

Awareness Regarding Application of Endotracheal Tube (ETT) Cuff Pressure Measuring Gauge in Anesthesia Practice; A Critical Step to Avoid Postintubation Tracheal Stenosis in Critically ill Patients on Prolonged Mechanical Ventilation

Sir,

It is evident from the current literature that the most frequent cause of tracheal stenosis is internal trauma, induced by endotracheal or tracheostomy intubation. Local data regarding the incidence of postintubation tracheal stenosis is not available. The tracheal stenosis, though rare, is a serious complication of tracheal intubation and is responsible for a significant operational impact. Its frequency is of the order of 1%.^{1,2} Most important factor leading to this iatrogenic complication is excessive endotracheal tube (ETT) cuff pressure which is avoidable by optimization of the cuff pressure within the recommended range. It has been observed in daily practice that air in the pilot balloon of ETT cuff is filled blindly with the assumption of no air leak around the cuff, with no regard to actual ETT cuff pressure measurement.

Most of the patients in a study by Herrak *et al.* manifested the first clinical signs of stenosis within 4 months after the extubation.² The new onset or the worsening residual breathlessness, within weeks or even days after the episode of ventilation, should alert to the diagnosis of tracheal stenosis even if intubation was short-lived.

ETT cuff pressure management is an essential part of airway management in intubated and mechanically ventilated patients. The introduction of high-volume, low-pressure cuffs has reduced the incidence of post-intubation tracheal stenosis. Despite the introduction of high-volume, low-pressure cuffs, there are still reports of postintubation tracheal stenosis due to cuff pressure exceeding the tracheal mucosal perfusion (ETT cuff pressure exceeding 30 mm/Hg) in patients who are on prolonged mechanical ventilation due to local and systemic causes. This is due to lack of awareness and non-availability of ETT cuff pressure measuring gauge in



Figure 1: Cuff pressure measuring gauge.

most of the government and private hospitals' critical care areas of the country. Cuff pressure should be kept in the green zone (20 - 30 cm H₂O) as shown in Figure 1. The potential sites for postintubation tracheal stenosis are the vocal cords, ETT cuff, and the tube tip site. Cuff pressure should be checked immediately postintubation and 2-hourly in case nitrous oxide is used or the patient is in the prone position for the intended surgery. Important preventive measures to avoid postintubation tracheal stenosis are the usage of low-pressure, high-volume cuffs (cuff pressure 20 - 30 cm H₂O), non-traumatic intubation, use of possibly the smallest tube, minimizing traction, tension, suctioning, friction, movement, and duration of ETT intubation.

The availability and the education regarding the usage of this important instrument should be disseminated among the practising anesthesia faculties so that they can teach their juniors to apply it in their daily practice, thus avoiding a life-threatening complication of post-ETT intubation tracheal stenosis.

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Received: November 27, 2015; Accepted: March 02, 2016.

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