



## YouTube: A good source of information on pediatric tonsillectomy?☆

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### ABSTRACT

**Objective:** To investigate YouTube as a patient information source on pediatric tonsillectomy.

**Methods:** YouTube was searched on July 31, 2012 for the search terms *pediatric tonsillectomy (PT)*, *tonsillectomy (T)* and *tonsil surgery (TS)*. Non-English videos were excluded. Two physician reviewers independently assessed the videos for characteristics, usefulness, and information source. Usefulness was assessed according to a checklist developed by the authors. Any discrepancies were resolved by consensus. Data were analyzed with SPSS software.

**Results:** One hundred fifty-six videos were included in the analysis. Forty videos were classified as very or moderately useful (25.6%). Sources of the videos were as follows: patient experience, 103 videos (66%); physician, 30 (19%); surgical technique, 14 (9%); and news report, 9 (6%). Physician sourced information was generally at least moderately useful (58%) and patient experience videos were the predominant source of videos categorized as not useful or misleading (50%). Physician sourced information (coefficient = 0.61; 95% CI: .21 to 1.00,  $p = 0.003$ ) and PT search term (coefficient = 0.26; 95% CI: 0.05 to .47,  $p = 0.017$ ) were the most useful videos after adjusting for mean duration, days online, number of views and page search.

**Conclusion:** YouTube has a large number of videos on pediatric tonsillectomy with a variety of content ranging from very useful to not useful, and misleading. Health care professionals must recognize the potential influence that these video Web sites may have on patient attitudes.

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## 1. Introduction

Tonsillectomy is a common surgery performed on pediatric patients by Otolaryngologists. Prior to the information age, patients and their caregivers would usually rely on physicians to provide education on diagnoses and treatment options. The advent of easily accessible health-related information on the Internet [1] has changed this physician-patient relationship. Fifty million Americans search health-related information on the Internet monthly, with 100 million viewers accessing websites such as YouTube [2].

Two surveys of caregivers of children undergoing otolaryngology procedures showed the prevalence of Internet use as an information source and influence on clinical decision-making [3,4]. One hundred seventeen parents or guardians of children undergoing otolaryngologic surgery in a private hospital in Brazil showed

that 90% used the Internet to search for information on the disease and surgical treatment, only 10% discussed this information with their physician, and 78% reported that this information had impact upon the decision to have their child undergo surgery [3]. At Cincinnati Children's Hospital, Boston et al. surveyed 204 caregivers and showed that 83% of responders had Internet access, and of these, 48% searched the Internet for information related to their child's diagnosis or surgical procedure, and 93% stated that this information was helpful and understandable and 84% reported that it influenced or somewhat influenced their decision-making [4].

YouTube is a popular source of video blogs and short original videos uploaded by individuals [5]. Most videos on YouTube are based on personal experience although some videos from professional sources such as physicians are available. This diversity of authorship and lack of peer-review process on YouTube has led to the posting of inaccurate or misleading health information [1,2].

Recent studies have evaluated the quality and accuracy of pediatric otolaryngology written health information on the Internet. These show a heterogeneous assortment of high and low quality information sources [6,7]. Since these sources are sought out by patients and their caregivers and play a role in their decision-making process, physicians should be cognizant of the

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availability and quality of Internet-based information. No search has been carried out to date regarding the usefulness of online videos for pediatric tonsillectomy. In this study, the video-based source YouTube, was evaluated as a patient source of information for pediatric tonsillectomy.

**2. Methods**

YouTube ([www.youtube.com](http://www.youtube.com)) was searched on July 31, 2012 for videos containing relevant information about tonsillectomies in pediatric patients. The following search terms were used: *pediatric tonsillectomy (PT)*, *tonsillectomy (T)*, and *tonsil surgery (TS)*. Non-English videos were excluded. On the assumption that no user would go beyond the first three pages for a specific search term, only the videos on these pages were evaluated. This study did not require approval by the Hamilton Health Sciences/Faculty of Health Sciences Research Ethics Board.

Two physician reviewers (J.S. and S.N.) independently assessed each video for characteristics (duration, number of views, days since upload, likes/dislikes), content (usefulness, misleading), and source (patient experience, surgical technique, physician, news report). The authors created a checklist for evaluating usefulness (Table 1). At present, no validated tool for this purpose exists in the literature. Any disagreements were resolved with consensuses.

Data was summarized. Categorical data was reported as frequencies and relative frequencies and continuous data as mean with standard deviation or median with minimum and maximum. The ANOVA model was used to compare the means and Tukey method was used for post hoc comparisons of the means. Generalized linear regression analysis was performed to adjust for the effect of video factors like duration of video, number of days online, number of views and page search.  $R^2$  indicating the amount of explained variation in the model, coefficients with 95% CI and *p*-values were reported. Data were analyzed with SPSS software version 20 (SPSS Inc., Chicago, IL) by a statistician (F.F.).

**3. Results**

The search identified 2594 videos (search terms *PT* = 86 videos, *T* = 1880, *TS* = 628). After limiting the review to the first three pages of search results and excluding irrelevant videos, 156 videos were reviewed (*PT* = 38, *T* = 59, *TS* = 59). Descriptive statistics are listed in Table 2. Only five videos were very useful (3.2%). Most videos were somewhat useful (39.2%) or not useful (32.7%). Three videos were misleading (1.9%).

Physician sourced information was generally at least moderately useful (58%). Patient experience videos were the predominant source of videos categorized as not useful or misleading (50%) (Fig. 1). The mean usefulness of the physician sourced information

was significantly higher than patient experience videos ( $p < 0.001$ ) but not for surgical technique ( $p = 0.252$ ) and news report sourced information ( $p = 0.893$ ). The search term *PT* yielded the highest percentage of at least moderately (34%) and the lowest percentage of not useful or misleading videos (11%) (Fig. 2). The search term *T* yielded 29% of at least moderately and 14% of not useful or misleading videos. The mean usefulness of the videos for search term *TS* was significantly lower than those for *PT* ( $p < 0.001$ ) and also those for *T* ( $p < 0.001$ ). Adjusting for mean duration, days online, number of views and page search, physician sourced information (coefficient = 0.61; 95% CI: .21 to 1.00,  $p = 0.003$ ) and *PT* search term (coefficient = 0.26; 95% CI: 0.05 to .47,  $p = 0.017$ ) were still the most useful videos for tonsillectomy. Page search 1 provided the most useful video information for tonsillectomy compared to page search 2 and 3 with coefficient of 0.20 (95% CI: 0.01 to 0.34,  $p = 0.043$ ). There were no significant differences between the tonsillectomy videos usefulness and mean number of likes ( $p = 0.260$ ) and dislikes ( $p = 0.898$ ) indicated by the viewers.

**4. Discussion**

To the best of our knowledge, this is the first study to evaluate the usefulness and accuracy of YouTube as a patient source of information for pediatric tonsillectomy. Only 3.2% of videos reviewed were deemed to be very useful and of these, physicians posted the majority. One video was duplicated in the search by two different search terms (*PT* and *T*) [8]. We cannot recommend the patient experience video that was categorized as very useful as the informative narration was visually set against a violent video game [9]. Therefore, we would support three of the videos reviewed as the most useful adjuncts to patient education (Table 3) [8,10,11]. Most videos were categorized as somewhat useful or not useful (71.9%). The most useful videos were identified with the search term *PT*; however, 23 out of 61 results from this search (37.7%) were excluded because of non-relevant content.

YouTube is user-driven yet not peer-reviewed [12]. Previous studies have evaluated YouTube as a source of information on the Epley maneuver [13] as well as other non-otolaryngology topics [1,2,12,14,15]. Content may be biased because the majority of videos are personal testimonials [2]. Our study determined three videos to be misleading. The first video was posted by an adolescent pediatrician who presented himself as an expert and reported inaccurate indications for tonsillectomies when compared with current treatment guidelines [16]. The second video showed a child undergoing tonsillectomy without a general anesthetic in Belarus [17]. This procedure is never performed without a general anesthetic in our institution. The third video was a patient who attributed the need for tonsillectomy to lactose in the diet [18]. Patients may come across these resources and form inaccurate opinions regarding tonsillectomies.

A number of studies in the published literature have reported on the quality of Internet information in pediatric otolaryngology. Volsky et al. reviewed the top five URLs for 24 diagnoses, identified eMedicine, NLM/NIH MedlinePlus and Wikipedia as the three most referenced sources [7]. The authors scored their content accuracy at 84% ( $p < 0.05$ ), 49%, and 46%, respectively based on an author-derived scale and comparison to two widely used Otolaryngology textbooks. The highest number of errors was identified in Wikipedia sources, which relies on community intellect to maintain its literature, similar to YouTube. MedlinePlus URLs were the most user-friendly when evaluated by Flesch-Kinkaid Reading Level and Fresch Reading Ease, scoring at a grade 8 or 9 grade level as opposed to e-Medicine (>12th grade,  $p < 0.05$ ). Roshan et al. (2008) evaluated the role of information available over the Internet for parents of children undergoing tonsillectomy according to the LIDA instrument (a validated method of

**Table 1**  
Usefulness checklist.

Preoperative	✓ Indications
	✓ Specialist referral
Intraoperative	✓ Basic tonsil information
	✓ Surgical technique
	✓ Anesthetic
Postoperative	✓ Bleeding
	✓ Recovery
	✓ Pain
	✓ Delayed bleeding
	✓ Dehydration
	✓ Other
Usefulness total points available: 11	Very useful 8–11
	Moderately useful 4–7
	Somewhat useful 1–3
	Not useful 0

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