

Obesity, Obstructive Sleep Apnea and the “HELP” Position

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To The Editor

Over 30% of surgical patients are obese (BMI>30) and it is estimated that over ten million surgeries involving obese patients will be performed in 2010 (*National Hospital Discharge Survey* data; CDC.gov/obesity) [1-3]. The incidence of obesity is increasing in Europe and Asia as well as in the United States. The significant rise in childhood obesity predicts that this problem will continue for the foreseeable future. Since the overweight population represents a large segment of the surgical caseload it presents significant challenges to the anesthesia care team particularly during endotracheal intubation.

Contrastingly, the US prevalence of obstructive sleep apnea (OSA) in the general population is 9% in women and 4% in men [1]. This number translates to nearly 20% of surgical patients and OSA is associated with obesity, hypoxia and hypertension and airway management issues [1-4,8]. A good number of patients with OSA are indeed obese, but the exact incidence of obese surgical patients who have concomitant OSA is currently unknown. Many anesthesiologists agree that the combination of obesity and OSA further complicates airway security.

Both obese patients and patients with OSA carry airway and respiratory concerns [2-11]. Residual general anesthesia, sedatives and opioid analgesia can produce post-operative respiratory depression in both OSA and obese patients. Obesity and soft tissue edema of the upper airways contribute to intermittent airway obstruction leading to difficult airway management. When the obese patient is flat, the excess adipose tissue in the back, shoulders, and neck places the patient's chest above the level of the patient's head, a position that could make airway maintenance problematic. The severity of OSA is also worsened by the supine position, a common post-operative position [8]. When compared to non-OSA surgical patients, OSA surgical patients have a higher incidence of postoperative respiratory complications including prolonged oxygen therapy and additional monitoring [11,13]. The HELP position (Head Elevated Laryngoscopy Position) places the upper airway in the optimum position for ventilation and has potential to promote and improve the breathing pattern in obese patients, as well as in patients with OSA, during the immediate post operative period [2,5,7,8].

Proper head position for airway maintenance is documented in the American Society of Anesthesiologists (ASA) *Algorithm for Difficult Intubation* and in newly advanced difficult intubation guidelines [13,14]. Difficulty with intubation and/or ventilation contributes to the morbidity and mortality of anesthesia. The *ASA Closed Claims Project* database, notes that obesity and difficult intubation are the second most frequent primary damaging events leading to malpractice claims [15]. Additionally, the *Anesthesia Patient Safety Foundation*, whose mission is to improve the safety of patients during anesthesia, has published the concerns of anesthesia insurance providers and malpractice carriers. These concerns include: obstructive sleep apnea, difficult airway management, morbid obesity, and opioid respiratory depression [16].

Most articles reviewing airway management of obese and morbidly obese patients concentrate on the description and use of intubating devices. [17-20]. Optimal ventilation and the successful placement of these devices depend on proper head position of the patient. Studies

have demonstrated that obese surgical patients benefit from the head elevated laryngoscopy position [21-23]. Therefore, since many obese patients have concurrent OSA, the HELP position may also prove beneficial in preserving the airway in these obese patients experiencing obstructive sleep apnea.

The HELP position places the patient in a ramped posture so that the pinna of the ear and the sternum are in the same horizontal plane (P-S line) (Figures 1, and Figure 2). The pinna-sternum alignment maximizes the view of the larynx during laryngoscopy and intubation [21-23]. High rates of successful intubations have been reported to occur with obese patients when they are placed in the HELP position provided by a multi-chambered *inflatable patient adjustment device* (Nissen IPAD®) [24].

The thin patient requires only a small pad under the head to help the anesthesia team visualize the trachea during intubation. The obese patient presents a much different situation. When the obese patient is flat, the excess adipose tissue in the back, shoulders, and neck places the patient's chest above the level of the patient's head a position that makes it difficult to place the endotracheal tube. As a result, supports are placed under the patient's upper body to elevate the head above the level of the chest.

Fiber optic intubating aids and airway devices, such as the LMA (laryngeal mask airway) are useful in securing the airway in morbidly obese patients and in obese patients with OSA. Accordingly, we advocate placing these patients in the HELP position prior to anesthesia induction to improve ventilation and augment the success rates of LMA placement and endotracheal intubation. In our experience, simply placing the obese patient and obese patients with associated OSA in the HELP position is all that is required to accomplish an uncomplicated intubation using direct laryngoscopy.

We are not aware of any current literature which specifically promotes the use of the HELP position in obese patients with co-existing OSA. Bariatric surgeons are becoming more knowledgeable regarding the importance of the HELP position and anesthesiologists will continue to seek safe, efficient and dependable alternatives to using blankets and elevation pillows will be available. We therefore advocate that this position will improve ventilation in obese patients with OSA and has the potential to reduce post-operative respiratory complications in these patients. We further propose placing obese patients with co-existing OSA in the HELP position in the following situations: prior to

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Received December 29, 2010; **Accepted** January 18, 2011; **Published** January 19, 2011

Citation: Gayes JM (2011) Obesity, Obstructive Sleep Apnea and the “HELP” Position. J Anesth Clin Res 2:115. doi:10.4172/2155-6148.1000115

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induction of general or MAC anesthesia and prior to the placement of an ETT or LMA; prior to emergence from general anesthesia; prior to extubation or LMA removal; and during the post anesthesia recovery period as indicated.

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