

## ORIGINAL RESEARCH

# Outcome of pterygium surgery with sutureless glueless conjunctival autograft

<sup>1</sup>Dr. Shweta Verma, <sup>2</sup>Dr. Tushar Mohan

<sup>1</sup>Assistant Professor, Ophthalmology, Saraswati Medical College, Unnao, UP, India

<sup>2</sup>MBBS MS FIAGES, Nova Hospital, Patrakarpuram, Lucknow, UP, India

### Corresponding author

Dr. Shweta Verma

Assistant Professor, Ophthalmology, Saraswati Medical College, Unnao, UP, India

Email: [drshwetaverma1979@gmail.com](mailto:drshwetaverma1979@gmail.com)

Received: 02 May, 2023

Accepted: 05 June, 2023

### ABSTRACT

**Introduction:** To study the outcome following pterygium excision with conjunctival autografting by sutureless glueless technique with autologous blood clot. **Material and Method:** 30 eyes of 30 patients with primary nasal pterygium were selected according to inclusion criteria. They underwent pterygium excision with Conjunctival autografting (CAG) by sutureless, glue-less CAG with autologous in situ blood coagulum. The patients were followed up after 1 day, 1 week, 6 weeks, 6 months and. They were examined for sub graft haemorrhage, graft oedema, graft retraction, graft dehiscence, recurrence or any other complications. **Results:** The mean age of patient was 47 years. There were 56.67% males and 43.33% females. Surgery was performed more in right eye (60%) as compared to left eye (40%). Post operative recurrence of pterygium was observed in 1 case (3.33%), graft oedema was noted in 5 cases (16.67%) which resolve within 1 week with topical treatment, graft retraction was noted in 3 cases (10%) and 2 patients (6.67%) had foreign body sensation following surgery which resolve in a month duration. None of the patient had graft loss. All the patients were comfortable with excellent cosmetic outcome during the subsequent follow ups. **Conclusion:** The results were very encouraging as they suggested that sutureless and glue free limbal conjunctival autografting following pterygium excision is an excellent surgery in view of easy technique short surgical time, excellent cosmesis, economical and without much complications.

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### INTRODUCTION

Pterygium is one of the common ocular surface disorders. From two Greek words, the word "pterygium" has been derived: (pteryx) meaning wing and (pterygion) meaning fin.(1) Pterygium is basically a fibrovascular overgrowth of the subconjunctival tissue, triangular in shape, and encroaching on to the cornea in the medial and lateral palpebral fissure. The various known risk factors are immune mechanism, genetic predisposition, and chronic environmental irritation, which include UV (ultraviolet) rays, hot and dry weather, wind, dusty atmosphere, and the period of exposure to such conditions. However, the most common is the increased time of exposure to UV rays of the sunlight, followed by chronic eye irritation from dry and dusty conditions.(2)

The prevalence rates are different in various parts of the world. It is highest in the "pterygium belt" described by Cameron, which lies between 37° north and south of the equator. The prevalence of pterygium was stated to vary widely from 0.3 to 29 percent in the world. In India, the prevalence ranges from 9.5 to 13%. [3] It is more commonly found in rural parts of the country. [4] Males work outdoors much longer than

females, so it has been shown that pterygium is found more often in males compared to females.(10)

UV rays cause the insufficiency of the limbal stem cells of the cornea. It causes activation of the tissue growth factors, which further lead to angiogenesis and cell proliferation. The limbal stem cells are damaged by the UV rays that cause conjunctivalization of the cornea, and the cornea is invaded by aggressive fibroblasts. UV radiation may cause mutations in the p53 tumor suppressor gene, resulting in the abnormal pterygial epithelium.(11)(12)

Recent studies have indicated that human papillomavirus could also be involved in the pathogenesis of the pterygium.(13).

In addition to the obvious cosmetic concerns, it can induce corneal astigmatism. The induced corneal astigmatism may cause significant visual impairment and may require surgery.(2)

Although it can be easily excised, it has a high rate of recurrence ranging from 24% to 89%. (3) Various adjunctive measures have been described to reduce the recurrence rates after its excision. Limbal-conjunctival autograft is currently the most popular surgical procedure as it has been suggested that

including the limbal stem cells act as a barrier to the conjunctival cells migrating onto the corneal surface. The most common method of autograft fixation is suturing, with drawbacks of prolonged operating time, postoperative discomfort, suture abscesses, buttonholes, and granuloma formation which usually requires a second operation for removal. Replacing sutures with tissue adhesives may shorten the operating time, improve postoperative comfort, and avoid suture related complications. However, the major concern of the commercial fibrin glue is the cost and the potential risk of transmitted infection(4) The existing data on success of sutureless and glue free limbal conjunctival autograft for the management of primary pterygium is very encouraging.

Thus, a new method of adhering graft to recipient site by patient's own blood reduces complications associated with sutures as well as with fibrin glue.

**MATERIAL AND METHOD**

30 eyes of 30 patients with nasal pterygium who fulfilled the inclusion and exclusion criteria were included in the study. The inclusion criteria involved diminution of vision either because of astigmatism or encroachment on pupillary area, progressive nasal pterygium, marked cosmetic deformity. Patients with temporal/ recurrent/ atrophic pterygium, patients on anticoagulants, patients with ocular surface diseases e.g.-blepharitis, sjogren syndrome and dry eye, history of previous ocular surgery or trauma, pterygium with cystic degeneration, pseudopterygium were excluded from the study.

Data was collected from the patient after informed consent. Preoperative investigations included were, visual acuity by Snellen's chart, near vision by Jaeger's chart, best corrected visual acuity by streak retinoscopy and automated refractometer, slitlamp bio-microscopy, keratometry by manual and automated refractometer, fundus examination by direct and indirect ophthalmoscopy, slit lamp bio-microscopy with +78 D and + 90D lens.

All patients underwent pterygium excision with conjunctival autograft. After painting and draping, under topical anesthesia fibrotic tissue was extensively dissected by striping method to expose the sclera and corneal stroma. The subconjunctival fibro-vascular tissue, including Tenon's capsule, were thoroughly removed to provide clean scleral bed. The size of the defect was measured with Vernier callipers. Around 0.5 mm more than the measured defect marking was done on superotemporal conjunctiva sparing superior conjunctiva for future cataract and other surgery. A thin film of blood clot was allowed to form over the bare sclera. Any active bleeding was stopped by direct tamponade . A thin Tenon free conjunctival auto graft with limbal stem cell was excised. Auto graft was slide over the cornea; orientation was kept limbus to limbus. It was slipped over with draping motion to ensure epithelial side was up. After placement of graft over the bare sclera with oozed blood during excision, gentle pressure was applied for 10 minutes.

The stabilization of graft was tested centrally and on each free edge to ensure firm adherence to sclera. Blood oozed during pterygium was used as tissue adhesive to secure conjunctival autograft. Graft was observed and bandaging done for 24hours. Postoperatively steroid drops in tapering dose were given. The following parameters were analysed post operatively like subconjunctival haemorrhage, wound gape, graft shrinkage, graft loss, chemosis, graft dehiscence, recurrence or any other complication. Post operatively all patients were followed up on 1 day, 3 day, after one week, after one month and three months and 6 months. Appropriate statistical method was used to analyse the data.

**RESULTS**

The study highlighted predictable results regarding age and sex incidence of pterygium occurrence. The study showed mean age group for pterygium was 47 years and more common in males (56.67%).

**Table 1: Age Distribution**

Age of the Patient	Observation
<40 years	8(26.6%)
41-50years	11(36.7%)
51-60years	7(23.3%)
>60years	4(13.3%)
Total	30

**Table 2: Sex Distribution**

Sex	No of Patients	Percentage
Male	17	56.67
Female	13	43.33
Total	30	100

**Table 3: Laterality**

Laterality	Number
Right	18
Left	12

In postoperative period graft oedema was present in 5 cases(16.67%), Subgraft haemorrhage in 1(3.3%) patient, graft retraction was noted in 3 cases (10%) but none of the patient had graft loss. Post operative recurrence of pterygium was observed in 1 case (3.3%). These problems were resolved by topical treatment in due course of time and patients were comfortable and satisfied with cosmetic outcome in subsequent follow ups.



Complications	Number	Percentage
Graft Oedema	5	16.67
Subgraft Haemorrhage	1	3.3
Graft Retraction	3	10
FB Sensation	2	6.67
Recurrence	1	3.3
Graft loss	None	-

**DISCUSSION**

The mean age of patient found in our study was 47years Sharma et al (6)Dasgupta et al(7 )Ranguet al(8 )Rathi et al(9)and Bhargava et al(10) who reported the maximum incidence of pterygium in the age group ranging between 30-50 years. Though the study conducted by de Wit et al(5)found the mean age of presentation to be much higher i.e. 73.7+/-7.7 years.

Our study revealed male preponderance which was more and less comparable with the sex ratio in the studies conducted by Malik et al(4) Rangu et al(8)and Bhargava et al(10) while studies by Sharma et al(6)and de Wit et al(5)reported a higher incidence of the disease in females.

Bhargava et al(10) had post-operative complications like graft displacement in 4 cases (7.69%) on 1stpost-operative day and mild graft edema was noted in 4 (7.69%) cases in first week. There was hematoma below graft in 3 (5.76%) cases and in 1case it persisted for 1 month. Recurrence was seen in 1 (1.92%) case in the 12-month follow-up period. Dasgupta et al(7)found graft dehiscence in1 (1.67%) case and recurrence in 1 (1.67%) case Rangu et al(8)reported no recurrence in their study of 20 eyes though graft edema and graft retraction was seen in 2 (10%) cases each.

Similar findings were reported by Nanda et a(113) with no recurrence in the 50 eyes treated with suture less glue less conjunctival autograft. Singh PK et al(11) compared placing of conjunctival autograft with fibrin glue and with autologous blood. He found

that the rates of recurrence were the same 10% in both the groups. However, complications like graft displacement and graft retraction were more common in patients grafting with autologous blood (10%) than in those grafting with the glue, though the difference was not statistically significant (p=0.3185). In a similar study by Sharma et al(6)graft retraction occurred in 3 eyes (3.75%) and recurrence was seen in 1 eye (1.25%) after 3 months of follow up. In Malik et al(4)study, graft dehiscence was seen in 5%, graft retraction in 7.5% and recurrence in 2.5% cases. Rathi et al(9)reported graft loss in (1)2%, chemosis in 2(4%) and recurrence in 1 (2%) cases.

De Wit et al(5)postulated that the opposition 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. Specifically, the risk of graft retraction as described by Tan(14)appears to be no greater without suturing or fibrin glue as long as meticulous dissection of the sub-epithelial graft tissue is respected. Therefore, it can be said that as there is an even tension across the whole of the graft interface and no direct tension on the free graft edges, there is reduced stimulus for subconjunctival scar tissue to form. Conjunctival autografting without sutures and glue is today recognized as the procedure of choice for pterygium surgery, in terms of its efficacy and safety.

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