Securing Feeding Tubes in Head and Neck Surgery: Septal Suture or Bridle Technique

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Abstract

Objectives: To compare use of the anterior septal suture (SS) technique versus the septal bridle technique (BT) in securing nasogastric feeding tubes in head and neck surgery patients.

Study Design: A multicenter prospective nonrandomized controlled study was conducted on patients undergoing head and neck surgery with postoperative need for a nasogastric feeding tube.

Methods: Patients underwent either a septal suture or a bridle technique to secure the feeding tube intraoperatively. They were assessed by a standard questionnaire and physical exam administered at three time points postoperatively: days 1-5 (time-1), 6-9 (time-2), and day 10 or greater (time-3). The following factors were assessed: subjective assessment of overall pain, pain due to securing mechanism, route of pain control, local complications, and tube dislodgement secondary to securing method. To analyze pain at each time point a nonparametric two sample Wilcoxon matched pairs signed rank test was used.

Results: 74 patients were enrolled in the study. 29 patients underwent a septal suture technique and 45 underwent the bridle technique. No local complications were reported secondary to either securing method. No tube dislodgments occurred directly as a result of either securing technique. Overall pain did not significantly differ in both cohorts at each time point (p=0.196, 0.808, 0.469). Pain due to the tube securing method was significantly less for the bridle technique at time points 1 and 2 but not at time 3 (p=0.037, 0.021, 0.722). Overall pain and pain due to securing method did not significantly differ in patients primarily controlled on PO or IV medication at time 1 (p=0.744, p=0.909). When analyzing the change in overall pain from time 1 to time 2 in both cohorts there was a significant decrease in pain (p=0.001, p=0.001). When analyzing the change in mean pain due to the securing mechanism from time 1 to time 2 it was found to be significant in the SS patients (p=0.038) and approaching significance in the BT patients (p=0.078).

Conclusions: The septal suture and bridle technique are both effective methods in securing feeding tubes postoperatively in head and neck surgery patients. In both cohorts no local complications were directly attributed to securing method and no tube dislodgments were reported directly related to the securing method.

Methods

- Enrolled at Henry Ford Hospital (HFH) and Oregon Health & Science University (OHSU)
- Patients undergoing Head and Neck Surgery with postoperative need for enteric feeding without established enteral access
- Septal Suture performed with 2.0 suture with air knot to minimize tension
- Bridle performed with 14Fr catheters and umbilical tape
- 10 French enteric feeding tube placed intraoperatively followed by securing via study method
- Patient reported overall pain and tube pain recorded at 3 time points, routes of primary pain control along with examination for local complications assessed
- Subjective pain reported on a scale of 1-10
- Data analyzed with nonparametric two sample Wilcoxon test and Wilcoxon matched pairs signed rank test

Discussion

Early enteral nutrition is an important aspect of postoperative management of head and neck surgery patients for several reasons: not only does it promote wound healing and tissue repair but also decreases the systemic inflammatory response and improves patient outcomes. Effective means of securing nasogastric feeding tubes are important not only to prevent premature removal of the feeding tube and interruption of caloric intake, but also to avoid the risks involved in replacing a nasogastric feeding tube in patients that may have healing suture lines, wounds, or free flaps in the upper aerodigestive tract. Numerous methods of securing nasogastric tubes have been described, including tape, adhesive fixation devices, septal bridling, and the anterior septal suture. Several studies have shown the superiority of the septal bridle compared to taping of tubes in ICU patients; however, the utility and safety of the anterior septal suture has not been previously investigated.

In this study we compared the septal bridling technique to the anterior septal suture for securing nasogastric tubes in patients after undergoing head and neck surgery. Our results show no difference in effectiveness between the two techniques; no patients in either group experienced any episodes of premature tube removal or local tissue complications. The absence of any local tissue complications such as alar necrosis or septal ulceration is consistent with previous reports of the absence of similar complications when nasogastric tubes are bridled with umbilical tape. There is evidence that bridling with red rubber catheters has been shown to cause septal ulceration. However, our rate of 0% tube dislodgement is lower than that previously reported in the literature, which ranges from 6.5-18% in bridled patients. There are several likely explanations for this discrepancy. First, our postoperative patients are a different population than medical ICU patients usually studied; they are generally not sedated due to prolonged intubation and not disinfected postoperatively as many medical ICU patients are. Second, most of the nasogastric tubes in our study were of relatively short duration (<7-10 days), unlike many patients in previous studies (up to 170 days). If post-operatively it was felt that a patient would require a feeding tube for a prolonged period of time, they would generally undergo a gastric feeding tube, so tube duration was generally shorter in our study. Finally, as head and neck surgery patients, our study group was subject to serial head and neck exams daily by multiple physicians as part of their routine postoperative monitoring, and thus problems with nasogastric tubes could be detected early; this may not be the case with patients in a medical ICU setting. Thus, the absence of significant tube dislodgement in our study is not surprising.

Additionally, our study compared both techniques for patient comfort; we found a small but significant difference in pain scores associated with the nasogastric tube. Patients in which a septal bridle was used to secure the nasogastric tube had slightly lower pain scores than those in the anterior septal suture group. While there is not a clear explanation for this finding, one explanation may lie in the point of fixation with each technique. The primary point bearing the tension of the tube in the septal bridle is the fixed bony strut of the posterior septum, with minimal intervening soft tissue that could be subject to irritation. In the anterior septal suture, the tension of the nasogastric tube is pulling on the anterior septum and adjacent soft tissue, which is somewhat mobile and thus may be somewhat irritated with any head motion or changes in tension on the nasogastric tube. Additionally in this study we did not standardize the pain control regimen, pre-operative pain was not assessed, and we did not take into account the extent of surgical treatment, which strongly influence patient reported pain. However, this difference in patient comfort appears to be quite minimal and should not preclude the use of the anterior septal suture when deemed appropriate.

Conclusion

The septal suture and bridle technique are both effective methods in securing feeding tubes postoperatively in head and neck surgery patients. In both cohorts no local complications were directly attributed to securing method and no tube dislodgments were reported directly related to the securing method.

Images

- Image of septal suture (left) and a bridle technique (right) post-operatively

Table 1. Demographics and results

<table>
<thead>
<tr>
<th></th>
<th>Bridle Technique</th>
<th>Septal Suture</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=74</td>
<td>45</td>
<td>29</td>
</tr>
<tr>
<td>Gender</td>
<td>M= 29</td>
<td>M= 18</td>
</tr>
<tr>
<td>F= 16</td>
<td>F= 11</td>
<td></td>
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<tr>
<td>Age distribution (years)</td>
<td>24 – 84</td>
<td>18 – 82</td>
</tr>
<tr>
<td>Tube duration</td>
<td>13 pt’s &lt; 5 days</td>
<td>1 pt &lt; 5 days</td>
</tr>
<tr>
<td>26 pt’s &lt; 9 days</td>
<td>6pt’s &gt; 10 days</td>
<td>18 pt’s &lt; 9 days</td>
</tr>
<tr>
<td>10pt’s &gt; 10 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dislodgments due to mechanism</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Local tissue damage</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
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Figures

- Figure 1. Mean overall pain
- Figure 2. Mean tube pain
- Figure 3. Mean reported pain vs route of pain control
- Figure 4. Mean overall pain at day 2-5 vs day 6-9
- Figure 5. Mean tube pain at day 2-5 vs day 6-9

References