

LETTER TO THE EDITOR

Priming Insertion of the Laryngeal Mask at Induction: why should we dare to think about it?



Dear Editor,

The laryngeal mask (LM) has contributed significantly to the modern anesthetic practice. Multiple advantages are associated to the use of LM, nonetheless could the anesthesiologists, with simple, but not yet described maneuvers ameliorate the anesthetic practice related to LM insertion? The LM limits infraglottic manipulation, reduces the need of muscle relaxants and opioids, minimizes vasopressor response and the risk of laryngospasm/bronchospasm or infraglottic trauma comparing to endotracheal intubation¹; nevertheless, on the other hand, the LM may contribute to supraglottic edema namely by pushing the tongue towards the larynx during insertion, which may lead to complications related to airway management.

The issues related to the LM use may be related to the conflict with tongue position during its insertion, which brings the need of digital manipulation of the device inside the mouth; additionally, an eventual resulting forceful LM insertion may lead to epiglottis, glottis, oral cavity, and pharynx trauma.²

The goal of this publication is to propose a simple straightforward maneuver to minimize those complications and improve success/smoothness of the LM insertion. The Priming Insertion of the Laryngeal Mask at Induction or the Laryngeal Mask Priming (LMP) technique can be described as follows: using a careful pre-oxygenation, after the administration of opioids (for instance), during the administration of the induction agent, the patient is asked to open slightly his mouth and the LM is inserted in the anterior third of oral cavity to allow that the most anterior portion of the tongue get positioned below the device. Usually, the LM will stand in the patient's mouth no longer than 10 seconds until the loss of consciousness, gag reflexes or the protective airway reflexes; thereafter the LM is advanced to its final position, sliding it posteriorly along the palate towards the larynx without digital manipulation.

Cuffed (semi-inflated) or gel LM may be used; to date, in my experience, it was not observed any additional distress or discomfort provoked by this technique.

The potential benefits of this technique of this *priming* maneuver comparing to the common mode of LM insertion

are: 1) diminished risk of upper airway edema/trauma (the risk of pushing down the tongue forcefully by the device is lowered), 2) lower risk of teeth, lip, temporomandibular articulation (TMA), or oral cavity trauma, 3) less head extension needed for mouth opening and for keeping away palate from tongue to allow the advancement of LM.

In fact, all the anesthesiologists have faced problems with the patient's mouth opening for LM insertion that obligated to the use of aggressive maneuvers as head hyperextension or maximum mandible protrusion, that may be deleterious.

These difficulties will sometimes lead to administration of excessive dose of induction agent, as propofol, which can bring unwanted hemodynamic changes and to the administration of unplanned muscle relaxant which can affect airway control.

It must be mentioned some clinical scenarios where the described maneuver brings definitely some advantages; for instance:

- 1) presence of increased risk for difficult airway (TMA dysfunction, obesity, macroglossia, teeth instability, cervical spine pathology, retrognathia/prognathia) whenever the LM use is planned for securing airway.
- 2) placement of laryngeal mask in lateral decubitus; in this case, the LMP technique is a highly recommendable technique (with the insertion of the LM, without the priming maneuver both operator's hands would be occupied simultaneously, 1) holding the LM and 2) opening the mouth, which complicates the ability to conduct an effective head extension by a single individual; even for anesthesiologists that are reluctant to place a LM in lateral decubitus, it may be necessary in common scenarios, such as unexpected prolonged hip arthroplasty, in which the single-shot spinal anesthesia has to be converted to general anesthesia keeping the lateral decubitus).
- 3) patients at high risk of deleterious consequences from gastric insufflation, such as patients that will be submitted to short-duration laparoscopic surgeries, patients with limited respiratory function or at high risk of post-operative nausea and vomiting, because the reduced need of bag/valve/mask ventilation using the LMP technique diminishes the gastrointestinal dilation.³

Considering eventual complications/risks, the main concerns would be that patients might gag, vomit or develop laryngospasm during airway insertion. As with the common LM insertion, the final insertion towards the the larynx will

only occur after the loss of the gag and protective airway reflexes. Some anesthesiologists would also be concerned that stopping any pre-oxygenation before anesthetic induction, or preventing the ability to perform bag/valve/mask ventilation, would result in an inevitable reduction in patient airway safety; of note, the period of time without oxygenation may be slightly shortened with LM priming maneuver (as it avoids the need to opening the mouth by the anesthesiologist resulting in lower time without ventilation). Notably, the anesthesiologists insert the LM after a standard pre-oxygenation without prior bag/valve/mask ventilation, in multiple occasions, concerned with its risks, being frequently the most used mode of LM insertion, as such nothing will be modified about the lack of manual ventilation with this technique in most cases.

Should we perform this technique in all the patients? The answer is certainly: not necessarily, but a significant number of patients will benefit from it. In common clinical cases it is hard to demonstrate the benefits of this mode of insertion of the LM, nevertheless it may be adopted, at least, in those mentioned clinical situations given the lack of significant complications associated to the technique and the high potential gain. A description in the literature of a similar LMP technique, to our best knowledge, has not yet been reported.

I would like to launch a challenge to the readers: a large prospective study, eventually multicentric, may be undertaken comparing the LMP method to the traditional mode of insertion in both supine or lateral decubitus position in relation to the following outcomes 1) the time from stopping pre-oxygenation to the first wave of EndTidal CO₂; 2) the rate of success on the first attempt; 3) the incidence of gag reflex; 4) the need of unplanned administration of muscular relaxant or additional hypnotic drug; 5) the difficulty in the mouth opening; 6) the need to insert at least an operator's finger inside the mouth; 7) the incidence of desaturation.

There is the possibility that larger differences in some outcomes are more likely found in the patients in which the LM insertion is done in lateral decubitus or in the high-risk subgroups of patients.

The LMP mode of insertion in a patient previously placed prone position, may be useful, but the advantages/risks of the LM use in that position are obviously highly controversial.

Conflicts of interest

The author declares no conflicts of interest.

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Inefficient humidification as the cause of noninvasive ventilation failure in COVID-19 patients



Dear Editor,

Five to six percent of COVID-19 patients developed acute hypoxemia respiratory failure.¹ The hypoxemia might not respond to high-flow nasal cannula therapy (HFNC), and eventually require escalation of oxygen therapy to continuous positive airway pressure (CPAP) or noninvasive ventilation (NIV). Patients who failed NIV had high minute ventilation, which may be due to increased alveolar dead space, increased CO₂ production from the inflammatory response and impaired carbon dioxide clearance, or both.² Successful NIV leads to more patient comfort, reduced ventilatory work of breathing, decreased chest wall motion and minute ventilation, improvement in arterial oxygen saturation, and dyspnea resolution. Patients on NIV frequently complain of dry mouth. Because of ineffective humidification and high minute ventilation, COVID-19 patients develop

dry and thick bronchial secretions, which might lead to airway obstruction. This also results in increased requirements of airway procedure like bronchoscopy or endotracheal tube replacement in COVID-19 patients. There is lack of clear guideline or recommendation regarding the appropriate humidification application during NIV, as this is poorly understood.

Either of the two humidification systems, heated humidification (HH), or a heat and moisture exchange filter (HME) is used for NIV. The humidification system's selection should be based on the patient's lung condition, ventilator settings, intended duration of use, and other factors like the presence of leaks and body temperature. Switching from HME to HH was found to be associated with a significant decrease in PaCO₂ levels. Many centers use filters to provide passive humidification and reduce the risk of exhaled gas/aerosol dispersion during NIV.³ In our clinical experience, we have found better results in patients with prolonged NIV who were switched from HME to HH. Few patients who were on CPAP mode of NIV for more than five days (HME filter attached) were observed to be noncompliant with complains of dry throat. All these patients required high FiO₂ (0.6 to 0.8) with