Abstract

Objective: At the conclusion of this presentation, the participants should be able to demonstrate the application of a coblator wand to successfully remove laryngeal Teflon granuloma with minimal invasiveness.

The purpose of this study was to remove laryngeal Teflon granuloma transglottically using the coblator wand, and to preserve and improve each patient's voice handicap index.

Three patients were selected to undergo removal of their laryngeal Teflon granulomas using the coblator wand. Each patient was followed post-operatively to measure their respective voice handicap indices pre- and post-operatively.

The Arthrotec Precise LW Coblator was used to remove laryngeal Teflon granulomas of three patients using a microlaryngoscopic approach. Each patient's voice handicap indices were measured before and after surgery.

After removal of the laryngeal Teflon granuloma, each three patients short term results have revealed substantial subjective improvement of voice quality and statistically significant improvement in quality of life as measured by the voice handicap index.

The removal of laryngeal Teflon granuloma can be safely and effectively removed with the Precise LW Coblator. The use of the coblator wand can save operating room time, decrease risk of bleeding, effectively and improve a patient's voice handicap index.

Introduction

Teflon (polytetra fluoroethylene) was a commonly utilized substance for the medialization of the vocal fold. Although this product is rarely used at this time, the sequelae of Teflon injection has proved to be a challenging problem. The major complications are mostly due to over injection or delayed granuloma formation. The latter is a problem that will become apparent some time after injection and is still a relatively common finding for laryngologists. Multiple techniques have been used to remove Teflon granulomas; however, the procedures may have several limitations that include recurrence of the granuloma, an extensive operation, poor voice quality, and/or destruction of the vocal fold. Many laryngologist attempt removal with CO2 laser; however, this removal is difficult and granulomas can recur. According to Sataloff et al, a case study outlines a patient that underwent six operations to remove his laryngeal granuloma, with little success. Other studies performed include extensive operations to remove the Teflon granulomas. For instance, Netterville et al described using an open laryngotony technique to remove the granuloma. However, despite the impressive results from the procedure, several co-morbidities accompany an open procedure, including infection, bleeding, external scar, and risks anesthesia. This study outlines a new surgical technique utilizing the Arthrocare Precise LW Coblator to aid in excision of Teflon granulomas while preserving operative time, using a direct microlaryngoscopic approach, and significantly improving voice quality.

Cases

Case 1
A 64 year-old female with a history of left true vocal fold paralysis, developed dysphonia. She had a silastic medialization laryngoplasty and Teflon vocal fold injection medialization. She developed a granuloma. She previously underwent micro flap excision of the granuloma with recurrence of disease. The patient re-presented with continued dysphonia and voice fatigue. Videostroscopy revealed a large granuloma on the anterior-superior aspect of her left true vocal fold, absent mucosal waves on the left and decreased on the right (Figure 1).

Case 2
A 51 year-old male with a history of a right true vocal fold paralysis, status post a total thyroideaectomy develop severe hoarseness. He underwent a Teflon injection of his right true vocal fold. One year post injection, he developed worsening dysphonia. Videostroscopy disclosed a large submucosal mass of the immobile right vocal fold with decreased mucosal waves on the left and absent on the right.

Case 3
A 59 year-old woman with a history of left vocal fold paralysis following thyroidectomy was injected with Teflon. She later developed severe dysphonia. The patient subsequently had 5 attempts at removal of the granuloma with a laser without success before referral. She was noted to have a large supraglottic and glottic granuloma with an anterior commissure web and shortening of the left ary-epiglottic fold (Figure 3).

Operative Technique

The larynx is evaluated microscopically through a suspension laryngoscope. At the conclusion of this presentation, the participants should be able to

Objective:

Table 1. Voice Handicap Index Scores

<table>
<thead>
<tr>
<th>Pre-operative and Post-operative VHI Scores</th>
<th>Physical Functional</th>
<th>Emotional</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Pre-op</td>
<td>30</td>
<td>23</td>
<td>20</td>
</tr>
<tr>
<td>1. Post-op</td>
<td>13</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>2. Pre-op</td>
<td>25</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>2. Post-op</td>
<td>10</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>3. Pre-op</td>
<td>31</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>3. Post-op</td>
<td>20</td>
<td>17</td>
<td>9</td>
</tr>
</tbody>
</table>

Benefits

There appears to be distinct advantages of the use of the PROcise LW coblator aided in removal of a Teflon granuloma. The coblator functions at a low temperature which could prevent lateral heat distribution into the tissue. It also serves to control superficial bleeding that might obstruct the field. Any more significant areas of bleeding are easily managed with the bipolar cautery. Overall the coblator allows relatively precise dissection with minimal to no damage of surrounding tissue, little bleeding, and time saved in the operating room. Microdissection has the disadvantage of difficulty in controlling bleeding and laser has the disadvantage of higher heat distribution into the tissues and the visible laser reaction with the Teflon. Coblation would mitigate both of these difficulties and save operating room time.

In these three patients short term results have revealed substantial subjective improvement of voice quality and statistically significant improvement in quality of life as measured by the VHI, where an improvement of 8 for each of the subscales or 18 in the total score is significant. The patients noted little post operative pain both immediately after the surgery and at their first follow up 2-3 weeks after resection. All three patients noted that their voice quality improved significantly after the procedure. Although the substantive improvement has occurred, it is yet to be seen whether these significant improvements will be maintained with long term follow up.

Bibliography