

Pediatric Adenotonsillectomy in a Low Resource Setting: Lessons and Implications

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ABSTRACT

Objectives: To examine the practices related paediatric adenotonsillectomy in our setting especially in relation to blood request and transfusion, routine investigations, post-operative analgesic practice and complications. **Methods:** We reviewed the record of paediatric patients who had adenotonsillectomy in our facility over a 5-year period to obtain relevant information to our study. **Results:** There were 33 males and 19 females with mean age of 3.27 ± 2.76 years. Sinus tachycardia was found in 11(21.2 %) of the subjects and T wave anomaly in 1(1.9%) of the subject. Thirty-five (67.3%) patient had adenotonsillectomy, 13(25.0 %) adenoidectomy only and 4(7.7%) tonsillectomy only. Majority of the patients (24, 46.2%) were classified as ASA physical status I. Pre-operative blood request rate was high (49, 94.3%) though the transfusion rate was 1.9 % (1 patient). Acetaminophen combined with other analgesics was used for post-operative analgesia for most of the patients. There was significant weight gain post-operatively among patient **Conclusions:** Cold steel adenotonsillectomy is safe and effective in our environment. We believe that there is no justification for routine pre-operative blood request as a preconditions for surgery. We also like to suggest that post-operative pain management be streamlined taking into consideration the available analgesics in our setting.

KEYWORDS: Adenoidectomy, analgesia, pediatric, tonsillectomy, transfusion

INTRODUCTION

Adenotonsillectomy is one of the most common surgeries performed in the pediatric age group.^[1] The operative methods of this procedure are generally grouped into cold steel/dissection methods and more modern methods such as coblation, use of a harmonic scalpel, suction diathermy, radiofrequency ablation, electrocautery, microdebrider, and laser. Proponents and opponents of these modern methods have hinged their arguments on issues bothering on pain, bleeding, and duration of admission.^[2] In our setting, cold steel adenotonsillectomy is generally the common practice.^[1,3] This method usually involves curetting for the adenoid and

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intracapsular dissection with tonsillar dissector under general anesthesia. Hemostasis, the main concern of this approach, is ensured by dissection at the right plane. Due to the risk of hemorrhage, preoperative clotting profile is done in conjunction with grouping and cross-matching of blood for possible transfusion. In our practice, blood availability for elective surgery usually relies on getting the relatives to donate blood or source for suitable donors for grouping and cross-matching in readiness for surgery. There is an increasing challenge in getting safe blood available and as a consequence of the scarcity, there is an increase in case postponement and cancellation.^[4-7] In the light of this challenge with blood availability for our patients, we undertook this study to review our practice in relation to utilization of blood among pediatric patients undergoing adenotonsillectomy in our facility.

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METHODS

This was a retrospective study. The medical records of patients ≤16 years of age who had adenotonsillectomy under general anesthesia in our facility over a 5-year period (from January 2010 to December 2014) were retrieved. We extracted the biodata, presentation, preoperative investigations, preoperative blood request, surgery performed records of transfusion, and transfusion-related complications.

The data were entered into the SPSS Statistics Software Version 20 (IBM Corporation) for Windows and data were presented as frequencies or proportions of the total.

RESULTS

There were 74 cases identified in the period under review, but only 52 case notes were retrieved made up of 33 males and 19 females. The mean age was 3.27 ± 2.76 years with an age range of 1–16 years. Table 1 shows the presenting symptoms and rate of occurrence. Figure 1 shows the grade of tonsillar enlargement among the patients. Sinus tachycardia was found in 11 (21.2%) of the subjects and T wave anomaly in 1 (1.9%) of the subject. One patient suspected to have cardiovascular anomaly was found to have a ventricular septal defect with mild regurgitation and normal ventricular function. However, cardiologist review ruled otherwise. Thirty-five (67.3%) patient had adenotonsillectomy, 13 (25.0%) adenoidectomy only, and 4 (7.7%) tonsillectomy only. Twenty-four (46.2%) belonged to American Society of Anesthesiologists (ASA) physical status Class I, 25 (48.1) belonged to Class II, 1 (1.9%) belonged to Class IV, while the ASA status of two (3.4%) were not specified. Table 1 shows the preoperative investigation result.

Preoperative blood request rate of 94.3% (49 patients) was found in the study. However, the mean intraoperative blood loss is 66.1 ± 56.8 ml. The transfusion rate is 1.9% (one patient) intraoperative. This patient had an excessive primary hemorrhage of over 400 ml. Postoperative transfusion was not carried out in any of the subjects.

Etamsylate, a platelet aggregator, was used in 15 (28.8%) of the subjects. There was no significant difference in the use of etamsylate with regards to the rate of intraoperative transfusion ($P = 0.310$).

Table 1: Presenting symptoms

| Presenting symptoms | Frequency (%) |
|----------------------------|---------------|
| Recurrent nasal discharge | 50 (96.2) |
| Snoring | 49 (94.2) |
| Difficulty with breathing | 46 (88.5) |
| Sleep apnea | 28 (53.8) |
| Failure to thrive | 16 (30.8) |
| Difficulty with swallowing | 11 (21.2) |
| Recurrent fever | 7 (13.5) |
| Halitosis | 2 (3.8) |
| Ear discharge | 1 (1.9) |

One patient developed fever intraoperatively and was successfully managed with intravenous acetaminophen. One patient had cardiac arrest but was promptly resuscitated and was transferred to the Intensive Care Unit (ICU) after the procedure.

Acetaminophen combined with other analgesics was used for postoperative analgesia for most of the patients [Figure 2]. Figure 3 shows the overall use of the different categories of analgesics.

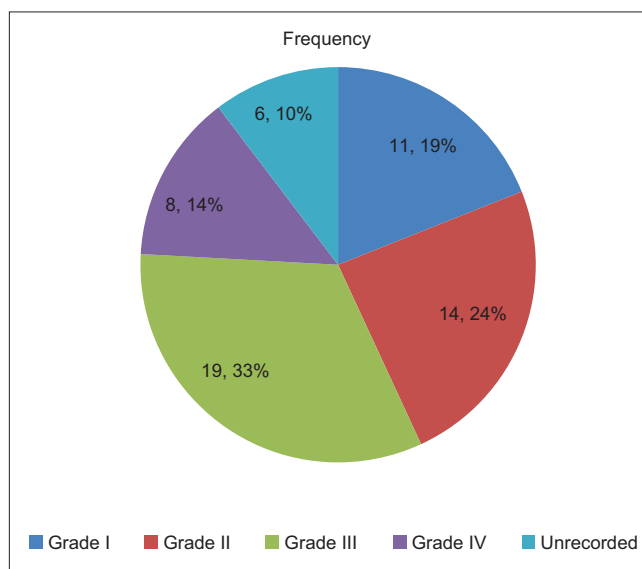


Figure 1: The grade of tonsillar enlargement among the patient

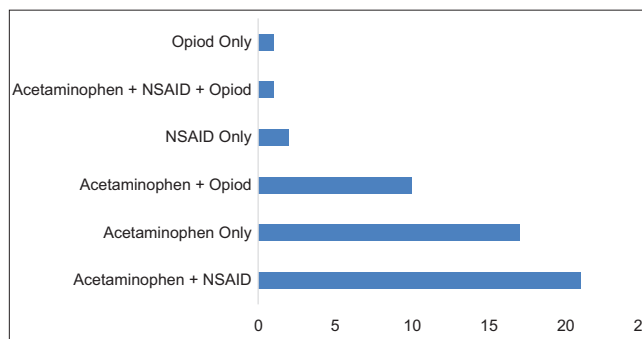


Figure 2: Pattern of analgesic use postoperatively in patients

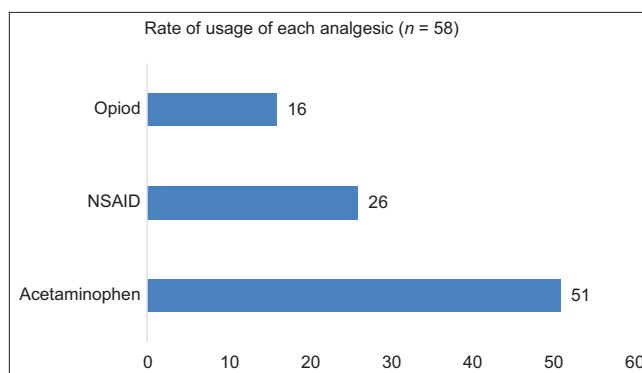


Figure 3: Type of analgesic used and rate of use

Table 2: Preoperative hematological investigation findings

| Preoperative investigations | Mean (SD) |
|-----------------------------|-------------------|
| Preoperative PCV (%) | 37 (4) |
| Preoperative WBC | 8,067 (3,653) |
| Prothrombin time (s) | 14.9 (1.4) |
| PTTK (s) | 35.9 (11.0) |
| INR | 1.1 (0.1) |
| Platelet count | 221,474 (102,665) |

PCV: Packed cell volume, WBC: White blood cells, PTTK: Partial thromboplastin time test kaolin, INR: International normalized ratio, SD: Standard deviation

Table 3: Rates of postoperative complications

| Complications | n (%) |
|-------------------|-----------|
| Throat pain | 16 (30.8) |
| Vomiting | 5 (9.1) |
| Fever | 5 (9.1) |
| Trismus | 1 (1.9) |
| Epigastric pain | 1 (1.9) |
| Airway compromise | 1 (1.9) |

Five patients had postoperative nausea and vomiting (PONV) and were successfully managed. Moreover, one patient developed airway compromise postextubation and was re-intubated and transferred to ICU for further management. There was no case of emergency reoperation or mortality. The summary of haematological profile of subjects and rates of post-operative complications are shown in Tables 2 and 3 respectively.

Twenty-one patient had both pre- and post-operative weight assessment at 6–8 weeks. Among these patients, the mean pre- and post-operative weight was 11.8 ± 3.6 kg and 13.3 ± 3.3 kg, respectively (Wilcoxon signed rank test $P < 0.001$).

DISCUSSION

Symptoms analysis shows that recurrent nasal discharge, snoring, and difficulty with breathing are the top presenting complaints. Although sleep apnea ranked fourth, it is possible that caregiver may not have noticed this episode as much as the snoring. However, our findings still buttress the assertion that with more effective antimicrobial therapy the obstructive symptoms as an indication for surgery has increased over the infective symptoms in the last decades.^[8] If surgery does not immediately eliminate these top symptoms, there may be issues with low satisfaction on the parts of parents/caregivers.^[1]

In our setting, the fear of bleeding associated with adenotonsillectomy has resulted in a policy of rigorous preoperative investigations. Apart from scaling the hurdle of normal investigation results which includes normal clotting profile, patients have to make available obligatory one pint of blood before qualifying for surgery. Why this practice persists in not understandable as it has been shown that coagulation

testing prior to tonsillectomy and adenoidectomy in children is not cost-effective.^[9] This also questions the need for grouping and cross-matching which is high in our subjects compared with the rate of transfusion. In our setting where most patients pay out of pocket, it makes sense to discard this wasteful practice. However, a detailed family history and past medical history should be obtained to rule out bleeding disorders.

The pre- and post-operative weight showed a significant gain. This is consistent with other studies that showed rapid weight gain in postadenotonsillectomy.^[10,11]

A major cause of morbidity following adenotonsillectomy is the postoperative pain.^[12] Acetaminophen in combination with nonsteroidal anti-inflammatory drugs (NSAIDs) or opioids was the mainstay for postoperative pain management in most of the patients. Opioids should be avoided when there is fear of respiratory depression. NSAIDs have been favored by some authors in the management of posttonsillectomy pain however there exist concerns regarding the effect of NSAIDs on platelets and increased risk of bleeding in the postoperative period.^[13] Recent studies however have found that there is no significant increase risk of bleeding except with the use of aspirin.^[13-15]

Perioperative complications in this series include PONV seen in five (8.6%) patients is low. This rate compares favorably with the incidence of PONV among adenotonsillectomy patients reported by other authors.^[16]

CONCLUSION

In view of the low transfusion rate in our study, our protocol of routine grouping and cross-matching cannot be justified when there are no risks factors for bleeding disorders. We there recommend that this practice should be abandoned. This study, however, suffers the limitations common to all retrospective reviews viz-a-vis small sample size. A prospective multicenter study could help to validate some of the assertions of this review.

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Conflicts of interest

There are no conflicts of interest.

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