CORRESPONDENCE

Routine preoperative obstructive sleep apnea screening of elective surgical patients: a single-centre three-month experience

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To the Editor,

Routine preoperative screening for obstructive sleep apnea (OSA) has been recommended by the Society of Anesthesia & Sleep Medicine¹ and the American Society of Anesthesiologists.² These recommendations come with the backing of evidence suggesting that OSA screening helps to reduce postoperative OSA-related complications. Both groups also acknowledge clinical, clerical, and economic burdens imposed by routine screening.

Poised with the burden of implementing routine OSA screening, we set about collecting our hospitals' OSA screening and complication demographics for three months. We sought to understand how routine screening may impact our local practice.

With Research Ethics Board approval and patient consent, we conducted routine preoperative OSA screening of our tertiary care adult non-obstetrical elective surgery patients at Vancouver General Hospital

& UBC Hospital (affiliated sites) from June 5 to August 25, 2017. Screening was conducted either in the Anesthesia Consult Clinic or just prior to surgery. Six routinely collected recovery room complications recorded by postanesthesia care unit (PACU) nurses were tabulated the day following surgery.

Of 1,892 patients approached, 1,761 consented to enrolment. This represented 12.9% of the total elective surgical patients at our two hospitals for 2017. The proportional distributions of patients at the two hospital sites and across all surgical specialties were greater than 10% of the total patients for 2017 with one exception (otolaryngology 9.6%).

By recall, 298 patients (17%) reported previous overnight sleep studies. Of these, 66% reported positive studies for OSA, representing 11% of the total study cohort. Those with negative or no prior sleep evaluation (1,563 patients, 89% of the study cohort) were screened for OSA using STOP-BANG scoring.

The greatest utility of STOP-BANG is its ability to rule out severe OSA with scores < 3. Nevertheless, the low specificity at this cut-off results in many false positive scores ≥ 3 .³ Literature advocates a less sensitive but more specific cut-off of ≥ 5 for a positive screen, but stipulates using this cut-off in surgical populations with low prevalence of OSA without specifying how low this prevalence should be.⁴

Using a STOP-BANG cut-off of ≥ 3 , 840 (54%) of the screened patients were positive. This compares with 239 (15%) of positive screened patients at a cut-off of ≥ 5 . It is not tenable to work with over half of your elective patient population being labelled as screen-positive for OSA with scores ≥ 3 . Of the cohort sampled then, 11% had a previous diagnosis of OSA, and 15% had STOP-BANG scores ≥ 5 , resulting in 26% of elective surgical patients

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Table Comparison of registered nurse-recorded complications encountered in the PACU* based on STOP-BANG < 3 or $\geq$ 3, and STOP-BANG < 5 or $\geq$ 5.

PACU complication	STOP-BANG < 3		STOP-BANG $\geq$ 3		P value	STOP-BANG < 5		STOP-BANG $\geq$ 5		P value
	n for analysis	n (%)	n for analysis	n (%)		n for analysis	n (%)	n for analysis	n (%)	
Desaturation (VGH & UBCH)†	633	28 (4.4)	680	37 (5.4)	0.32	1125	51 (4.5)	188	12 (6.4)	0.36
Monitored bed required§ (VGH & UBCH)†	633	1 (0.2)	680	9 (1.3)	0.02	1125	6 (0.53)	188	4 (2.1)	0.04
New PAP required (VGH & UBCH)†	633	0	680	5 (0.7)	0.06	1125	0	188	5 (2.7)	<0.001
Post-op ventilation (VGH only)‡	245	2 (0.8)	347	5 (1.4)	0.71	495	5 (1.0)	97	2 (2.1)	0.32
Reintubation in PACU (VGH only)‡	245	0	347	0	-	495	0	97	0	-
Respiratory arrest in PACU (VGH only)‡	245	0	347	0	-	495	0	97	0	-

ICU = intensive care unit; OR = operating room; OSA = obstructive sleep apnea; PACU = postanesthesia care unit; PAP = positive airway pressure treatment; UBCH = University of British Columbia Hospital; VGH = Vancouver General Hospital. *Not all study patients came to the PACU postoperatively. Potential reasons for this include bypassing the PACU on account of a procedure only under sedation, direct admission to the ICU, or cardiac surgery ICU from the OR, having a procedure out of the main OR such as in radiology or the cardiac catheterization laboratory, or the patient may not have come to surgery despite prior anesthesia consultation. †Complication data collected at both VGH and UBCH sites routinely by the PACU nurses. ‡Complication data collected only at VGH site (a site of higher acuity care) routinely by PACU RNs. §Monitored bed refers to a minimum of continuous pulse oximetry monitoring and immediate nursing intervention if readings are low. Includes high acuity, step down, and critical care units. Data here represent monitoring ordered as a result of patient's stay in the PACU. This does not represent monitored beds ordered in advance of surgery.

being earmarked as potentially at risk of OSA-related complications.

The Table shows occurrences of the six registered nurse-recorded PACU complications. Desaturation events did not correlate with higher STOP-BANG scores. Neither were patients with higher STOP-BANG scores more likely to be brought ventilated to the PACU. Arrangements for 24 hr monitored care upon PACU discharge that was not arranged prior to surgery (ten out of 1,313 cases), and the need for initiation of new positive airway pressure therapy (five out of 1,313 cases) were correlated to higher STOP-BANG scores. No critical reintubations or respiratory failures occurred.

In summary, in this three-month trial of routine OSA screening, a quarter of our patients were earmarked with a potential for OSA-related issues postoperatively. Of the PACU complications reviewed, very few OSA-attributable complications were encountered, none of which were critical. We acknowledge, of course, that OSA-related complications also occur outside the PACU. Such events were not followed up in this study cohort. The single-centre results presented here reflect the contemporary nature of perioperative OSA screening—a very high prevalence of screen positive patients at risk of infrequent but potentially harmful/lethal perioperative complications.⁵

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