

Predicting Impossible Bag-Mask Ventilation

In a study of more than 53,000 patients, 2.2% were very difficult to ventilate by bag-mask, but only 0.2% were impossible.

Difficult bag-mask ventilation (BMV) occurs in about 2% to 5% of elective anesthesia patients, depending on the definition. Previous studies (JW Emerg Med Jul 1 2000) have identified clinical predictors, including obesity, older age, and difficult mask seal (because of presence of a beard or a small mandible). To identify predictors of *impossible* BMV, these authors prospectively recorded clinical attributes for 53,041 adult patients who underwent elective anesthesia and subsequently received BMV at a single hospital from 2004 to 2008.

BMV was impossible in 77 patients (0.16%). Multivariate regression analysis identified the following independent predictors of impossible BMV: neck changes secondary to radiation therapy, presence of a beard, male sex, history of sleep apnea, and Mallampati class 3 or 4 airway. Compared with the likelihood of impossible BMV in patients with none of these risk factors, the likelihood was 5.4 in patients with one or more risk factors, 5.8 in those with two or more, 8.9 in those with three or more, and 25.9 in those with four or more. Fifty-eight patients with impossible BMV were intubated routinely with a direct laryngoscope. Of the remaining 19 patients (25%), 8 required more than three attempts, 7 required use of alternative devices, 1 required an emergency cricothyrotomy, and 3 were awakened and not intubated.

Comment: Difficult or impossible bag-mask ventilation, like difficult laryngoscopy, can be predicted, and clinicians should evaluate patients for difficult BMV before using neuromuscular blockade. Although we often can't get snoring or sleep apnea histories during emergencies, we *can* determine whether the patients are obese or have poor mask seals, abnormal anatomy, or high Mallampati scores. Beware and prepare!

— Ron M. Walls, MD, FRCPC, FAAEM

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