Velopharyngeal Insufficiency and Success Rate of Adenotonsillectomy in Prader-Willi and Trisomy 21 Patients

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ABSTRACT

Background: Adenotonsillectomy (T&A) is a common procedure performed to address obstructive sleep apnea (OSA) in Prader-Willi (PW) and Trisomy 21 (T21) patients. This study evaluates the rate of velopharyngeal insufficiency (VPI) after T&A and success rate of T&A for each group.

Methods: A retrospective chart review was performed on ICD-9 codes related to cleft palate and velopharyngeal insufficiency in PW and T21 patients between 2005 and 2015 who underwent T&A for OSA. The frequency of VPI after T&A treatment was determined for each group.

Results: The study cohort included 22 PW patients and 44 T21 patients who had undergone T&A. 18% of the PW patients had velopharyngeal insufficiency (VPI) after T&A requiring a corrective surgical procedure, while there were no patients within the T21 cohort who had VPI (p<0.05). In those patients that had a post-operative polysomnogram, the mean decrease in OAHI of the PW and T21 patients measured 8.4 and 4.7 points, respectively (p=0.3). 54% of the PW patients and 76% of the T21 patients that had a follow-up polysomnogram demonstrated persistent severe OSA post-operatively.

Conclusions: This study demonstrated a relatively high rate of VPI after T&A in children with PW, particularly when compared to another at-risk cohort of children with T21. While the OAHI decreased after T&A in both groups, a significant number of children with PW or T21 had persistent severe OSA. Further investigation into the optimal management of OSA, while preventing treatment complications such as VPI, is needed for children with these high risk conditions.

INTRODUCTION

Obstructive Sleep Apnea (OSA) in Pediatrics (OAHI)

-<3.5: normal
-3.5-5: mild
-5-10: moderate
->10: severe

•Adenotonsillectomy (AT) is the most common procedure performed to address OSA

Complications

•Bleeding
•Dehydration
•Persistent OSA
•Velopharyngeal Insufficiency (VPI)

OBJECTIVE: Determine rate of success and VPI after AT in PW and T21 patients.

METHODS AND MATERIALS

•IRB approved University of Utah/Intermountain Healthcare
•2005-2015

•Inclusion
  •ICD-9- Adenotonsillectomy AND
  •Trisomy 21 OR Prader-Willi

•Exclusion
  •ICD-9 codes related to cleft palate

•Chart reviewed Pre- and Post-operative Polysomnogram (PSG)

•Chart reviewed rate of VPI
  •Diagnosed by speech pathologist & otolaryngologist via nasometry and flexible nasopharyngoscopy

RESULTS

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<tr>
<th></th>
<th>PW</th>
<th>T21</th>
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<tbody>
<tr>
<td>Number (N)</td>
<td>22</td>
<td>44</td>
</tr>
<tr>
<td>Average Age</td>
<td>3.9±3</td>
<td>3.4±2.3</td>
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<thead>
<tr>
<th></th>
<th>PW</th>
<th>T21</th>
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<tbody>
<tr>
<td>Normal</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Mild OSA</td>
<td>25%</td>
<td>5.90%</td>
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<tr>
<td>Moderate OSA</td>
<td>25%</td>
<td>29.40%</td>
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<tr>
<td>Severe OSA</td>
<td>50%</td>
<td>64.70%</td>
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<td>Pre-operative</td>
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<td>PSG</td>
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<td>PSG</td>
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DISCUSSION/CONCLUSIONS

•High percentage of persistent OSA after AT in PW and T21 patients.

•VPI more prevalent in PW patients than T21 even though both groups have characteristic hypotonia.

Further investigation into the optimal management of OSA in these high risk groups while preventing complications such as VPI is needed.