

Airway management in obstructive sleep apnea: local solutions

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To the Editor,

After reading the Continuing Professional Development Module on the management of sleep apnea,¹ I suggest two additional airway management strategies to minimize short-term adverse outcomes in selected intubated patients with obstructive sleep apnea (OSA).

First, to reduce the incidence of airway irritation with its attendant coughing and breath holding, I use lidocaine gel on the external cuff of the endotracheal tube as well as intracuff lidocaine (2% preservative free lidocaine 3 mL, no alkalization).² The patient is placed in a semi-upright position and, despite being under a light plane of anesthesia, tolerates the endotracheal tube. The use of local anesthetics prevents, or at least attenuates, troublesome airway reflexes that compromise functional residual capacity (cough, breath holding) or airway patency (laryngospasm). The emerging patient's tidal volumes can be kept well above closing capacity without disruptive emergence airway reflexes by employing a ventilator pressure support mode or hand-bag assisted ventilation until the patient is "fully conscious".

Second, to avoid relapse into a pathologic snoring (obstructive breathing) pattern in the early post-extubation period, I place an appropriately sized nasal airway (coated with lidocaine gel) into the "best-fit" nares immediately after intubation.³ This step allows any traumatic epistaxis to subside prior to the end of the procedure; insertion of the device at extubation could lead to a bloody airway, which

may further compromise extubation. After I started applying these techniques in practice, recovery room nurses developed a new sign of "full recovery". When patients remove the airway device or complain of its presence, it is a good indication that they will maintain their own airway from that point onwards. The foregoing strategy is contraindicated in selected patients undergoing procedures such as transphenoidal pituitary resection.

Repatriating a fully controlled airway to spontaneous unassisted breathing constitutes an inherently unstable transition period in an anesthetic plan, particularly in OSA patients. While contemporary anesthesiologists may take full advantage of current ultra-short-acting pharmacological agents for OSA patients, and may heed such good advice as verifying full reversal of neuromuscular blockade prior to emergence, simple techniques may also play a role in the smooth and successful airway management of these patients.

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Reply

We sincerely thank Dr. Beriault for his interest and astute comments regarding the management of obstructive sleep apnea (OSA) patients, in particular during emergence from anesthesia and extubation. The intention of the functional algorithms published in the Continuing Professional Development Module was to present concise and widely applicable practical principles to assist anesthesiologists in the perioperative management of OSA patients.¹ In the context of emergence from anesthesia and extubation, we advocate the use of short-acting anesthetic agents, verification of full neuromuscular block reversal, and extubation in a non-supine position when the OSA patient is conscious and cooperative. It is worth noting that reflex reaching out for the tracheal tube or sitting up should not be considered purposeful. Post-extubation obstruction is dangerous, as it may result in hypoxia and negative pressure pulmonary edema in the OSA patient.²

Dr. Beriault's correspondence alluded to the valid concerns of airway irritation by the endotracheal tube during emergence, relapse of upper airway obstruction immediately post extubation, and postoperative oxygenation (OSA patients are frequently obese with compromised functional residual capacity). These problems are recognized to occur more frequently in OSA patients, and similar solutions have been proposed in more comprehensive review articles.^{2,3}

Complementary to our generic principles, the step-by-step descriptions of local solutions suggested by Dr. Beriault would certainly help mitigate the above-mentioned problems. These include intracuff lidocaine, nasopharyngeal airways to prevent postoperative airway obstruction, and pressure support ventilation / continuous positive airway pressure (CPAP). Individual expertise and experience would determine the degree of success for each method described. A word of caution – high doses of intracuff lidocaine complicated by cuff rupture entail the risk of local anesthetic toxicity. Nasopharyngeal airways are better tolerated than oropharyngeal airways, however epistaxis is the drawback.

To be effective, adequately long nasopharyngeal airways should be used with the distal end positioned retroglossally.²

Other newer exciting strategies described in recent literature include the use of dexmedetomidine, the use of low-dose remifentanyl to ameliorate endotracheal tube-induced airway irritation during emergence,⁴ and the use of the Boussignac CPAP system immediately following extubation to improve oxygenation.⁵ The OSA patient poses special challenges to the anesthesiologist. As champions of patient safety, we look to the horizon for novel and effective anesthesia techniques to ameliorate morbidity in the vulnerable OSA patient.

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