



Author Response to Chung

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We read with interest, Dr. Chung's letter to the editor¹ regarding our manuscript addressing OSA and ambulatory surgery.² We wholeheartedly agree that larger scale studies are needed to better understand the impact of OSA on surgical outcomes; this was clearly noted in the manuscript's conclusion. Furthermore, the statement, "our study supports the concept that patients with obstructive sleep apnea may be able to undergo ambulatory surgical procedures without increased risk of major adverse outcome" was not meant to be construed as a definitive recommendation as it was preceded with ... "additional large scale studies are needed..." We merely sought to highlight the fact that OSA and the symptoms suggestive of OSA are relatively common in ambulatory surgical patients, and that not all patients with OSA will suffer an adverse outcome following ambulatory surgery. This concept is not new. Sabers and Plevak first suggested that prior diagnosis of OSA was not a risk factor for unplanned admission after ambulatory surgery in 2003.³ Additionally, in a study by Warner, the low incidence of death and adverse outcome after 45,000 consecutive outpatient procedures performed at the Mayo Clinic in 1993 supports the supposition that OSA alone may not be a single variable associated with poor outcome, as one would assume that many of those patients had previously undiagnosed OSA.⁴ This is in contrast to patients with OSA undergoing more extensive inpatient surgical procedures which were referenced in Dr. Gay's prior editorial.

Regarding Drs. Chung and Gay's comments concerning the "small" prevalence of patients at risk for OSA in our population (4.8%), we would like to point out that there are highly variable reports of prevalence amongst different epidemiological studies. The epidemiologic study referred to in Dr. Chung's letter specifically quotes the polysomnographic prevalence of OSA as defined by an AHI.⁵ The actual prevalence in that paper were 4% and 2%, respectively, when including symptoms of OSA, which a predictive questionnaire such as we used (Maislin) would take into account. Another factor contributing to the perceived low prevalence of OSA in our cohort is the predominance of female subjects (68%). The authors are unaware of any predictive model that is capable of identifying patients at risk of OSA with 100% sensitivity with 100% speci-

ficity. Historically, with regards to predictive models, what has been gained in achieving greater sensitivity has been lost with substantial proportional decreases in specificity. So although there have been models that tout nearly 100% sensitivity in identifying the patient with OSA, in reality, that patient's chance of not suffering the malady could be equally well determined by the flip of a coin.⁶

Regarding the patients who reported having a prior diagnosis of OSA, it is impossible to state with any certainty in an unobserved ambulatory population, the rate of compliance with CPAP. Although all patients presenting to our facility with known OSA are asked to use their CPAP perioperatively, studies in some populations have shown compliance to be less than 25%.⁷ We therefore agree that the use of CPAP in this population could confound the results because it was neither evaluated nor controlled for.

The nature of ambulatory surgical procedures is such that postoperative pain is expected to be manageable with no more than low dose narcotics. And while there were a wide range of ambulatory surgical procedures performed in the process of this study, the perioperative care team was blinded to the results of the questionnaire used to determine the patient's propensity to OSA, and therefore it had no impact on their decision to manage their pain with postoperative narcotics.

The authors agree that further large studies need to be performed to better understand perioperative risk in patients with OSA. We agree that it is important to preoperatively screen patients for signs and symptoms of OSA; however, this can and should be done with the recognition that healthcare resources are not infinite. Just as it is routine for patients to undergo preoperative cardiac risk assessment, the authors believe that patients should also be assessed for risk of sleep disordered breathing. And while both pathological processes yield patients that may benefit from prolonged postoperative monitoring after ambulatory surgery, this costly utilization of precious healthcare resources may not be necessary for many of these patients.

It is the mission of the perioperative physician to assess and survey for potential preventable causes of adverse outcome in surgical patients. However, to initiate mandatory hospital protocols to manage patients with OSA as an isolated entity without consideration

of comorbidities and surgical invasiveness may be a costly exercise for a healthcare system with limited resources.

REFERENCES

1. Chung F. It may be unsafe for patients with untreated severe OSA requiring post-operative narcotic to undergo ambulatory surgery. *J Clin Sleep Med* 2011;7:111.
2. Stierer T, Wright C, George A, Thompson RE, Wu C, Collop N. Risk assessment of obstructive sleep apnea in a population of patients undergoing ambulatory surgery. *J Clin Sleep Med* 2010;6:467-72.
3. Sabers C, Plevak DJ, Schroeder DR, Warner DO. The diagnosis of obstructive sleep apnea as a risk factor for unanticipated admissions in outpatient surgery. *Anesth Analg* 2003;96:1328-35.
4. Warner MA, Shields SE, Chute CG. Major morbidity and mortality within 1 month of ambulatory surgery and anesthesia. *JAMA* 1993;270:1437-41.
5. Young T, Palta M, Dempsey J, Skatrud J, Weber S, Badr S. The occurrence of sleep-disordered breathing among middle-aged adults. *N Engl J Med* 1993;328:1230-5.
6. Chung F, Yegneswaran B, Liao P, Chung SA, Vairavanathan S, Islam S, Khajehdehi A, Shapiro CM. STOP questionnaire: a tool to screen patients for obstructive sleep apnea. *Anesthesiology* 2008;108:812-21

7. Grote L, Hedner J, Grunstein R, Kraiczi H. Therapy with nCPAP: incomplete elimination of Sleep Related Breathing Disorder. *Eur Respir J* 2000;16:921-7.

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DISCLOSURE STATEMENT

The authors have indicated no financial conflicts of interest.