INTRODUCTION

Adenotonsillectomy is one of the most common surgical procedures in the pediatric population. Over 500,000 outpatient tonsillectomies are performed each year in the US\(^7\). Pediatric outpatient tonsillectomy has an overall complication rate of 8.8% with an unplanned admission rate of 8.0%\(^3\) and an average 2.0% post-tonsillectomy bleed rate\(^6\).

Recent emphasis on quality improvement and cost effectiveness has encouraged physicians and administrators to further assess procedures. Prior studies looked at complication rates in outpatient tonsillectomy but none have included unplanned admissions in a multi-hospital setting. We analyzed outcomes of adenotonsillectomies & tonsillectomies performed in a 4-year time period at a single institution encompassing two major pediatric hospitals.

METHODS AND MATERIALS

Inclusion and Exclusion Criteria

10,969 tonsillectomies with or without adenoidectomy were performed on 9,444 index visits between January 1, 2010 - December 31, 2013. Procedures completed at a single pediatric institution with two major hospital systems.

Patients scheduled for outpatient surgery but then admitted for observation post-operatively were included.

Primary outcome measures used include ED returns, readmission, and reoperation within 30 days of discharge.

Data Fields

Demographic, socioeconomic, and clinical factors were collected: age, race/ethnicity, primary language, payer status, and zip code.

Readmissions and reoperations were further subcategorized based on whether they were related to previous adenotonsillectomy.

Statistical Method

Statistical analysis was performed with IBM SPSS Statistics.

Associations between dichotomous variables were analyzed and binary multivariate logistic regression analysis was used to assess whether or not significant risk factors independently contributed to the increased hazard of dependent variables.

A two-tailed \( P \) value < 0.05 was considered statistically significant.

RESULTS

<table>
<thead>
<tr>
<th>Continuous variables</th>
<th>Mean/SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>6.27/1.59</td>
<td>5 days - 20 years</td>
</tr>
<tr>
<td>Length of stay (days)</td>
<td>1.07/+0.80</td>
<td>1-7</td>
</tr>
<tr>
<td>Procedure length (minutes)</td>
<td>21.3/12.8</td>
<td>5-207</td>
</tr>
<tr>
<td>Median household income per zip code ($)</td>
<td>57,771</td>
<td>12,084 - 114,674</td>
</tr>
</tbody>
</table>

**Categorical Variables**

- English as primary language: OR 0.544 (0.38-0.77), \( p=0.001 \)
- Caucasian race: OR 0.98 (0.96-1.00), \( p=0.043 \)
- Atlanta metropolitan zip codes: OR 0.95 (0.86-1.05), \( p=0.010 \)
- Medicare/Medicaid as primary payer: OR 1.57 (1.23-2.00), \( p=0.001 \)
- PICU admission: OR 0.69 (0.55-0.88), \( p=0.002 \)
- Index surgery at Scottish Rite: OR 2.19 (1.33-3.60), \( p=0.001 \)
- Index surgery start before 2pm/after 3pm: OR 1.07 (0.78-1.44), \( p=0.001 \)
- Unplanned admission after index outpatient surgery: OR 0.00 (0.00-0.00), \( p=0.001 \)

| Table 1. Patient characteristics and other variables associated with index visits for Tonsillectomy (n=1513) or Adenotonsillectomy (n=3,829). |

**Study Cohort and Patient Characteristics**

Rate of unplanned admission after surgery was 25.2%.

**Sources of Readmissions within 30 Days of Discharge**

Summary of the sources of readmission and clinical events in Figure 1.

- All-cause revisit rate was 9.3% (875/9,444).
- All-cause readmission rate was 2.0% (193/9,444).
- Related readmissions were 1.6% (154/9,444).

**Events after Readmission**

Total rate of related readmissions for post-operative control of bleeding was 0.8% (n=73/9,444).

**Risk Factors Associated with Patient Subgroups**

Multivariate analysis performed to determine the clinical and demographic risk factors.

Result are summarized in Table 2.

With return to ED as a dependent variable, risk factors:

- Age
- Non-English speaking
- City (Atlanta) zip code
- Admission > 2 days*

*Patients were not more likely to undergo reoperation (Table 2)

**CONCLUSIONS**

All-cause readmission rate following tonsillectomy/adenoidectomy was 2.0%, with 0.8% rate of reoperation for bleeding.

Being admitted after planned outpatient surgery 2 days, age, non-English speaking, and living in the city were all risk factors for return.

Implementation of Nationwide Children's Hospital guidelines on admission after adenotonsillectomy is an effort to reduce readmission: young age is an indication for admission.

Recognizing patients that will benefit from inpatient observation and ensuring appropriate post-operative instructions, regardless of language, are essential at preventing future return visits.

REFERENCES