Buccal Oxygenation During Prolonged Laryngoscopy Prevents Desaturation in Obese Patients

Calvin A. Brown, III, MD, FAAEM

Compared with usual care, supplemental oxygen delivered to the buccal space through a modified tracheal tube reduced the risk of desaturation during prolonged laryngoscopy in obese patients undergoing elective surgery.

Obese patients can desaturate quickly during emergency airway management, placing them at risk for hypoxic injury. Apneic oxygenation via nasal cannula has been shown to prolong safe apnea time in obese patients (NEJM JW Emerg Med Jul 2010 and J Clin Anesth 2010; 22:164). The effect of supplemental oxygen delivered orally has not been assessed.

In a single-center Australian study, 40 adult obese patients (body-mass index, 30–40 kg/m2) undergoing general anesthesia for elective surgery were randomized to usual care (no apneic oxygenation) or apneic oxygenation with oxygen delivered to the buccal space via a modified 3.5-mm Ring-Adair-Elwyn tube affixed to the left cheek. Patients who could not be fully preoxygenated and those with chronic lung disease, congestive heart failure, ischemic heart disease, or elevated intracranial pressure were excluded. Patients were preoxygenated to an end-tidal O2 ≥80% and were prepared for intubation using propofol, remifentanil, and rocuronium. Laryngoscopy was performed with the GlideScope AVL. Once full glottic visualization was confirmed, a deliberate grade III view was created to mimic partial airway obstruction, and the laryngoscope was held in this position until oxygen saturation dropped below 95% or 750 seconds elapsed.

Patients in the buccal oxygenation group were significantly less likely than those in the usual care group to reach SpO2 <95% during the first 750 seconds of apnea (hazard ratio, 0.159). The buccal oxygenation group also had a significantly longer median safe apnea time (SpO2 ≥95%) than the usual care group (750 seconds [range, 389–750] versus 296 seconds [range, 244–314]).

Comment: Through the mouth or through the nose, it doesn't really matter by which route oxygen is delivered. Apneic oxygenation is noninvasive, effective, and essentially free. It should be a routine part of emergency airway management

Citation(s):

Copyright © 2016. Massachusetts Medical Society. All rights reserved.