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## Background

- Polysomnography continues to be the gold standard in determining the degree of obstructive sleep apnea (OSA) in children.
- Screening for Obstructive Sleep Apnea (OSA) may help prevent morbidity and mortality during the perioperative course.
- Our short questionnaire correlated OSA with the Apnea Hypopnea-Index (>5) (AHI) and increased need for oxygen in PACU.
- We want to see if we can predict OSA and PACU outcomes with a prospective large cohort.

## Methods

- Patients 3-18 years of age, ASA 1-3 were enrolled.
- Parents filled out a questionnaire regarding OSA related symptoms.
- Based on prior study correlating questionnaire scores with OSA on PSG, scores  $\geq 2$  out of 6 possible symptoms were deemed to predict OSA.
- PACU outcomes and length of stay (LOS>1 hour) were queried from the EMR
- 1,000 patients to be enrolled according to power calculation from previous study in patients with PSG

## Results

212 boys, 211 girls age  $12 \pm 4$  year of age

	Pilot study: Procedures in patients with preoperative PSG <sup>a</sup>		Current ongoing study: All procedures	
	No predicted OSA (N=63)	Predicted OSA (N=122)	No predicted OSA (N=290)	Predicted OSA (N=133)
Age (yr) <sup>b</sup>	8 (4)	8 (4)	12 (4)	11 (4)
Gender (M/F)	41/22	59/63	140/150	72/61
BMI (kg/m <sup>2</sup> ) <sup>b</sup>	19 (7)	22 (9)	22 (6)	24 (9)
ASA status				
1	1 (2%)	12 (10%)	88 (30%)	17 (13%)
2	41 (65%)	64 (53%)	158 (54%)	81 (61%)
3	21 (33%)	44 (37%)	44 (15%)	35 (26%)
Adenotonsillectomy	27 (43%)	82 (67%)	1 (0.3%)	9 (7%)
PACU outcomes				
LOS > 60 minutes	16 (25%)	39 (33%)	121 (42%)	58 (44%)
Supplemental oxygen	3 (5%)	26 (21%)	54 (19%)	34 (26%)

Patient characteristics and PACU outcomes, by predicted OSA status, in prior retrospective study and present prospective study.

<sup>a</sup> Previous retrospective study. Kako et al. Int J Pediatr Otorhinolaryngol 2017;102:71-5.

<sup>b</sup> Mean (SD) shown.

BMI, body mass index; LOS, length of stay; OSA, obstructive sleep apnea; PACU, post-anesthesia care unit; PSG, polysomnography; SD, standard deviation

## Discussion

- Precise association between OSA and postoperative outcomes remains unclear.
- Among patients with preoperative PSG, high scores on OSA symptom questionnaire predicted increased odds of supplemental O<sub>2</sub> use in PACU
- Similar, but smaller, difference in supplemental O<sub>2</sub> use was found in interim analysis of current study
- Undiagnosed OSA may pose a risk of respiratory complications in the PACU and postoperatively unrelated to OSA symptoms as evidenced by increased LOS in PACU which is beyond oxygen requirements. Other factors besides OSA may contribute to postoperative outcomes which need to be explored.

## References

- Tait AR, Voepel-Lewis T, Christensen R, O'Brien LM. Paediatr Anaesth 2013;23:510-6.
- Raman VT, Splaingard M, Tumin D, Rice J, Jatana KR, Tobias JD. Paediatr Anaesth 2016;26:655-664.
- Kako H, Tripi J, Walia H, Tumin D, Splaingard M, Jatana KR, Tobias JD, Raman VT. Int J Pediatr Otorhinolaryngol 2017;102:71-5.

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