Study of surgical outcome of sutureless & glueless conjunctival autografting after pterygium surgery: a retrospective study

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Introduction
The term pterygium comes from the ancient Greek word (pteryx: wing & geon: fin). Pterygium is characterized by a triangular portion of bulbar conjunctiva encroaching upon the cornea(1). Pterygium is most common in the so called “Pterygium area” which is defined by geographical altitude of 40 degree north and south of equator(1). It is more common in adult male involving in outdoor activities(2). The exact cause of pterygium is still unknown but UV radiation is supposed to be the most important cause. Other causes include exposure to dry & dusty environment. Pterygium is most often seen from nasal side in the inter-palpebral area. The nasal affinity of pterygium is attributed to the fact that a greater portion of bulbar conjunctiva is exposed to the UV radiation. Secondly there is sparseness of subconjunctival tissue in the temporal region & the temporal region is exposed to a lesser extent to UV radiation due to a greater amount of bowing of outer 2/3rd of upper lids.

The prevalence rate of primary pterygium varies from 0.7 to 3.1% in various populations around the world(3). Patient may have foreign body sensation, redness, irritation and is controlled by lubricating eye drops. Indication for surgery include visual impairment, cosmetic disfigurement, motility restriction & recurrent inflammation. Pterygium surgery was evolved significantly over time.

In bare sclera technique, pterygium mass is excised and the underlying sclera is left exposed, unfortunately recurrence rate is up to 50% of cases. To prevent the recurrence, conjunctival autografting by the use of sutures are being done but this technique takes more time for stitches and produces ocular discomfort for several weeks. These complications led to the development of no stitch technique using fibrin glue as adhesive to secure the graft(5,6). The fibrin glue causes the risk of transmitting reactions and infections. All these lead to the development of sutureless & glueless conjunctival autografting for covering bare sclera. Pterygium excision with sutureless glueless conjunctival autografting is gaining popularity due to its simple technique and lesser recurrence rate.

Postoperative follow up was done on first day, seventhday, first month and sixth month. Patients were enquired about pain and discomfort and examined for hemorrhage, graft dislocation, graft retraction and recurrences and other postoperative complications.

Material & Methods
All the patients of pterygium that come between 1st March 2016 to 30th August 2016 at Narayan medical college & hospital, Sasaram were randomly selected irrespective of eyes, age and gender. All the cases were examined with slit lamp. Blood sugar, bleeding time, clotting time and xylocaine sensitivity test was performed. Informed consent was obtained from all patients before surgery. Surgical steps: all patients were anesthetized with a peribulbar block and then eyes were painted and draped. The body of pterygium is dissected 4mm away from the limbus down to bare sclera, reflected over the cornea. Pterygium mass was carefully dissected out from the cornea, the subconjunctival fibrovascular tissue including Tenon’s capsule were thoroughly removed to provide clear sclera bed. The size of the defect is measured with Vernier caliper. At supero-temporal position conjunctiva was marked in such a way the graft become 1mm larger than bare sclera. A thin Tenon free conjunctival autograft with limbal stem cell is excised. Autograft is slid over the bare sclera and orientation is kept limbus to Limbus. It is slipped over with draping motion to ensure epithelial side is up.

Post-operatively steroid drops are initially given four times a day and tapered over four weeks period. Antibiotic drops were administrated four times a day for one month and sixth month. Patients were discharged with a course of oral antibiotics. All patients were examined on first day, seventh day, first month and sixth month. A total of 20 eyes of 17 patients underwent primary pterygium surgery with sutureless and glueless conjunctival autografting. There were 11 male (64.70%) and 6 females (35.30%). The mean age group was 41.85 years. Out of total 20 eyes, 18 eyes (90%) had nasal pterygium and two eyes (10%) had nasal plus...
temporal pterygium. Mean graft size was 23.30mm$^2$ and the mean surgical time was 16.15 minutes. In our study there was one graft dislocation. The possible reason could be due to patch removal in this patient was done by paramedical staff, in rest of the patients careful patch removal was done by investigator itself. In one of our patient graft retraction was observed on first postoperative day. But on fourth week of post-operative visit, the retracted graft covered the exposed area. There were no recurrence observed in our records up to a follow-up period of 6 months. The mean follow up period was 5.22 month. In one patient vision improved by two Snellen’s chart line and cosmetic outcome was found to be excellent in all the patients.

Table 1: The type of pterygium, gender of patients and the Laterality

<table>
<thead>
<tr>
<th>Sub-groups</th>
<th>Number</th>
<th>Percentage(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of pterygium</td>
<td>Nasal</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Nasal &amp; Temporal</td>
<td>2</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>6</td>
</tr>
<tr>
<td>Laterality</td>
<td>OD</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>OS</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 2: Results of suture and glue-free autologous grafts for pterygium

<table>
<thead>
<tr>
<th></th>
<th>Age, mean +/- SD</th>
<th>Follow-up, mean +/- SD</th>
<th>Operation time, mean +/- SD</th>
<th>Mean graft size, mean +/- SD</th>
<th>Recurrence</th>
<th>Visual improvement</th>
<th>Complications (dislocation/retraction)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>41.85 +/-10.85 years</td>
<td>5.22 +/-1.06 months</td>
<td>16.15 +/-1.70 minutes</td>
<td>23.30 +/-3.2 mm2</td>
<td>none</td>
<td>1 patient</td>
<td>1 dislocation+1 retraction</td>
</tr>
</tbody>
</table>

Fig. 1: Primary pterygium

Fig. 2: 1 month post-op

Fig. 2: Intraoperative

Fig. 3: Post op. after grafting

Fig. 4: Graft retraction day 1
Discussion
Currently practiced surgical methods of pterygium excision include conjunctival autografting using suture or glue and sutureless glueless autografting. The presence of sutures may lead to prolong wound healing and fibrosis\(^{6,8}\), subsequent complications such as pyogenic granuloma formation are easily treated. Others such as symblepheron, fornical contracture, ocular motility restrictions, diplopia and sclera necrosis and infections are much more difficult to manage and may be sight threatening\(^{9,10}\). As the fibrin glue is manufactured from human plasma, it carries the risk of transmitting diseases.\(^{12}\)

Most commonly Hepatitis A and Parvovirus B19 are prone to get transmitted through fibrin glue. The fibrinogen compounds may also be susceptible to inactivation by iodine preparations such as those used for conjunctival disinfection before pterygium surgery\(^{11}\). Sutureless glueless conjunctival autografting in pterygium surgery is a simple technique with excellent results.

In Dr Mitra study\(^{13}\)- a prospective, non-comparative, interventional case series conducted in India- 19 patients underwent graft fixation with autologous blood. The mean surgical time was 11 minutes, no graft dislocation and no recurrence at the end of 6 month follow up.

In our study, the mean surgical time was 16.15 minutes. There was one graft dislocation on the very first postoperative day but there was no recurrence.

Conclusion
No suture no glue conjunctival autografting in pterygium surgery is excellent because of its simple technique, short surgical time, lesser complication, excellent cosmetic outcome and almost no recurrence. This surgery has all the potential to stand the test of the time.

References