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Intratracheal Lidocaine and Postoperative Sore Throat at
Providence Sacred Heart Medical Center and Providence Holy
Family Hospital

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Background

Postoperative sore throat (POST) is a common side effect from general anesthesia (GA) and has a prevalence of 14.4-50%. The experience of POST contributes to patient discomfort during recovery from surgery. The etiology of this is thought to be from tracheal mucosal erosion from the cuff of the endotracheal tube (ETT), trauma from intubation, coughing and bucking, and friction between the ETT and the tracheal mucosa during general anesthesia. Risk factors shown to contribute to the development of POST include, but are not limited to, elderly age, smoking history, general anesthesia (GA) and has a prevalence of 14.4%.

Methods

• A retrospective, observational, EPB project was conducted at Providence Sacred Heart Medical Center and Providence Holy Family Hospital.
• CIRC approval and IRB exemption was obtained.
• A HIPPA compliant REDCap database was used to securely store de-identified extracted data. No PHI was collected.
• The outcome of postoperative sore throat was assessed.
• Exposure to various modalities of intratracheal lidocaine was assessed.
• Surgical patients undergoing elective general anesthesia with endotracheal tube from January 1 to December 31 of 2019 were included.
• Exclusion criteria: Non-GA general anesthesia with age <18
• An a priori power analysis revealed 785 records would power results (1-β=0.80, α=0.05, Df=1, W=0.1).

Findings

Table 1. Demographic and clinical characteristics (N=1182)

<table>
<thead>
<tr>
<th>Facility</th>
<th>Count</th>
<th>Percent</th>
<th>Count</th>
<th>Percent</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSHMC</td>
<td>547</td>
<td>47.1%</td>
<td>471</td>
<td>39.5%</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>PHFH</td>
<td>121</td>
<td>10.5%</td>
<td>111</td>
<td>9.4%</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoker</td>
<td>512</td>
<td>43.3%</td>
<td>512</td>
<td>43.3%</td>
<td>0.98</td>
</tr>
<tr>
<td>Multiple positions</td>
<td>532</td>
<td>45.0%</td>
<td>541</td>
<td>46.0%</td>
<td>0.05</td>
</tr>
<tr>
<td>Paralytic</td>
<td>912</td>
<td>77.4%</td>
<td>912</td>
<td>77.4%</td>
<td>0.05</td>
</tr>
<tr>
<td>ETT Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENT Service*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Positions</td>
<td>308</td>
<td>26.1%</td>
<td>308</td>
<td>26.1%</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Succinylcholine*</td>
<td>328</td>
<td>27.8%</td>
<td>340</td>
<td>28.7%</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Succ + Roc*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Risk of postoperative intratracheal lidocaine

<table>
<thead>
<tr>
<th>LTA</th>
<th>RR</th>
<th>95% CI</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No LTA</td>
<td>1.00</td>
<td>1.00 - 1.00</td>
<td>0.95</td>
</tr>
<tr>
<td>LTA</td>
<td>1.02</td>
<td>1.01 - 1.03</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

Figure 1. Rates of post-operative sore throat at PSHMC & PHFH

Figure 2. Rates of intratracheal lidocaine administration and POST by modality

Discussion

This retrospective observational EPB study shows that rates of POST among patients receiving GA with an ETT are 2% (n=318). Of the POST group, 81% did not receive any form of intratracheal lidocaine (n=282). The most common form of intratracheal lidocaine used was via laryngotracheal topical anesthesia (LTA). Limitations of this study include small sample size, limited and subjective reporting of POST, and inconsistent documentation of intratracheal lidocaine. Multiple studies support the use of intratracheal lidocaine to prevent the development of POST after general anesthesia with an ETT.

This EPB project shows that there was a statistically insignificant reduction of POST with the use of 4% LTA. However, this study may generate hypothesis about LTA use, given limited research published on the use of LTA for POST. Lidocaine gel 2% showed statistically significant reduction in POST. Only one occurrence of intra-cuff lidocaine was documented, showing no reduction in POST; however there is strong research evidence showing the effectiveness of intra-cuff lidocaine on the reduction of POST. This study may inform further hypothesis about group characteristics of patients receiving intratracheal lidocaine.

References