Crank up the Oxygen and Skip the Bag-Valve-Mask

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*High-flow oxygen through a nonrebreather mask is noninferior to bag-valve-mask for preoxygenation.*

Preoxygenation is a key step in rapid sequence intubation and involves allowing the patient to breath spontaneously with supplemental oxygen. The classic method, thought to achieve the highest alveolar oxygen concentration, is to use a bag-valve-mask (BVM) with high-flow oxygen and a good mask seal but no positive pressure (i.e., no squeezing of the bag). These investigators assessed whether preoxygenation with a nonrebreather mask delivering high-flow oxygen is noninferior to preoxygenation with a BVM delivering oxygen at 15 L/minute.

Twenty-six healthy volunteers were preoxygenated with each of four methods in random order: nonrebreather mask with 15 L/minute oxygen flow; nonrebreather mask with the wall-mounted oxygen valve wide open (>40 L/minute flow); BVM with 15 L/minute oxygen flow, and standard mask with the wall-mounted oxygen valve wide open. The corresponding mean fractions of expired O2 in a single breath were 54%, 86%, 77%, and 72%.

**Comment:** The traditional BVM method is uncomfortable for patients because someone has to hold the mask tightly over the patient’s face. Also, in my experience, this method is rarely used correctly, in that everyone seems to feel a compulsion to squeeze the bag, which risks filling the stomach with air and increasing the incidence of vomiting and aspiration.

This study shows that high-flow oxygen through a nonrebreather mask is not inferior to the BVM approach. However, it is unknown if optimizing preoxygenation influences patient outcomes, so it's hard to know what to recommend — a nonrebreather mask at 15 L/minute might be adequate for most intubations. Having read this study, I will no longer preoxygenate with a BVM. Instead, I will use a nonrebreather mask at 15 L/minute and then will open the oxygen valve to maximize flow during the last 3 minutes (or 8 tidal volume breaths for cooperative patients).

**Citation(s):**

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