

ORIGINAL ARTICLE

EFFICACY OF GASTRIC ASPIRATION IN REDUCING POST-TONSILLECTOMY VOMITING IN CHILDREN

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Background: Nausea and vomiting are two of the most frequently experienced postoperative side effects complicating one third of the cases. The objective of this study was to determine the effectiveness of gastric decompression in reducing the incidence and complications associated with post-tonsillectomy vomiting in children. **Methods:** This was a randomised control study conducted at the ENT Department, Ayub Teaching Hospital Abbottabad from January to June 2012. Patients included in this study were divided into two groups, group A undergoing gastric aspiration and group B not undergoing gastric aspiration. Gastric aspiration was done with an oro-gastric tube placed under direct visualisation while the patient was still under general anaesthesia. The incidence of vomiting, episodes of vomiting and the need for rescue anti-emetic prophylaxis were noted. **Results:** A total of 54 patients were included in the study. Their ages ranged from 5 to 12 years with mean age 7.85 ± 2.18 years. No statistically significant difference ($p > 0.05$) was noted between the two groups for the patients experiencing vomiting (33% vs 41%, $p = 0.389$), the mean number of episodes of vomiting (0.71 vs 0.88, $p = 0.555$), and patients requiring rescue anti-emetics (11% vs 15%, $p = 0.500$). **Conclusion:** Gastric aspiration during tonsillectomy is not useful in reducing post-tonsillectomy vomiting.

Keywords: Gastric aspiration, Tonsillectomy, Vomiting, Postoperative

INTRODUCTION

Tonsillectomy remains the most common surgical procedure performed worldwide.¹ Nausea and vomiting are two of the most frequently experienced postoperative side effects, with major concern for the patients and physicians in the postoperative period.² Pain, nausea, vomiting, oedema and poor oral intake are the most common morbidities following tonsillectomy.³ Tonsillectomy is associated with an incidence of postoperative vomiting ranging between 40–73%.^{4–6} The prevalence of postoperative nausea and vomiting may complicate about one third of surgical procedures.^{2,6} Persistent vomiting is costly both in terms of financial effect and potential medical sequela.^{7–9} The incidence of postoperative emesis is more frequent in paediatric patients than adults.^{4,10} The cause of postoperative vomiting in the paediatric population is thought to be multifactorial with patient characteristics, anaesthetic medications, surgical manipulation, and postoperative care all hypothesised to contribute.^{7,11,12} In response to this “Big ‘Little’ Problem”,⁵ multiple studies have investigated the effects of newer anaesthetic agents and anti-emetic prophylaxis on postoperative vomiting.^{4,13} In general, the results of these studies have been mixed. Marginal improvements, unfavourable adverse effect profiles, and high costs have limited the universal adoption of any single protocol.^{4,14} The use of gastric aspiration in reducing postoperative vomiting has been advocated in the older medical literature and several review articles.^{7,11,15}

However, recent studies have failed to demonstrate any benefit of gastric aspiration in reducing postoperative vomiting in gynaecologic or general

surgical patients.^{4,11} Further, a recent literature search failed to find any prospective studies examining the effectiveness of gastric aspiration in reducing postoperative vomiting following tonsillectomy, adenoidectomy, or adeno-tonsillectomy.⁷ This study aimed to determine efficacy of gastric aspiration in reducing the incidence and complications associated with post-tonsillectomy vomiting in children.

MATERIAL AND METHODS

This was a randomised control study conducted at the ENT Department, Ayub Teaching Hospital from March to June 2012. The inclusion criteria was children of either sex below 13 years age with history of chronic tonsillitis, recurrent episodes of acute tonsillitis and/or hyperplastic obstructive tonsils causing sleep apnoea syndrome. Exclusion criterion was patients who received anti-emetics within 24 hour before surgery and children with any remarkable history of gastrointestinal disorders. The registered subjects were randomly allocated into two groups. Group A included patients who underwent gastric aspiration with an orogastric tube prior to extubation following surgery ($n=27$). Group B included patients who did not undergo gastric aspiration ($n=27$).

Demographic information was recorded. Baseline investigations like viral profile, Hb, Bleeding time and clotting time were done in all patients. Patients fasted after midnight and were not given any pre-medication. The anaesthetic protocol was standardised throughout the study. All patients underwent tonsillectomy by cold knife dissection method. In group A, an oro-gastric tube was placed postoperatively under

direct visualisation and the gastric contents were aspirated prior to emergence from anaesthesia. A mouth gag was in place at the time of suctioning. In group B, the patients underwent tonsillectomy without undergoing gastric aspiration.

All children were transferred to the recovery room where standard monitoring was established, and they were observed for two hours. The incidence of vomiting was recorded by the nurse in the recovery room who was unaware of the groups of patients or the purpose of study. Vomiting was defined as the forceful expulsion of gastric contents from the mouth. Retching and nausea were not considered vomiting for the purpose of this study. After transfer to the ward, a soft diet was offered to all children during their hospital stay. Also, a maintenance intravenous infusion was kept until their oral intake was judged adequate (oral ingestion of 100 ml of fluids and 100 ml of soft food within 4 hours). Patients who vomited more than twice in the hospital were given metochlorpropamide 0.15 mg/Kg intravenously. Postoperative pain was addressed with rectal paracetamol 30 mg/Kg 6 hourly. Patients were observed for 24 hours after surgery. Data on the incidence, number of episodes of vomiting, and administration of rescue prophylactic anti-emetics were recorded and was analysed using SPSS-11.

RESULTS

A total of 54 patients were included in the study. They were randomised into two groups, Group A and B with 27 patients in each. The age of patients varied from 5–13 years with mean age was 7.85±2.18 years. The two groups did not differ statistically with respect to age distribution with $p=0.342$ (Table-1). In Group A there were 15 (55%) boys and 12 (45%) girls while Group B had 14 (52%) boys and 13 (48%) girls.

There were no statistically significant differences between the groups in the overall incidence of vomiting (9 patients vs 11 patients, $p=0.389$) and mean number of episodes of vomiting (0.71 vs 0.88 with $p=0.555$). Prophylactic anti-emetic rescues were required in 11% (3/27) of Group A and 15% (4/27) of Group B patients with ($p=0.500$). (Table-2)

Table-1: Age and sex distribution in groups

Variables	Group A (n=27)	Group B (n=27)	p
Boys	15 (55)	14 (52)	0.50
Girls	12 (45)	13 (48)	
Age (Years)	7.85±2.18	7.29±2.06	0.342

Table-2: Clinical results

Variables	Group A (n=27)	Group B (n=27)	p
Post-op vomiting [No. (%)]			
No	18 (67)	16 (59)	0.389
Yes	9 (33)	11 (41)	
Episodes of vomiting			
(Mean±SD)	0.71±1.10	0.88±1.18	0.555
Rescue prophylactic Anti-emetics [No. (%)]			
No	24 (89)	23 (85)	0.500
Yes	3 (11)	4 (15)	

DISCUSSION

Tonsillectomy is one of the most common procedures performed in hospitals throughout the world. Postoperative vomiting represents one of the most common complications and the single most common reason for unplanned hospital admission following adenotonsillectomy.^{8,12,16} In a study of 1,476 paediatric patients undergoing general anaesthesia, Kermode *et al*¹² found 24% overall incidence of postoperative vomiting and 54% incidence of vomiting following tonsillectomy. Incidence of post-tonsillectomy vomiting as high as 75% has been reported in the literature.^{12,17} In addition to the potentially fatal complications of dehydration, electrolyte imbalance and aspiration pneumonia, vomiting has been reported has been reported to result in a level of physical and psychological distress exceeding that of the operation in 54–71% of patients surveyed in an ambulatory setting.^{8,9} The cause of postoperative vomiting in the paediatric population is thought to be multi-factorial with patient characteristics, anaesthetic medications, surgical manipulation, and postoperative care all hypothesised to be contributing factors.^{8,11,16}

Many studies have attempted to use various interventions to reduce postoperative vomiting. In a review article addressing anaesthetic issues in outpatient otolaryngology surgery, Pasternak¹¹ stated that gastric aspiration with an oro-gastric tube prior to extubation is essential to decreasing nausea, emesis, and pulmonary aspiration. Further, this practice has been advocated in multiple review articles dating several decades.⁷

The use of a gastric tube to decompress the stomach is generally believed by anaesthetists to be an effective way of decreasing postoperative nausea and vomiting. The efficacy of gastric aspiration in reducing post-surgical vomiting has been addressed in 2 recent prospective studies. Hovorka *et al*¹⁸ studied 201 patients who underwent hysterectomy and found no significant difference in the incidence of vomiting between patients who underwent postoperative gastric aspiration and patients who did not (79% vs 70 respectively). Trepanier and Isabel¹⁹ actually demonstrated a higher incidence of vomiting in patients who underwent postoperative gastric aspiration with an oro-gastric tube (17% vs 6.8%) in a study of 256 ambulatory general surgical patients. Older studies show conflicting results, some showing a beneficial effect¹⁵, while other reported either no effect²⁰ or a deleterious one²¹. These studies seem to indicate that reducing gastric distension with an oro-gastric tube does not reduce postoperative vomiting. These studies cannot be directly correlated with paediatric otolaryngology because patients who underwent tonsillectomy experienced additional pro-emetic stimuli including intra-gastric blood, manipulation of the posterior pharynx and stimulation of the trigeminal nerve. Therefore, addressing gastric aspiration in patients who undergo tonsillectomy remains a critical next step.

The efficacy of gastric aspiration in reducing post-tonsillectomy vomiting is available indirectly from several studies. Ferrari and Donlon²² and Furst and Rodarte²³ in their investigations of the role of prophylactic anti-emetics in reducing post-tonsillectomy vomiting, required all patients, including the control groups, to undergo gastric aspiration. The incidence of vomiting in these control groups was high (62% and 70% respectively). In comparison, 3 similar studies evaluating prophylactic anti-emetics were designed so that no patients underwent gastric aspiration. The control groups of these studies also had high incidences of post tonsillectomy vomiting (54–73%).^{4,13,24} Although experimental and surgical variables preclude the direct statistical comparison of these studies, they seem to indicate that gastric aspiration may not significantly affect the incidence of post-tonsillectomy vomiting.

According to our study there was no statically significant reduction in the incidence of vomiting, number of episodes of vomiting and need of rescue prophylactic anti-emetics. This is consistent with the results of the studies noted earlier. The incidence of vomiting in our study group and control groups are comparable with other studies and that of Al-Khotum *et al*⁴ who reported 34% vs 37% incidence of vomiting between the two groups. The mean numbers of episodes of vomiting according to a Nemer study were 2.4 and 2.3, while 0.8 and 0.7 between the two groups were reported by Jones *et al*⁷ in a study of 80 paediatric patients. Our study results of mean number of episodes of vomiting between the two groups are comparable with that of Jones *et al*⁷. According to Al-Khotum *et al*⁴ study 13% required rescue prophylactic anti-emetics in patients who underwent gastric aspiration while 10% in those who did not undergone gastric aspiration while our results showed 11% in those who underwent gastric aspiration and 15% in those without gastric aspiration ($p=0.5$).

CONCLUSION

Gastric aspiration with an oro-gastric tube does not decrease postoperative vomiting, mean number of vomiting episodes and the need of prophylactic anti-emetics which is consistent with the results of previous studies. Routine use of oro-gastric tube placement for gastric aspiration following paediatric tonsillectomy is not advisable and requires reassessment.

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