

P. J. Frost
C. D. Hingston
M. P. Wise

Reducing complications related to endotracheal intubation in critically ill patients

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Jaber and colleagues recently described a 10-point intervention aimed at reducing complications associated with endotracheal intubation and demonstrated a reduction in life-threatening events, such as severe hypoxaemia and circulatory collapse, occurring in the first hour following intubation [1]. Although these outcomes are commendable, we suggest that this intubation bundle or checklist could be improved by the inclusion of preparatory elements in the pre-intubation phase of the bundle. Difficult airway evaluation and the organisation of equipment, such as working suction, appropriate laryngoscopes, oropharyngeal airways and endotracheal tubes, is a prerequisite in all patients [2]. Most of this essential equipment can be pre-assembled in intubation packs, which could include a checklist in order to save time. The authors suggest that standard operating procedures for intubation are employed in the operating room but are lacking in intensive care units (ICU). Common, standard operating procedures for intubation in both

environments are likely to reduce opportunities for error; however, some aspects of this procedure, such as patient positioning, may be different in the ICU.

Jaber and colleagues do not specify the patients' position during intubation. Generally this procedure is both taught, and undertaken, with the patient supine and a pillow or wedge under the occiput to flex the cervical spine, whilst the head is extended at the atlanto-occipital joint. However, providing the individual is not grossly hypotensive, we suggest that critically ill patients should be routinely intubated in the semi-recumbent position. Functional residual capacity (FRC) varies with body position, decreasing as a person moves from a sitting to a supine position [3]. Whilst of little consequence in pre-oxygenated healthy individuals, in critically ill patients who are hypoxaemic, adopting the supine position can result in dramatic oxygen desaturation. Moreover, as the FRC acts as an oxygen reserve during apnoea induced by anaesthesia, the supine position limits the effectiveness of pre-oxygenation (even with non-invasive ventilation). Consequently, following induction, the time available for intubation prior to desaturation is shorter in the supine than in the semi-recumbent position. Obese individuals are particularly vulnerable to these effects: pre-oxygenation of such patients in the sitting position rather than the supine position significantly extends their tolerance to apnoea [4].

Another advantage of semi-recumbent positioning is that laryngeal exposure is superior to that in the supine position. Lee et al. [5] demonstrated that during laryngoscopy of 40 patients, the percentage

glottic opening score was significantly better in the 25° back-up position than in the flat supine position. An improved view of the larynx has the potential to reduce the number of difficult, oesophageal or failed intubations. The semi-recumbent position is also associated with less risk of gastric aspiration and ventilator associated pneumonia. Finally, as semi-recumbent positioning is an essential element of the ventilator care bundle, it obviates inadvertent omission from the latter.

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P. J. Frost · C. D. Hingston ·
M. P. Wise (✉)
Critical Care Directorate,
University Hospital of Wales, Heath Park,
Cardiff CF14 4XW, UK
e-mail: mattwise@doctors.org.uk
Tel.: +44-292-0746210
Fax: +44-292-0743799