A new technique of sutureless and glueless conjunctival autografting in pterygium surgery by thermocautery

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Abstract

Purpose: To compare the efficacy and safety of thermocautery with vicryl 8-0 sutures in conjunctival autografting for the treatment of primary pterygium.

Methods: A prospective, clinical trial was conducted in 80 eyes of 80 patients with primary pterygium. Patients underwent pterygium surgery using either by thermo cautery (40 eyes) or by vicryl 8-0 sutures (40 eyes) to attach the conjunctival autograft. Postoperatively all the patients were evaluated on postoperative days 1, 3, and 7 and then at months 1, 3 and 12. Outcome measures were surgery time, postoperative patient symptoms, complications and recurrence rate.

Result: In cautery group mean surgical time (22.4±1.9) was which was significantly shorter (p=0.0005) than suture group (25.3±2.1). At day 7 and 30 there is statistically significant difference present. Whereas at 3 and 12 month after surgery all symptoms decrease both in suture group and cautery group. 2 patient developed conjunctival recurrence (grade 3) in the cautery group and 3 patient in suture group. Corneal recurrence (grade 4) was noted 1 in each group. But there is no statistically significant difference (p=0.644) in overall recurrence rate. In cautery group 02 patient developed graft dehiscence.

Conclusion: Conjunctival autografting with thermocautery in pterygium surgery is safer, faster, technically easier, economical and have less post operative discomfort than conventional surgery.

Key-words: Pterygium, Conjunctival autograft, Thermo cautery.
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All the procedures were performed in accordance to the tenets of the Declaration of Helsinki, and the study protocol was approved by the institutional Ethics Committee. Informed consent was obtained from all the participants after explaining the nature of study.

All the patients were evaluated by an individual observer and graded according to the grading system developed by Ten et al where grade 1 (atrophic) described as clearly distinguishable episcleral vessels under the body of the pterygium; grade 3 (fleshy), episcleral vessels totally obscured and all other pterygia not falling in to grade 1 or 3 described as grade 2 (intermediate). In current study we include Grade 2 and 3 pterygia. Patient with any active eye disease like ocular surface disease, pseudopterygium, glaucoma or previous surgery were excluded from the study.

Sample size was calculated by following assumption: level of significance 5%, power 80%. A minimum 37 patient required in each group. A total 80 eyes of 80 patients with primary pterygium were included in that time period. Patient with odd serial number were underwent conjunctival autografting fixed with thermo cautery and even serial number were underwent conjunctival autografting fixed with 10-0 nylon.

Pre Operatively all patient underwent detailed ophthalmic examination including best corrected visual acuity (BCVA), slit lamp biomicroscopy, fundus examination, applanation tonometry. All the surgery done by a single surgeon under local anaesthesia by lignocain and bupivacain. After dressing and draping head of pterygium was separated from the cornea by blunt dissection. If scar tissue is present they are removed by polishing. Then the body of pterygium was separated by blunt dissection and cut 01 mm away from lacrimal curuncle. Minimal cautery was used to control bleeding.

After removal of pterygium a trapezoid shaped bare sclera created and measured by calliper. Additional 01 mm in length and width relative to bare sclera conjunctival autograft was harvested from superior bulbar conjunctiva after injecting normal saline subconjunctivally. Dissection was done carefully to exclude Tenon’s capsule under the graft and a thin rim of corneal epithelium was included in limbal side with help of Crescent blade. Then graft placed over the bare sclera with epithelial side up and limbal edge towards limbus.

In cautery group minimal cautery were applied to the adjoining graft and recipient edge just to make it sticky. The adjoining sticky margins were pinched together to ensure firm adhesion at multiple points to ensure proper adhesion. In suture group conjunctival graft secured with surrounding conjunctiva by 8-0 vicryl suture. After removing the speculum pad bandage applied over that eye with 0.3% Tobramycin and 0.1% Dexamethasone ointment. Surgical time monitored and noted from incision to the removal of speculum.

01 day after surgery pad and bandage removed and slit lamp examination done. Topical Moxifloxacin, Difluprednet and artificial tear prescribed to all patients.

Patients were followed up 01, 03, 07 days, 1 month, 3 month and 12 month after surgery. At each visit BCVA, slit lamp biomicroscopy, fundus examination, applanation tonometry and assessment of any complication including recurrence was done in each patient. The recurrence was graded by the grading system developed by Prabhasawat et al. The postoperative symptom was evaluated at each post operative visit and graded by a 5 point scale proposed by Lim-Bon-Siong et al.

**Result**

We included a total 80 eyes with primary pterygium, of them 40 eyes underwent pterygium excision and conjunctival autografting with suture and rest 40 eyes underwent pterygium excision and conjunctival autografting with thermo cautery. All the patients followed up for 12 months. In suture group there is 23 males and 17 females with a mean age of 52.4±10.4 (Table 1). In cautery group there is 24 males and 16 females with a mean age of 56.2±10.2. The demographic characteristic of the study population are summarized in the table no 1. There were no statistically significant difference both in age in between two groups (p=0.15). In preoperative assessment there were no statistically significant difference in pterygium grade in between two groups (p=0.63). In cautery group mean surgical time (22.4±1.9) was which was significantly shorter (p=0.0005) than suture group (25.3±2.1). In postoperative day 1 and 3 there is no statistically significant difference in symptom score (Irritation, foreign body sensation, Epiphora and Pain) in between two groups. But at day 7 and 30 there is
statistically significant difference present. Whereas at 3 and 12 month after surgery all symptoms decrease both in suture group and cautery group (Figure 1). In that 12 month follow up period 2 patient developed

### Table 1: Comparative data of study groups

<table>
<thead>
<tr>
<th></th>
<th>Cautery Group</th>
<th>Suture Group</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age</td>
<td>56.2 ± 10.2</td>
<td>52.4 ± 10.4</td>
<td>0.15</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>24</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>16</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Pterygium Grade(%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 2</td>
<td>21</td>
<td>23</td>
<td>0.63</td>
</tr>
<tr>
<td>Grade 3</td>
<td>19</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Surgery Time</td>
<td>22.4 ± 1.9</td>
<td>25.3 ± 2.1</td>
<td>0.0005</td>
</tr>
</tbody>
</table>

![Figure 1](image-url) Five-point scale assessment of postoperative irritation (1a), foreign body sensation (1b), epiphora (1c), and pain (1d) at 1, 3, 7 days, 1 month, 3 month, and 12 month after pterygium surgery.
conjunctival recurrence (grade 3) in the cautery group and 3 patient in suture group. Corneal recurrence (grade 4) was noted 1 in each group. But there is no statistically significant difference (p=0.644) in overall recurrence rate.

In cautery group 02 patients developed graft dehiscence.

**Discussion**

The ideal surgical procedure for pterygium which has low recurrence rate, low complication rate, less post operative symptom and satisfactory cosmetic appearance after surgery. Recently pterygium excision and conjunctival autografting with help of suture or fibrin glue reduced the recurrence rate significantly. The current study described the new technique thermal cautery which was an attempt to decrease postoperative symptom, surgical time and cost of surgery.

This study shows cautery required significantly shorter surgical duration (p=0.0005) than suture group, which makes this technique more convenient for the patients and surgeons. Besides this is more beneficial for the hospital also, and more number of surgeries can be done in a single day, which is more suitable for developing country like India. After pterygium surgery, initial few postoperative days patients are usually more symptomatic. In the current study 01 and 03 day after surgery symptom score has no significant difference between the two groups. This is probably due to presence of corneal epithelial defect. However the cautery group has significantly lesser symptom score both at postoperative day 7 and day 30 than suture group especially foreign body sensation. According to Biedner et al suture themselves or inflammation caused by the suture causes more foreign body sensation in suture group though in all cases knot were buried. Whereas at postoperative month 3 and 12 there is no significant difference in symptom score in between two groups, this is probably due to absorption of all suture after 01 month.

Another advantage of thermocautery is that it is more cost effective. 01 pack of 8-0 Vicryl (Johnson and Johnson, Intl, Brussels, Belgium) is INR 500, where as 01 thermo cautery cost about INR 300 and it is reusable. The thermo cautery eliminate the tedious suturing process and makes the surgery easier, faster and ensures more consistent result irrespective of experience of the surgeon.

In terms of recurrence rate in current study there is no statistically significant difference in recurrence rate in between two groups 12 month after surgery (p=0.644).

In conclusion conjunctival autografting with thermocautery in pterygium surgery is safer, faster, technically easier, economical and have less post operative discomfort than conventional surgery. The recurrence rate seems to be comparable to conventional surgery. In recurrent pterygia further randomized trial required to confirm these findings.

**Reference**


