ABSTRACT

Objectives: The objective of this study was to review consecutive tympanostomy tube surgeries for last 8 years paying particular attention to the type of tube inserted at the time of surgery.

Methods: Retrospective chart analysis of the last 3046 consecutive ears for tympanostomy tube surgery from 2005 to 2013.

Results: Out of 3046 total ears reviewed, the total rate of ototorrhea was 3.78% with 0.0% ototorrhea in titanium tubes, 0.0% ototorrhea in Sheehy activent tubes, 2.19% ototorrhea in Goode tubes, and 25.0% ototorrhea in triune tubes.

Conclusion: Early post-tympanostomy tube ototorrhea is a frequent complication of tympanostomy tube insertion with a complication rate of 3.8%, and the type of tubes placed at time of surgery seems to make a difference in the incidence of post-tympanostomy ototorrhea.

INTRODUCTION

Today the use of tympanostomy tubes are the most common procedure used by otolaryngologists to treat otitis media, a middle year infection commonly found in children. The introduction of transtympanic plastic tubes in 1954 completely revolutionized middle ear treatments although primary sources show that the first use of tympanostomy tubes was designed and manufactured6. Tymanostomy tubes, followed by adenoidectomy, have been observed to be the most effective way in preventing otitis media as well as produce large changes in quality of life2.

Otorrhea is a type of ear discharge, often the most common complication in tympanostomy tube procedures occurring at a rate of 2% to 17%. There are two postoperative periods in which ototorrhea can occur in. The first, early ototorrhea, happens in the first two weeks following the procedure3. The late period occurs between two weeks and the time of the tube extrusion. Higher rates of ototorrhea have also been seen in ears with mucoid or purulent fluid at the time of the surgery4. Postoperative ototorrhea could develop into chronic suppurative otitis media and a diseased middle ear5. It also affects the quality of life, especially for the children that it commonly occurs to. Therefore it is important to develop a method to prevent ototorrhea.

Otorrhea is caused by many different factors, including the type of material of the tube, the type of postoperative treatment, as well as the background of patient, such as age or living environment. Studies have been done to prevent ototorrhea, such as using phosphorylcholine-coated fluoroplastic Armstrong beveled tympanostomy tubes6. However, there was no statistically significant difference that indicated prevention. Surgeons have also tried unsuccessfully to lower contamination by using the non-touch technique while performing the surgery7. The non-touch technique is costly, time consuming, and ineffective. This indicates that early ototorrhea is more likely caused by preexisting middle ear condition than by external contamination.

Other studies have succeeded in finding a treatment that will help prevent postoperative ototorrhea. Studies have shown that the use of systemic antibiotic is most effective. Prophylactic antibiotic drops after tympanostomy tube placement have shown a significant decrease in the incidence of ototorrhea. For ears with mucoid or purulent fluid, the drop treatment lasts five days after surgery8.

Erythromycin is an ophthalmic ointment that is resistant against strains of bacteria that are often found in middle ear fluid, such as H. influenzae, M. catarrhalis, and S. pneumoniae9. Otozacin is another otic treatment used to treat against those bacteria. In addition, a study by Poeltler et al10 concludes that the use of prophylactic otic drops such as otozacin eases the pain of the patients.

METHODS AND MATERIALS

A retrospective chart analysis from July 2005 to Sept. 2013 of the last 8 years of consecutive tympanostomy tube surgery was done, with examination of the patients’ age, ethnicity, previous tube insertion, adenoidectomy, and type of tube. At 1 week post operative visit, the documentation of ototorrhea or no ototorrhea was examined.

RESULTS

A total of 3046 consecutive ears were studied and are presented in Table 1.

<table>
<thead>
<tr>
<th>Tube Inserted</th>
<th>Ears</th>
<th>Otorrhea</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium</td>
<td>1625</td>
<td>63</td>
<td>3.88%</td>
</tr>
<tr>
<td>Fluoroplastic</td>
<td>977</td>
<td>32</td>
<td>3.28%</td>
</tr>
<tr>
<td>Shepard</td>
<td>184</td>
<td>5</td>
<td>2.72%</td>
</tr>
<tr>
<td>Stainless steel</td>
<td>87</td>
<td>6</td>
<td>6.90%</td>
</tr>
<tr>
<td>Triune</td>
<td>4</td>
<td>1</td>
<td>25.00%</td>
</tr>
<tr>
<td>Donaldson</td>
<td>137</td>
<td>3</td>
<td>2.19%</td>
</tr>
<tr>
<td>Goode t-tube</td>
<td>27</td>
<td>5</td>
<td>18.52%</td>
</tr>
<tr>
<td>Sheehy activent</td>
<td>4</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3046</td>
<td>115</td>
<td>3.78%</td>
</tr>
</tbody>
</table>

DISCUSSION

This was a retrospective chart analysis that showed when doing a tympanostomy surgery, the type of tube placed made a difference in the rate of immediate post-tympanostomy tube ototorrhea. The overall rate of post-tympanostomy tube ototorrhea was 3.78% with silver-oxide coated tubes like Donaldson tubes having the least amount of complication and the long dwelling tubes like triune or Goode T-tube having the most amount of complication as can be expected. This study has been approved by Kaiser Permanente IRB Board #4996

REFERENCES