<sup>7</sup> No attempt is made to directly close the full extent of the excision wound, allowing natural graft positioning without tension.

The scleral bed is viewed through the transparent conjunctiva and to ensure residual bleeding does not relift the graft, small central haemorrhages are tamponaded with direct compression using non-toothed forceps (Figure 1d) until haemostasis is achieved, usually within 8–10 min. The stabilisation of the graft is tested with a Merocel spear centrally and on each free edge to ensure firm adherence to sclera.

Postoperatively (Figure 2), steroid drops were initially given four times a day and tapered over 6 weeks while antibiotic drops were administered four times a day for 1–2 weeks.

### Results:

A total of 15 eyes of 12 patients (mean (SD) age 73.7 (11.2)) years underwent SGF autologous conjunctival graft after pterygium excision (Table 1). There were eight female and four male patients. All patients had primary nasal pterygium and signed informed consent. Mean follow-up time was 9.2 (2.2) months. Mean graft area was 24(1.5) mm<sup>2</sup>. The mean surgical time was 14(1.4) min. There were no transplant dislocations or failures. There were no intra- or post-operative complications requiring further treatment. Visual acuities were not affected in the majority of patients. One patient with a large 5 mm pterygium encroaching 1 mm from the visual axis improved by 2 Snellen chart lines after surgery (6 of 24 to 6 of 12). Patients rated their cosmesis as excellent in all cases and photographic comparison of nasal to temporal conjunctiva at last review revealed no obvious cosmetic defects or recurrences. Post-operative pain on day 1 after surgery was consistently rated as less than or equal to 2 out of 10 on a visual analogue score. Pain did not increase after the first post-operative day.

### Discussion:

Current surgical methods to prevent pterygium recurrence include conjunctival autograft, limbal and limbal-conjunctival transplant, conjunctival flap and conjunctival rotation autograft surgery, amniotic membrane transplant, cultivated conjunctival transplant, lamellar keratoplasty, and the use of fibrin glue.<sup>9</sup> All of these techniques involve the use of sutures or fibrin glue and are therefore vulnerable to associated complications.

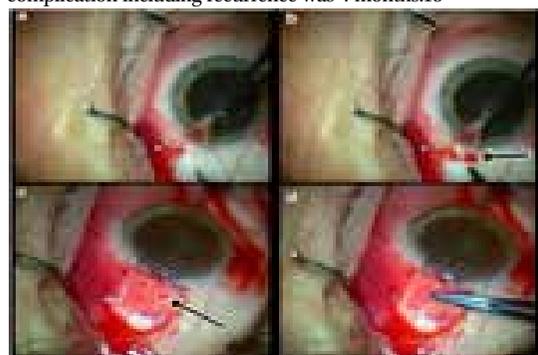
The presence of sutures may lead to prolonged wound healing and fibrosis.<sup>4, 6</sup> Subsequent complications such as pyogenic

granuloma formation are easily treated; others such as symblepharon formation, forniceal contracture, ocular motility restriction, diplopia, scleral necrosis, and infection are much more difficult to manage and may be sight threatening.<sup>10,11</sup>

Although generally considered safe, fibrin glues are currently manufactured from human plasma and therefore carry the theoretical risk of transmissible disease.<sup>9</sup> Virus removal and inactivation procedures are included in the manufacturing process although may be of limited value against nonenveloped viruses such as hepatitis A virus and parvovirus B19.<sup>12</sup> New devices, such as the CryoSeal FS System, that generate fibrin sealant from autologous blood may eliminate the current risks associated with pooled plasma. They are not currently in widespread use however and the time taken to procure the fibrin may be prohibitive in day case pterygium surgery.<sup>13</sup> Fibrinogen compounds may also be susceptible to inactivation by iodine preparations such as those used for conjunctival disinfection before pterygium surgery.<sup>14</sup> In this setting their superiority versus naturally occurring fibrin in the bare scleral wound site has not been directly compared. 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 a vascular bed with immune capability in close proximity to the injury site.

**Conclusion:** This simple technique for pterygium surgery may prevent potential adverse reactions encountered with the use of foreign materials and in this small series provided safe and comparable results to current methods.

**Limitations.** It was non-randomised and consisted of a small study population and a relatively short follow-up period of 8 months. However, one article comparing four commonly used techniques for pterygium surgery reported mean time for appearance of any complication including recurrence was 4 months.<sup>15</sup>



**(a) Scleral bed before capillary rupture. (b) A capillary is purposely ruptured (arrow). (c) Small bleeding point 2 o'clock position under graft identified. (d) Direct compression with forceps.**



**Sutureless and glue-free graft at the end of surgery.**

**Results:**

No. of Patients	15
No. of Eyes	17
OD	8
OS	9
Location	15 nasal/2temporal
Gender	9female/6male
Age, mean±SD	73.7±7.7 years
Follow-up, mean±SD	9.2±2.2 months
Follow-up, range	6 to 14 months
Operation time, mean±SD	14±1.4 min
Mean graft size, mean±SD	24±1.5 mm
Recurrence	None
Visual improvement	2 patient (2 Snellen lines)
Complications	None

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