Effectiveness of Postoperative Follow-up Telephone Interviews for Patients Who Underwent Adenotonsillectomy: A Retrospective Study

Dwight T. Jones, MD; Michelle J. Yoon, MD; Greg Licameli, MD

Objective: To evaluate the effectiveness of follow-up telephone interviews and questionnaires after tonsillectomy and adenoidectomy.

Design: Cohort study and retrospective review of the outcomes of patients whose follow-ups were conducted by telephone interview. Patients were contacted 2 to 4 weeks after surgery; responses were recorded on a standardized postoperative questionnaire.

Setting: Tertiary pediatric hospital.

Patients: A total of 2554 consecutive patients who had undergone tonsillectomy, adenoidectomy, or both procedures and completed a follow-up telephone interview during the period of January 8, 2000, to September 23, 2004.

Main Outcome Measures: Time to return to normal diet and activities, postoperative complications, pain management, postoperative visits, and caregiver’s evaluation of the follow-up telephone survey.

Results: A total of 2554 patient outcomes were reviewed. The mean patient age was 5.9 years. Follow-up contact occurred a mean of 24.1 days after surgery. Of the surgical procedures performed, there were 1957 adenotonsillectomies, 235 adenoidectomies, and 362 tonsillectomies. At the time of follow-up, 2.7% of the patients had undergone an additional surgical procedure to treat postoperative bleeding, 96.9% had resumed eating a normal diet, and 96.2% had resumed normal activities. Bleeding from the nose or mouth was reported to have occurred at some point during the recovery period in 12.8%. On a pain scale of 1 to 10, a mean pain peak of 6.7 was reported. For most patients, pain was highest on the second day after surgery. The percentage of patients who had temporary voice change was 62.7%, and 15.4% had a follow-up clinic visit. Regarding caregivers, 99.5% reported being given instructions for postoperative care, and 98.8% reported that they felt well prepared to care for their child at home. There were no adverse events reported from surgical intervention.

Conclusions: Compared with our previous experience with scheduled postsurgical clinic follow-ups, telephone interviews and standardized postoperative questionnaires pose no additional risk to patients. Considerable cost reduction and patient convenience were realized with a reduction of patient visits.


Adenotonsillectomy is one of the oldest pediatric surgical procedures and is currently among the 10 most commonly performed procedures in outpatient centers.1,2 Once performed exclusively in the inpatient setting, it is now predominantly an outpatient procedure. Therefore, treatment of the patient postoperatively is based on several parameters, including the risk of postoperative hemorrhage and the need for airway management.3-5 The surgical indications have also changed over the years; infection was once the predominant indication for adenotonsillectomy, whereas today obstructive sleep apnea secondary to adenotonsillar hypertrophy is the primary indication.6,7

The changing health care environment in recent years has forced hospitals and third-party payers to cut costs and payments for these procedures.2,8-10 Keeping these health care trends in mind, our pilot study performed in 200011 was designed to evaluate the efficacy of a postoperative follow-up telephone interview for patients who had undergone an adenotonsillectomy vs the traditional 2- to 4-week postoperative office visit. We present accumulated data from more than 2500 patients in an effort to continue to
monitor the efficacy of postoperative follow-up telephone interviews and provide appropriate and safe care.

**METHODS**

A total of 2554 patients who had undergone tonsillectomy, adenoidectomy, or both and had a follow-up telephone interview during the period of January 8, 2000, to September 23, 2004, at Children's Hospital, Boston, Massachusetts, were identified from the practices of 16 pediatric otolaryngologists. Their mean age was 5.9 years (range, 5.6 months to 34.8 years). This study was approved by the internal review board of the committee on clinical investigation at Children's Hospital, and consent was obtained to retrospectively review the medical charts of patients of the Department of Otolaryngology and Communication Disorders, Children's Hospital.

Prior to surgery, detailed postoperative instructions were given to each patient's caregiver. If, at any time during the postoperative recovery, the patient experienced any symptoms or signs that caused concern, or if the parent or caregiver (hereinafter, caregiver) desired a routine postoperative follow-up visit in the office, an appointment was arranged. Typically, contact was made by an otolaryngology nurse who placed a telephone call 2 to 4 weeks after surgery. At this point, the caregiver was again given the option to return for an office visit if desired, and the questionnaire was filled out by the nurse with the caregiver's responses.

For each patient, the type of operation, indications for surgery, and date of surgery were recorded. The indications used in this study included recurrent tonsillitis, obstructive sleep apnea, nasal obstruction, and adenotonsillar hypertrophy. Obstructive symptoms were identified from subjective descriptions of sleeping patterns by the caregivers, including snoring, gasping, choking, and apnic episodes. Polysomnography was not required for a diagnosis of obstructive sleep apnea but was obtained in some cases.

Postoperative bleeding was defined as any episode of blood noted on sheets or pillows, blood-tinted sputum or nasal discharge after coughing or sneezing, or any bleeding from the oral or nasal cavity at any time in the first 14 days after surgery. Caregivers were told to seek evaluation for all patients not recorded in the study to assess whether a patient was still having any obstructive symptoms. Postoperative pain was defined as any pharyngeal or ear pain and was assessed on a subjective scale of 1 to 10, with 1 indicating “no pain” and 10 indicating “severe pain” (using the Faces Pain Scale12). In addition, questions regarding type of pain medication, the number of days pain medication was taken, and the number of days after surgery that the patient resumed normal activity and oral intake were addressed.

In our series of patients, the most common surgical procedure was an adenotonsillectomy, which was performed in 1957 patients (76.6%), followed by tonsillectomy in 362 (14.2%) and adenoidectomy in 235 (9.2%). Of the total 2554 patients, 1184 were females and 1370 were males. The most common indication for surgery was adenotonsillar hypertrophy in 80.9% of patients.

Mothers were 8.5 times more likely than fathers to complete the telephone interview. The standardized postoperative questionnaire was performed a mean of 21.5 days after the surgery.

Approximately 97% of patients had normalized their oral intake status to levels equal to preoperative levels (Figure 1). Velopharyngeal insufficiency was present in 61 patients (2.7%). Of these cases, 88.0% had complete resolution by the time the follow-up telephone survey was conducted. As in our previous article,11 voice change was the most common postoperative complaint, occurring in 1426 patients (63.7%), with changes in pitch and nasal quality being the most frequently reported symptoms. By the time the standardized postoperative questionnaire was conducted, 93.0% of patients were reported to be sleeping comfortably without evidence of snoring.

On a pain scale of 1 to 10, the peak pain was most frequently reported as an 8 (mean, 6.7). For most patients, pain was highest on day 2 (Figure 2). The most common form of analgesia used in our series was acetaminophen with codeine (Tylenol with codeine; Ortho-McNeil Pharmaceuticals, Fort Washington, Pennsylvania). Analgesics were used for a mean of 6.5 days. Despite the
fact that explicit instructions were given to avoid any non-
steroidal anti-inflammatory analgesics in efforts to de-
crease the risk of postoperative hemorrhage. 15 patients
did report using them postoperatively. A total of 2178
patients (96.2%) had returned to regular activity at the
time of the postoperative follow-up telephone call.

At the time of follow-up, 2.7% had undergone addi-
tional surgery to treat postoperative bleeding. Postop-
erative bleeding was reported in 296 patients (12.7%).
The most likely day for a patient to present with post-
operative bleeding was the seventh day after surgery, and
if bleeding occurred it did so by the 10th day after sur-
gery in 85.6% of patients (Figure 3). A total of 9 pa-
tients (3.0% of those reporting bleeding) did not notify
the physician, although prior to surgery explicit instruc-
tions were given to do so if any bleeding from the pa-
tient’s nose or mouth was noted.

Nearly all respondents (99.5%) reported being given
appropriate instructions for postoperative care, and 98.8%
felt they were well prepared to care for their child at home.
Eighty-five percent of caregivers declined a postopera-
tive office visit. Of the 15.0% who did have a postopera-
tive office visit, 112 (28.0%) were requested to have fol-
low-up for routine postoperative ear and audiologic
evaluation, secondary to having concurrent bilateral myr-
ingotomy and tube placement.

**COMMENT**

Adenotonsillectomy has become one of the most com-
monly performed outpatient surgical procedures and has
undergone a successful transition from an inpatient to an
outpatient procedure. 12-15 Several factors, including
changing health care trends, have driven this change,8
and otolaryngologists must find strategies to continue to
provide safe and effective patient care.10 Our postopera-
tive follow-up telephone call program provides such a
method.

In our previous article,11 2 other studies of follow-up
telephone surveys were cited.17,18 The first evaluated trans-
portation, accommodations, and meals provided for 50
patients and their families who traveled long distances
for surgery. The second study examined the pain and hy-
dration status of 52 patients on the first day after sur-
gery and 14 days after surgery, and concluded that care-
givers were able to handle mild dehydration symptoms
and postoperative pain at home. The authors also found
that 30% of these patients had consulted a health care
provider during the postoperative period.17,18

More recently, Valtonen et al19 studied patient con-
tact with health care professionals after elective tonsil-
lotomy and found that 43.8% of patient-initiated con-
tact with health care professionals was most often related
to pain or hemorrhage, and information given over the
telephone was sufficient in nearly half the cases. A study
among patients with cataracts compared the efficacy of
evaluations the day after surgery performed in the hos-
pital, at home, and over the telephone.19 No striking dif-
fferences among the groups were noted; however, among
the group interviewed by telephone, 70% of patients pre-
ferred follow-up by telephone call.

Since January 1999, the University of Michigan has
used follow-up telephone calls for their patients who un-
dergo adenotonsillectomy.20 In their study,20 a total of 325
of their patients received follow-up telephone calls. Of
these, 3% requested a postoperative follow-up visit, mainly
for reassurance, and no postoperative complications were
detected during the office visit. It was also observed that
when postoperative office appointments were recom-
manded, 30% either did not schedule an appointment or
failed to come to a scheduled appointment. Most care-
givers of patients were satisfied with the follow-up tele-
phone call in place of the routine postoperative visit.

Voice change continues to be the most common post-
operative complaint, as it was in our pilot study (Table).
Previously, complaints pointed primarily to a lack of
preparation for this postoperative result. Careful preop-
erative counseling has been a priority to minimize care-
giver’s anxiety. Temporary velopharyngeal insuffi-
ciency was also reported in our follow-up study. We
continue to include this as a possible result in our rou-
tine preoperative counseling as well.

Patients were also discharged receiving different pain
control regimens based on the attending physician’s pref-
ferences. Pain medications were used for a mean of 6.5
days. This finding may aid in the determination of pre-
scription practices, helping physicians to avoid prescrib-
ing excessive amounts of pain medications and refills for narcotics. Pain was found to be the worst on the second day after surgery, diminished rapidly by the seventh day, and was gone in most patients by the 10th day. Thus, it is important to consider examining any patient with ongoing pain after 10 days. These results are consistent with those of our pilot study performed in 2000.

Postoperative bleeding continues to engender further discussion. Our pilot study noted a caregiver-reported bleeding event rate of 15% compared with a rate of 12.7% in this study. Typically, rates of 0.5% to 5% have been reported in the literature. In 2000, we proposed that one possible reason why our postoperative bleeding rate seemed to be inflated was that our cohort was small (134 patients). However, the present study included 2554 patients, raising concern that this important issue is largely underreported.

Delayed postoperative hemorrhage is one of the most common and potentially most serious complications of adenotonsillectomy. Therefore, all of our patients who undergo adenotonsillectomy, and their families, are told to call with any sign of nasal or oral bleeding during the first 14 days after surgery. Our departmental policy for the care of patients who experience posttonsillectomy hemorrhage is as follows: any patient with a clot in the fossae returns to the operating room, whereas patients who report oral bleeding without obvious clot or active bleeding are admitted for 24-hour observation. Liu et al demonstrated how bleeding rates may differ among different studies based on the criteria used to define posttonsillectomy hemorrhage. In our cohort of patients, 2.7% required operative intervention, similar to posttonsillectomy bleeding rates reported in the literature.

One concern about eliminating the postoperative visit is that the physician, the patient, and the patient's family will lose the sense of closure of the physician-patient relationship. In these days of busier lives for both physicians and their patients, we found with this study that patients and their families were satisfied with the care they received and were quite content not to have to come back for another visit, knowing that they could arrange an urgent visit if the need arose.

Several important conclusions can be drawn from this study. In agreement with our initial pilot study, the use of a follow-up telephone questionnaire administered by a trained medical professional is a safe postoperative recovery evaluation tool. None of the patients in our study experienced any serious or permanent postoperative sequelae. Moreover, patients and their caregivers seemed to be overwhelmingly satisfied with this form of follow-up. Eighty-five percent of caregivers felt comfortable with the follow-up by telephone call and did not request a follow-up clinic visit. This rate is lower than that in our pilot study because patients undergoing bilateral myringotomy and tube placement are required to have a postoperative office visit.

We continue to identify ways to modify preoperative counseling and prescription prescribing practices based on questionnaire data. Our follow-up telephone survey program provides an opportunity for cost savings for both the patient and their caregivers. Patients spend less time away from school, and expenses resulting from time lost at work and travel are reduced for their caregivers. We have found that the otolaryngologist is able to provide safe and effective follow-up by telephone, thereby allowing another patient requiring otolaryngologic care to use office time slots formerly used for follow-up visits. Our postoperative follow-up telephone call survey is a cost-effective way to manage the postoperative course of patients who undergo adenotonsillectomy without compromising patient safety or satisfaction.


Correspondence: Dwight T. Jones, MD, Department of Otolaryngology and Communication Disorders, Children's Hospital, 300 Longwood Ave, Boston, MA 02115 (Dwight.Jones@childrens.harvard.edu).

Author Contributions: Drs Jones, Yoon, and Licameli had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Jones, Yoon, and Licameli. Acquisition of data: Jones, Yoon, and Licameli. Analysis and interpretation of data: Jones, Yoon, and Licameli. Drafting of the manuscript: Jones, Yoon, and Licameli. Critical revision of the manuscript for important intellectual content: Jones, Yoon, and Licameli. Statistical analysis: Jones, Yoon, and Licameli. Obtained funding: Jones, Yoon, and Licameli. Administrative, technical, and material support: Jones, Yoon, and Licameli. Study supervision: Jones, Yoon, and Licameli.

Financial Disclosure: None reported.

Funding/Support: This study was funded and supported by the Committee on Clinical Investigation, the Clinical Research Program, and the Department of Otolaryngology Head and Neck Surgery.

Table. Comparison of Results From Original and Follow-up Studies

<table>
<thead>
<tr>
<th>Variable</th>
<th>This Study</th>
<th>Original Study, 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total patients, No.</td>
<td>2554</td>
<td>134</td>
</tr>
<tr>
<td>T&amp;A</td>
<td>1957</td>
<td>110</td>
</tr>
<tr>
<td>Adenoidectomy</td>
<td>235</td>
<td>9</td>
</tr>
<tr>
<td>Tonsillectomy</td>
<td>62</td>
<td>15</td>
</tr>
<tr>
<td>Resume PO intake</td>
<td>96.9</td>
<td>90.0</td>
</tr>
<tr>
<td>VPI</td>
<td>2.7</td>
<td>2.0</td>
</tr>
<tr>
<td>Resolution of VPI by the time of SPOQ</td>
<td>88</td>
<td>100</td>
</tr>
<tr>
<td>Bleeding</td>
<td>12.8</td>
<td>17.0</td>
</tr>
<tr>
<td>Additional SP</td>
<td>2.7</td>
<td>3.0</td>
</tr>
<tr>
<td>Voice change</td>
<td>62.7</td>
<td>68.0</td>
</tr>
<tr>
<td>Resume activity</td>
<td>96.2</td>
<td>100</td>
</tr>
<tr>
<td>Days pain medications used, No.</td>
<td>6.5</td>
<td>5.0</td>
</tr>
<tr>
<td>Better sleep</td>
<td>93.0</td>
<td>89.6</td>
</tr>
<tr>
<td>Follow-up appointment made</td>
<td>15.4</td>
<td>4.0</td>
</tr>
<tr>
<td>Postoperative instructions</td>
<td>99.5</td>
<td>NR</td>
</tr>
<tr>
<td>given to caregivers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caregivers felt well prepared</td>
<td>98.8</td>
<td>NR</td>
</tr>
<tr>
<td>after surgery</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: NR, not recorded; PO, oral intake; SP, surgical procedure; SPOQ, standardized postoperative questionnaire; T&A, tonsillectomy and adenoidectomy; VPI, velopharyngeal insufficiency.

aData are given as percentages except where noted.

bSee Rosbe et al.
laryngology and Communication Disorders of Children’s Hospital, Boston. The aforementioned programs assisted the investigators in the design and conduct of the study; in the collection, analysis, and interpretation of the data; and in the preparation, review, and approval of the manuscript.

Previous Presentation: This study was presented at the Annual Meeting of the American Society of Pediatric Otolaryngology; May 28, 2005; Las Vegas, Nevada.

REFERENCES