

Wingate J, McNaull P, Bortsov A
University of North Carolina , Chapel Hill , NC, USA

INTRODUCTION

Post-operative vomiting (POV) is an uncomfortable and costly side effect of anesthesia and surgery (1). In order to elucidate the effects of post-operative oral intake on POV, we conducted a randomized trial of apple juice versus water. We hypothesize that offering apple juice to children in the post-anesthesia care unit (PACU) may decrease their rate of POV more effectively than water.

METHODS

Following IRB approval, consent, and assent, 168 participants were enrolled. Patients age 2-17 years undergoing dental restoration, strabismus surgery or adenotonsillectomy on an outpatient basis were included (Table 1).

Anesthetic protocol included volatile anesthetics with limited opioid doses, orogastric suction and ondansetron and dexamethasone according to availability. Nitrous oxide, and ketamine were avoided. In the (PACU), subjects were randomized to receive apple juice or water. Episodes of vomiting were recorded and twenty-four hour follow-up was attempted.

RESULTS

One hundred thirty seven patients have so far completed the study. In order to detect a thirty percent decrease in POV, we plan to enroll 216 subjects. Presently, there is no difference in POV between the apple juice and water groups in the PACU or within 24 hours post-operatively (Table 2).

DISCUSSION

Following oral fluid intake, gastrointestinal motility increases due to the volume and solute load presented to it. Causes of POV in our subjects may be blood in the stomach (2), stimulation of the chemoreceptor trigger zone or decreased splanchnic blood flow.

We hypothesized that children who receive apple juice instead of water as their first oral intake in the PACU may vomit less often than those who first drink water. This hypothesis is based on evidence that sugared clear liquids may empty from the stomach rapidly (3).

Limitations of the study include inability to assess nausea, prompt return of ondansetron from national shortage (4), incomplete blinding and exclusion of patients with enteric feeding tubes.

CONCLUSION

Post-operative vomiting is a common cause of discomfort for our patients. Many prophylactic techniques have been studied to prevent this complication, however our study aims to evaluate POV from the PACU. We hope to present an evidence-based method for choosing first oral intake after emergence that reduces POV.

REFERENCES

1. Villeret et al. *Paediatr Anaes* 2002 12: 712–717
2. Orange, et al. *Pediatr Anaes* 2012 22: 890-896
3. Schmitz et al. *BJA* 2012 108 (4): 644-7
4. Bowhay, et al. *Pediatric Anesthesia* 2001 11: 215-221

Table 1. Characteristics of study participants

	Apple n=82		Water n=86		P*	
	Mean	SE	Mean	SE		
Age	5.4	0.4	6.1	0.4	0.21	
Weight	23.6	1.5	25.7	1.9	0.39	
Length of surgery, min	103.5	6.9	97.5	4.9	0.48	
Oral intake of fluids in PACU, ml	66.8	6.5	60.2	5.3	0.43	
	<i>n</i>	%	<i>n</i>	%		
PACU antiemetic	no	71	93	78	96	0.49
	yes	5	7	3	4	

*ANOVA test or Fisher exact test

Table 2. Post-operative vomiting by group

		Study group				P*
		Apple		Water		
		<i>n</i>	%	<i>n</i>	%	
Intention to treat		n=66		n=71		
Nausea or vomiting	no	56	85	58	82	0.65
	yes	10	15	13	18	
Vomiting 24h	no	54	90	59	92	0.76
	yes	6	10	5	8	
Retching 24h	no	55	92	58	91	1.0
	yes	5	8	6	9	
Per protocol		n=56		n=61		
Nausea or vomiting	no	48	86	48	79	0.35
	yes	8	14	13	21	
Vomiting 24h	no	50	91	55	92	1.0
	yes	5	9	5	8	
Retching 24h	no	51	93	54	90	0.43
	yes	4	7	6	10	

*Fisher exact test, 2-sided