

Indications for tonsillectomy and adenoidectomy: Our experience

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Abstract

Background: Infection and obstruction are the most common indications for performing tonsillectomy and adenoidectomy. In the past, infection was the main indication for these procedures; however, in the last few decades obstruction is said to be more prominent as an indication when compared to infection.

Objective: The objective of this study was to report our observations of indications for tonsillectomy and adenoidectomy.

Materials and Methods: This is a 2 year retrospective analysis of case records of patients aged 0-18 years who have had tonsillectomy, adenoidectomy and adenotonsillectomy performed in a tertiary hospital.

Statistical Analysis Used: IBM SPSS (for windows, version 19) software was used to analyze this data.

Results: A total of 115 patient's records were reviewed. Moreover, 33.9% were children under 3 years, 60.0% were between 4 years and 10 years and 6.1% were between the ages of 11 years and 18 years. Obstruction accounted for a total of 68.7% while infection accounted for only 31.3% of the indication for these procedures.

Conclusion: Obstruction as an indication is proportionally higher in younger children while infection is proportionally higher in older children.

Key words: Adenoidectomy, indications, infection, obstruction, tonsillectomy

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Introduction

Tonsillectomy is a procedure of antiquity, and dates as far back as the first century A.D.^[1] Tonsillectomy and adenoidectomy remain some of the most common procedures performed by otolaryngologists the world over. When performed for appropriate indications, it contributes to improvement in the quality of life and at times can help with airway difficulties.^[2] The benefits of these procedures have been demonstrated consistently.^[3-5] In about 70-80% cases, these procedures are curative and follow-up after surgery usually requires no further treatment especially for obstructive sleep apnea (OSA).^[6]

The McKinsey National Health Service report in the United Kingdom, recently considered tonsillectomy a relatively ineffective and often an unjustified procedure. An audit was carried out to strengthen the argument that

tonsillectomy was a valid treatment, the audit reported that 85% of the patients had all the essential criteria/indications documented, necessitating these procedures. It then concluded that these procedures could reduce patient morbidity and absenteeism from work if performed for the appropriate indications.^[7] The various techniques available to surgeons today include conventional cold steel, electrocautery, microdebrider, ultrasonic scalpel, and Coblation.^[3]

Infections and obstruction broadly speaking are the most common major indications for tonsillectomy and adenotonsillectomy the world over. The Gold standard for assessing OSA is overnight Polysomnography in a sleep laboratory, which is lacking in most centers of the

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world. Therefore assessment is essentially through clinical evaluation as seen in most developing countries.

For a very long time infection had been the most common indication for Tonsillectomy or Adenotonsillectomy up until the 1980s; however recently, obstruction is now more commonly reported as a primary indication. Proponents of this view claim that the introduction of antibiotics has reduced infection rates and therefore, the number of tonsillectomies and Adenoidectomies performed.^[8] Similarly, Parker and Walner observed, that obstruction as an indication was proportionally higher in younger children, while infection was proportionally higher in older children.^[9] Many authors however, believe that an improved understanding of the appropriate indications for tonsillectomy has led to the decline in the numbers of children undergoing this procedure. Against this background, we also decided to perform a retrospective analysis of our patient population and then compared our results to those reported in the medical literature to support and/or refute these claims. Our center uses the traditional cold knife dissection and adenoid curettage for tonsillectomy and adenoidectomy respectively.

Materials and Methods

The case notes of 115 patients aged 0-18 years who had undergone the procedure of tonsillectomy and Adenotonsillectomy between January 2009 and December 2010 were retrospectively reviewed. These procedures were carried out by four^[4] qualified Otolaryngologists according to the indications as laid down by the American Academy of Otolaryngology, Head and Neck Surgery [Table 1]. The

patient groups were primarily recruited from the Ear, Nose and Throat (ENT) clinic records. These patients were divided into three^[3] age ranges: 0-3 years, 4-10 years, and 11-18 years of age.^[9] Analysis of patient case notes included basic information such as: Date of birth, indication (s), type of procedure and date, gender, age groups, and outcome. The indications were then divided into 2 broad groups;^[1] infections; to include recurrent or chronic tonsillitis, recurrent Otitis media secondary to recurrent adenoiditis and peritonsillar abscess.^[2] Obstruction; comprising tonsil and/or adenoid hypertrophy upper airway obstruction and/or OSA/sleep-disordered breathing (SDB). The diagnosis of OSA/SDB was made entirely by history as sleep study/laboratory was not available.

Exclusion criteria

Patients with other co-morbid conditions, e.g., syndromic and neoplastic cases, and patients with incomplete case records. Four case notes were excluded due to missing operation notes and seven due to missing pages from the clinical history and examination.

Data analysis

IBM SPSS (for windows, version 19) software was used to analyze this data. Using a confidence interval of 95% for judging significance, association between variables was explored with a two-tailed Chi-square test.

Results

A total of 115 patient case records were reviewed. Our patient's ages ranged from 5 months to 18 years. The

Table 1: American academy of otolaryngology, head and neck surgery guidelines 2011

Criteria for tonsillectomy	
Criterion	Definition
Minimum frequency of sore throat episodes	7 or more episodes in the preceding year, OR 5 or more episodes in each of the preceding 2 years 3 or more episodes in each of the preceding 3 years
Clinical features (sore throat plus the presence of one or more qualifies as a counting episode)	Temperature >38.3°C, OR 101°F Cervical lymphadenopathy (tender lymph nodes or >2 cm), OR Tonsillar exudate, OR Positive culture for group A beta-hemolytic streptococcus
Hypertrophy causing upper airway obstruction (sleep apnea)	Severe dysphagia (trouble swallowing), sleep disorders, or cardiopulmonary complications. Usually, removal of both the tonsils and adenoids are indicated
Peritonsillar abscess	Unresponsive to medical management and drainage documented by surgeon, unless surgery performed during acute stage
Streptococcal carrier	Chronic or recurrent tonsillitis associated with the streptococcal carrier state and not responding to beta-lactamase-resistant antibiotics
Unilateral enlargement	Unilateral tonsil hypertrophy presumed neoplastic. Although without other indications (abnormal appearance, physical examination, symptoms or history) most asymmetries can be followed conservatively
Adenoidectomy alone	Recurrent acute otitis media or chronic serous otitis media. Adenoidectomy should not be performed with the insertion of the first set of myringotomy (ear) tubes unless there is another indication for adenoidectomy besides chronic otitis media. However, repeat surgery for chronic otitis media should consist of adenoidectomy with myringotomy (with or without myringotomy (ear) tube placement)

mean age was 5.44 years (+3.39 SD) with a median age of 5 years. There were a total of 59 males (51.3%) and 56 females (48.7%) with a male:female ratio of 1.05:1. A total of 68.7% (79) of our patient group had obstruction as an indication while 31.3% (36) had infection as an indication for surgery. Of note, some of our patient cohort had both indications documented but the primary indication for surgery was considered for typing patients into their specific groups.

Figure 1 shows age group of patients by primary indications for tonsillectomy and Adenotonsillectomy. Obstruction as an indication for surgery was highest among children 0-3 years of age at 92.3%; 58.0% amongst older children 4-10 years; 42.9% amongst patients 11-18 years old. While infection accounted for 7.7%; 42.0%; 57.1% with the above corresponding ages, as indication for surgery respectively. Fisher's Exact test revealed a significant association between age groups and indications for these procedures ($P = 0.0001$; Phi and Cramer's $V = 0.373$ respectively).

Further grouping for association by type of procedure and indication revealed 92.6% of tonsillectomies were due to infections and 7.4% due to obstruction; while 4.5% of adenoidectomies were performed for infections and 95.5% for obstruction; however, a combination of both procedures revealed 15.2% and 84.4% for infection and obstruction respectively [Figure 2]. Fisher's Exact test revealed a strong association between the types of procedures and the indications for performing them ($P = 0.0001$; Phi and Cramer's $V = 0.737$ respectively).

Discussion

In our study of 115 patients who had (Adeno) tonsillectomy below the age of 18 years, it was noticed generally that obstruction accounted for a total of 68.7% while infection accounted for only 31.3% as an indication over a 2 year period. Our study, results compares favorably with that of Parker and Walner.^[9] We also noted that with an increasing age obstruction was steadily rising with a significant decline after the age of ten and a nadir at 18 years. Similarly, infection as an indication was noticed more in children between 4 years and 10 years, with a decline after this age as well [Figure 1].

Over the years obstruction has consistently been noted as a major indication for (Adeno) tonsillectomy, with detection of SDB and airway obstruction being on the rise as validated by Lumeng and Chervin in a survey using parent-reported questionnaire for SDB, reported a prevalence of 4-11%.^[10]

In Children below the age of 3 years obstruction was the leading indication for (Adeno) tonsillectomy at 92.3% (36) [Figure 1]. This is similar to the findings of Tom *et al.* (1992) with same patient group where obstruction also accounted for 91.5% (204) as an indication in a survey spanning 2 years.^[11]

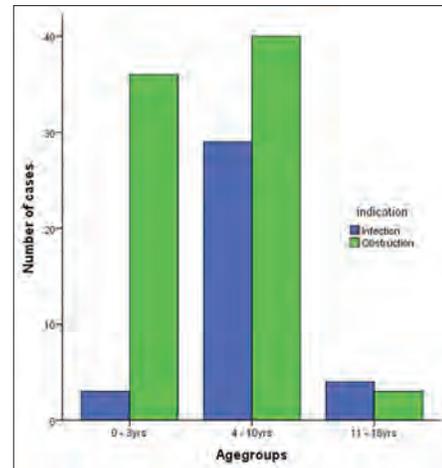


Figure 1: Children were consistently being operated more for obstruction as compared to infection, which was mostly in older children

Rosenfeld and Green in their article reviewing 1722 such procedures performed on all ages between 1978 and 1986, infection was the predominant indication for surgery. At the same time there was a dramatic rise in OSA as an indication from 0% in 1978 to about 19% by 1986.^[11] Similarly, in a 35 year epidemiological survey by Erickson *et al.* between 1970 and 2005 of 8106 patients, upper airway obstruction as an indication increased from 12% in 1970 to 77% in 2005. Several studies in Nigeria have also validated these findings by noting that tonsillectomy and adenoidectomy are being performed due more to obstructive hypertrophy.^[12,13] A study in North America also agrees with this current claim.^[14] Conversely, in 1970, 90% of adenotonsillectomies were performed for infections, which gradually declined to 30% by 2005.^[15]

However, Van den Akker *et al.* in a survey using questionnaires filled by ENT Surgeons and General practitioners, reported enlarged tonsils (42%) and recurrent tonsillitis (40%) as indications for surgery in children 15 years and below respectively.^[16] It may be difficult to directly compare our study population with this because it is a questionnaire based survey involving professionals with variable experiences. Similarly, in contrast to the above, our study shows a tendency toward more obstruction and comparatively less infection up until the first decade of life [Figure 1]. Also the responses were not based on the same age ranges as depicted in our study.

Furthermore, in sub-Saharan Africa Shamboul and Yousif reported Exudative tonsillitis and upper airway obstruction accounting for 72.5% and 16.7% respectively.^[17] Meaning infection was predominantly higher as an indication in their study in Sudan, they also recorded 52.5% (63) of their patient population with intra-operative bleeds. Furthermore, in a recent study in Nigeria, recurrent tonsillitis was the commonest indication for surgery (45.9%) while OSA

accounted for 32.4% of associated indications for surgery.^[18] These findings are at variance with our study, this may probably be due to different approach to patient selection and a smaller sample size compared to ours.

We also found that “obstruction was indicated proportionally higher in younger children, while infection was indicated proportionally higher in older children.” Other studies also validate this finding although in some different age groups were used up to 18 years of age making direct comparison a bit difficult. However, all allude to the same conclusions.^[9,11,19,20]

We did not find any significant difference in Children between the ages of 11 years and 18 years receiving tonsillectomy or (Adeno) tonsillectomy for infection or obstruction during our study [Figure 1]. This is in variance with the survey of Parker and Walner who found that a much larger proportion of children in the same age range were operated for obstruction.^[9]

Our result may be attributable to progressive shrinkage in adenoidal size with age, the older child who is able to report earlier or merely due to the difference in how indications are recorded in different centers. Perhaps, neoplastic cases due to lymphoid swellings may also have accounted for this. Our study also revealed a significant relationship between adenotonsillectomies and obstruction as an indication while majority of the adenoidectomies performed were due to obstruction [Figure 2]. Although, we also observed that a greater majority of tonsillectomies in this study were carried out as a result of infection [Figure 2], this compares favorably with the study of Shamboul and Yousif.^[17]

Limitations of this study include the fact that while indications are clear it is fairly common for infected tonsils and/or adenoids which are either chronically or acutely infected to be enlarged and therefore be recorded

as having some degree of obstruction. This may account for the overlap in some patients having both infection and obstruction as indications. Therefore, the primary indication for the surgery was considered. Furthermore, patients may be operated upon with less than the number of indications required in standard protocols due to other associated social, cultural and financial reasons; stemming from poor patient record keeping, lack of transportation or funds to return for subsequent care or follow-up, the risk of these patients being offered unsterilized near fatal options by unorthodox practitioners such as traditional or religious healers etc. All these may have affected the validity and make comparisons difficult when compared to other studies. Furthermore, our relatively small population group and shorter time period may also contribute to some degree of statistical error.

Finally, as with many studies, there are difficulties in chronicling indications for tonsillectomy and Adenotonsillectomies due to different study methods and different surgical techniques used. Therefore, the strength of our result lies in the single method of surgery (cold dissection) and our resolve to document our experience in sub-Saharan Africa.

It will be novel to try to find out the drift in indications with regard to gender using a larger cohort, our attempt in this study revealed only a negligible relationship. The significance of this is presently unclear to us and therefore requires further research.

Conclusion

In the last few decades obstruction has steadily risen as a prominent indication in younger children for tonsillectomy and (Adeno) tonsillectomy. While on the other hand, infection as an indication is more frequently encountered in older children. Our present study validates these assertions as well. It may be difficult in our setting to adhere strictly to the criteria as proposed in the Scottish intercollegiate guidelines network and American Academy of Otolaryngology, Head and Neck Surgery guidelines. This is particularly so in developing countries such as ours with varying cultural and religious taboos. Against this background otolaryngologists need to propose indications relevant to our setting.

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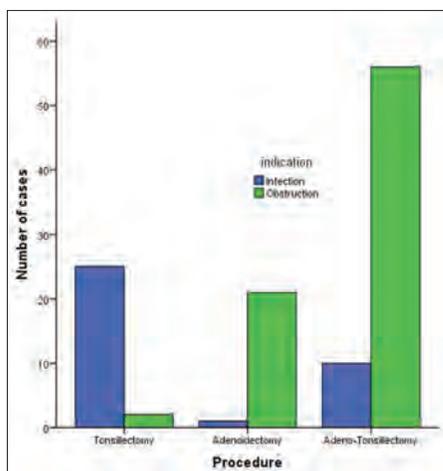


Figure 2: A combination of adenoidectomy and tonsillectomy was usually due to obstruction than each procedure alone

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