Using a gum-elastic bougie and nasogastric tube to facilitate oral to nasal tracheal tube change in a trauma patient

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Oral to nasal tracheal tube change has been performed using various techniques [1–4]. We describe our experience in an emergency situation in a polytrauma patient when an urgent oral to nasal tracheal tube change was required for surgery. We describe the use of a gum-elastic bougie along with a nasogastric tube to facilitate a tube change in the absence of other sophisticated equipment, successfully avoiding tracheostomy.

1. Technical tip

A 20-year old male was brought to emergency unit of our hospital after a road traffic crash. His GCS was 7 and mean blood pressure was 40 mm of Hg. He showed signs of upper airway obstruction. Orotracheal intubation was performed on direct laryngoscopy using a size 8.5 endotracheal tube (ETT) with stylet and fluid resuscitation was performed. A fractured right femur and mandible were detected on examination and investigations. No other Facial or CNS injury was present. His mean blood pressure improved to 70 mm Hg upon fluid resuscitation and his sensorium improved. He was prepared for emergency fixation of femur fracture and wiring of mandible fracture. Patient was fasting for last 10 h as told by the relatives. As the surgeons required a nasal tube, a decision to perform oral to nasal tube change was taken with an otolaryngologist standby for tracheostomy. A fiberoptic scope was not available.

The patient was kept sedated on fentanyl and sevoflurane in 100% oxygen. A lubricated nasogastric tube size 18 was introduced through right nostril and retrieved orally using a Magill’s forceps. Thereafter, it was cut at 5 cm from the tip (Fig. 1). A lubricated gum-elastic bougie was introduced through the existing orotracheal tube. A hollow airway exchange catheter was also introduced through the tube by the side of the bougie. The orotracheal tube was removed carefully. Oxygen was connected to the exchange catheter and it was fixed. In the next step the proximal end of the bougie was introduced snugly in the distal end of the cut nasogastric tube. The junction of the two was sutured (Fig. 2). Then an assistant stabilized and guided the bougie retrogradely in the mouth and the operator gradually withdrew the nasogastric tube through the nose till the junction of the two was retrieved nasally (Fig. 3). Thus we obtained a nasotracheal bougie over which an endotracheal tube was railroaded with laryngoscopy (Fig. 4). Anaesthesia was maintained using fentanyl and midazolam during the tube change. The time taken was 120 s and the patient maintained oxygen saturation and no haemodynamic instability was seen.

Thus we could avoid tracheostomy in this patient. Keeping an exchange catheter till intubation served two main purposes. Firstly, it allowed for oxygen supplementation and secondly it allows immediate orotracheal reintubation in case the bougie becomes accidentally dislodged during any of the steps of tube change. We have named this technique as “ESI Technique” (after the name of our institution).
We used this technique in 15 adult patients with normal airway. We could successfully exchange the tube in all patients. The average time taken was 100 s. All patients maintained haemodynamic stability and oxygen saturation was maintained. There was no trauma in any of these cases. Thus, we suggest that “ESI Technique” can be useful for performing oral to nasal tracheal tube change upon its selective use.

References