Efficacy and Quality-of-Life Impact of Adult Tonsillectomy

Neil Bhattacharyya, MD; Lynn J. Kepnes, RNP; Jo Shapiro, MD

Objective: To determine the quality-of-life impact and overall efficacy of adult tonsillectomy for chronic tonsillitis.

Design: Cross-sectional survey analysis of patients at least 1 year after undergoing adult tonsillectomy.

Interventions and Outcome Measures: The Glasgow Benefit Inventory was used to quantify the health benefit of tonsillectomy. Data were collected for demographics and antibiotic use, physician visits, and workdays missed due to chronic tonsillitis for the 12 months before and after tonsillectomy.

Results: Sixty-five patients returned completed surveys. Mean age was 27.3 years, and mean follow-up was 42.6 months. The improvements in the total score (+27.1), general health subscore (+34.7), social functioning subscore (+14.4), and physical functioning subscore (+9.5) of the Glasgow Benefit Inventory were each statistically significant (P<.001), indicating a significant health benefit of tonsillectomy. Statistically significant decreases in mean weeks receiving antibiotics (−7.8 weeks), mean physician visits (−5.4), and mean workdays missed (−6.3 days) were noted after tonsillectomy (P<.001).

Conclusions: Adult tonsillectomy provides a significant quality-of-life improvement for patients with chronic tonsillitis. Tonsillectomy also affords decreases in medical resource utilization and missed workdays after tonsillectomy. Such factors should be incorporated into decision making when considering tonsillectomy.

SUBJECTS AND METHODS

This study was approved by our institutional human studies committee. We searched the procedural database of a large academic general otolaryngology practice retrospectively for patients who had undergone tonsillectomy alone between January 1, 1994, and December 31, 1998. Patients who met the following criteria were excluded from the database: age greater than 16 years, tonsillectomy performed for chronic infectious tonsillitis, and minimum follow-up of 1 year. Patients who simultaneously underwent adenoectomy or uvulopalatopharyngoplasty were excluded, as were patients who underwent tonsillectomy to rule out malignant neoplasm.

The extracted cohort underwent evaluation by means of medical chart review and mail survey. Components of the survey included patient-reported data for disease severity variables. These variables included the number of weeks during which the patient was taking antibiotics specifically for tonsillitis, the number of workdays missed due to sore throat, and the number of physician visits specifically for sore throat during the 12 months before tonsillectomy. Analogous data were collected for the 12 months after tonsillectomy (excluding the immediate postoperative period). Each patient was asked to complete the Glasgow Benefit Inventory (GBI), which was modified accordingly to measure the change in health status and quality of life due to the tonsillectomy intervention.4 The GBI scores were scaled in standard fashion to range from −100 to +100, with positive scores implying an improvement in quality of life due to tonsillectomy.

Statistical analysis was conducted using commercially available software (SPSS, Version 10.0; SPSS Inc., Chicago, Ill.). Descriptive statistics were calculated for patient demographics and mean follow-up. Statistical comparison between disease variables before and after tonsillectomy was conducted using paired t test. The significance of scores on the GBI was assessed using the t test for population examining for scores that differed from a population mean of 0 (a score of 0 on the GBI or its subscales implies no positive or negative benefit). Correlation analysis was conducted between GBI scores and disease severity variables using the Pearson correlation coefficient.

COMMENT

Tonsillectomy with or without adenoectomy is one of the most commonly performed surgical procedures in the United States, with most performed in the pediatric patient population. Traditionally, adult tonsillectomy has been recommended for recurrent tonsillitis, chronic tonsillitis, or the streptococcal carrier state.  To some degree, these indications have been extrapolated from children. In addition, varying criteria for a diagnosis of chronic tonsillitis have been used, depending on frequency and severity of episodes. Other less common indications for adult tonsillectomy include halitosis, chronic cryptic debris, and obstructive sleep apnea syndrome (as an adjunct to uvulopalatopharyngoplasty). Despite the prevalence of chronic tonsillitis and tonsillectomy, relatively few studies have examined the impact of the diagnosis and treatment of this disorder on health and quality of life. Even fewer such data exist for chronic tonsillitis in adults and adult tonsillectomy. In a recent study by Mui et al,6 the efficacy of tonsillectomy for recurrent tonsillitis in an adult population was examined. The authors found that the mean number of clinic visits for throat infection and the mean number of oral antibiotic prescriptions for throat infection exhibited statistically significant decreases after tonsillectomy. These declines were evident in patients with and without the streptococcal carrier state. A follow-up telephone survey indicated that more than 87% of patients would recommend the operation for chronic tonsillitis. Other studies on tonsillectomy have uncovered similar results, but none of these studies attempted to examine more rigorously quality-of-life issues and the impact of health care resource utilization surrounding tonsillectomy.7,8 Such data are important for patient counseling and formulation of clinical guidelines to recommend tonsillectomy.

The GBI is a well-studied and validated outcomes instrument that was developed specifically to study outcomes after otolaryngologic interventions. It has been used to examine clinical outcomes for acoustic neuroma, middle ear surgery, and botulinum toxin treatments for month). Data for the mean number of weeks receiving antibiotics, mean workdays missed, and mean number of physician visits before and after tonsillectomy are presented in Table 1. Decreases in all 3 measurements were statistically significant (paired t test).

The summary of scores for the GBI is presented in Table 2. Patients derived statistically significant benefit on the total score as well as on the individual subscales of general health, social functioning, and physical functioning from the tonsillectomy intervention (t test). No correlation was found between GBI scores and length of follow-up (all P>.05, Pearson correlation coefficient). To test for potential response biases among patients, we divided the cohort into equal populations above and below the median follow-up. The groups were compared for differences in GBI scores, physician visits, antibiotic use, and workdays missed. No statistically significant difference between groups was identified, suggesting a minimal recollection bias. Results of correlation analysis between GBI scores and decreased antibiotic use, physician visits, and workdays missed are presented in Table 3.
tonsillitis. We found a similar number of physician visits specifically for sore throats, as in other studies on chronic health care resource utilization for chronic tonsillitis by before and after the proposed intervention. We measured intervention is to examine health care resource utilization be-

able value of tonsillectomy in these patients. This suggests that the benefit from tonsillectomy is beyond improving health from a purely medical standpoint. These other areas of beneficial impact are likely to involve decreases in work absences, physician visits, and medication requirements. We found no correlation between scores on the GBI and the duration of follow-up. This suggests that the benefit from tonsillectomy is durable and long-term. Furthermore, the mean follow-up approximating 3.5 years underscores the durable value of tonsillectomy in these patients.

Aside from patient-reported scores on outcome measurement tools, several other variables may be used to assess the overall health benefit of tonsillectomy. One common assessment method for a single surgical intervention is to examine health care resource utilization before and after the proposed intervention. We measured health care resource utilization for chronic tonsillitis by the frequency of physician visits and antibiotic use specifically for sore throats, as in other studies on chronic tonsillitis. We found a similar number of physician visits before and after tonsillectomy, similar to the results ofMui et al. However, our antibiotic utilization rate before tonsillectomy was notably higher, exceeding 1.5 months receiving antibiotics in the 12 months before tonsillectomy. The number of days of antibiotic treatment for sore throat after tonsillectomy dropped dramatically, suggesting that patients had fewer infections, or their infections were not severe enough to warrant antibiotic use. Both decreases reflect a substantial decrease in utilization of health care resources after tonsillectomy.

When considering the impact of chronic tonsillitis on patients’ quality of life, physicians should consider the number of the workdays missed due to the tonsillitis episodes. Excessive absences from work may have a significant impact on the patient’s productivity, promotion status, and even employability. We were somewhat surprised by the relatively high number of mean workdays missed during the 12 months before tonsillectomy. Some patients reported up to 30 days of work absence due to chronic tonsillitis. Again, the dramatic decrease in the number of workdays missed further emphasizes the potential impact of tonsillectomy on the quality of life of patients with chronic tonsillitis.

We identified a statistically significant correlation between the GBI total score (and the general health subscore) and the decrease in number of workdays missed before and after tonsillectomy. This indicates that the benefit from tonsillectomy perceived by patients may actually be related more to workdays missed due to tonsillitis than to the need to take antibiotics or visit physicians for treatment. This correlation also highlights work absence due to exacerbations of tonsillitis as an important factor that should probably be considered when recommending tonsillectomy for adult patients.

This study possesses several potential limitations. First, our data collection regarding medication use, physician visits, and workdays missed depended heavily on patient recollection and self-reporting. However, the consistency in reported variables between both subgroups above and below the median follow-up argues that patients retain an accurate representation of the impact of chronic tonsillitis in these areas. In addition, we encountered a relatively poor response rate. This was not surprising given that most of our patients undergoing adult tonsillectomy are in their third decade of life, often in secondary school or college, and are therefore highly likely to relocate within a few years after tonsillectomy. We found that this group of patients often changed mailing addresses and insurance information on a yearly basis, making subsequent follow-up very difficult. In fact, because of the geographic mobility of this patient group, we were unable to complete a prospective study on tonsillectomy, and therefore adopted the present study method. This factor also likely contributed to our relatively long mean follow-up period, because patients who responded were often permanent residents in our catchment area. We also asked patients to assess the impact of the chronic tonsillitis in the 2 years surrounding the tonsillectomy. This potentially neglects the variation in dis-

**Table 1. Impact of Chronic Tonsillitis Before and After Tonsillectomy**

<table>
<thead>
<tr>
<th>Disease Severity Measure</th>
<th>12 mo Before Tonsillectomy</th>
<th>12 mo After Tonsillectomy</th>
<th>Mean Net Change</th>
<th>Significance of Change, P Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of weeks receiving antibiotics</td>
<td>6.9 (7.0)</td>
<td>0.6 (0.9)</td>
<td>−7.8</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>No. of workdays missed</td>
<td>8.9 (11.3)</td>
<td>0.5 (1.4)</td>
<td>−6.3</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>No. of physician visits</td>
<td>5.8 (5.9)</td>
<td>0.3 (0.8)</td>
<td>−5.4</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

*Determined using paired t test.

**Table 2. Quality-of-Life Impact of Adult Tonsillectomy Measured Using the Glasgow Benefit Inventory**

| Score                          | Mean (±SD) (95% CI) P Value* |
|-------------------------------|------------------------------|---------------------------|
| Total score                   | +27.09 (4.41)                | <.001                     |
| Subscales                     |                              |                           |
| General health                | +34.68 (5.04)                | <.001                     |
| Social functioning            | +14.36 (4.87)                | <.001                     |
| Physical functioning          | +9.49 (4.77)                 | <.001                     |

* Determined using t test for population.
Table 3. Correlation Between Glasgow Benefit Inventory Scores and Disease Severity Variables in Chronic Tonsillitis After Adult Tonsillectomy

<table>
<thead>
<tr>
<th>Disease Severity Variable</th>
<th>Total score</th>
<th>Decrease in Weeks Receiving Antibiotics</th>
<th>Decrease in Missed Workdays</th>
<th>Decrease in Physician Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.22 (.10)</td>
<td>0.29 (.02)</td>
<td>0.14 (.30)</td>
</tr>
<tr>
<td>Subscales</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General health</td>
<td></td>
<td>0.24 (.07)</td>
<td>0.31 (.04)</td>
<td>0.18 (.18)</td>
</tr>
<tr>
<td>Social functioning</td>
<td></td>
<td>0.30 (.03)</td>
<td>0.18 (.15)</td>
<td>0.06 (.66)</td>
</tr>
<tr>
<td>Physical functioning</td>
<td></td>
<td>-0.10 (.47)</td>
<td>0.14 (.28)</td>
<td>-0.05 (.73)</td>
</tr>
</tbody>
</table>

*Shaded areas represent statistically significant correlations (P < .05).

Even in an era of broad-spectrum antibiotics, tonsillectomy provides significant symptom relief and quality-of-life improvement for properly selected adult patients with chronic tonsillitis. Our data suggest that tonsillectomy significantly decreases use of antibiotics, physician visits, and workdays missed due to chronic tonsillitis. Such factors may be as important as the absolute frequency of tonsillitis episodes in determining the appropriateness of tonsillectomy. Despite the solitary nature of tonsillectomy as a surgical intervention, the perceived benefit of tonsillectomy persists with long-term follow-up.

Accepted for publication July 11, 2001.

Corresponding author: Neil Bhattacharyya, MD, Division of Otolaryngology, 333 Longwood Ave, Boston, MA 02115.

REFERENCES


CONCLUSIONS

In conclusion, the clinical outcomes of adult tonsillectomy provide significant symptom relief and quality-of-life improvement for properly selected adult patients with chronic tonsillitis. The clinical outcomes associated with adult tonsillectomy, which include symptom resolution, decrease in antibiotic use, decrease in workdays missed, and decrease in physician visits, are statistically significant for the overall benefit of tonsillectomy after a median follow-up of 1 year. These findings are consistent with those of previous studies, which have reported similar improvements in quality of life and related outcomes following tonsillectomy. Additionally, the perceived benefit of tonsillectomy persists with long-term follow-up, further supporting its continued use as a surgical intervention for patients with chronic tonsillitis.