Dual Bougie Technique for Nasotracheal Intubation

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We read with great interest the anesthetic technique of using a gum elastic bougie (GEB) for nasal intubation in a recent issue of *Anesthesia Progress*. The authors recommend the use of GEB for the first attempt of nasotracheal intubation in patients with a difficult airway. We agree that this is an excellent alternative. We also have found an excellent variation of this method that utilizes a double bougie technique for insertion of a nasotracheal tube if the difficult airway can be secured initially with an orotracheal tube.

Key Words: Dual bougie technique; Nasotracheal intubation.

In the case of unanticipated difficult airway, nasotracheal intubation can prove hazardous. Epistaxis is a common complication of nasotracheal intubation if a large, unsoftened tube is used, and the blood can interfere with visualization and securing of the airway with conventional techniques. Piepho et al¹ advocate to “look before you leap” prior to nasotracheal intubation, ie, to assess the airway by direct laryngoscopy prior to passing a tracheal tube through the nares. The tracheal tube should be passed through nares only in patients with Cormack-Lehane grade 1 and 2 airways. If the airway seems to be potentially difficult, ie, Cormack-Lehane grade 3 and 4, the airway should be initially secured orally followed later by nasal intubation in a controlled manner.² This maneuver can increase the safety of nasotracheal intubation in patients with a difficult airway.

Although use of a single bougie as described by the authors and others can assist in nasotracheal intubation,^{2–5} the safety of the technique can be further increased by the use of 2 bougies. We describe safe nasotracheal intubation in a patient with unanticipated difficult airway using a dual bougie technique. A 49-year-old obese man presented with a fracture of the maxilla for open reduction and internal fixation. His preoperative examination revealed a Mallampati 2 score, a mouth opening 3 fingers wide, and thyromen-

tal distance of 6 cm. His neck extension and flexion were within normal limits. Anesthesia was induced with 160 mg of propofol, and muscle relaxation was achieved with 100 mg of succinylcholine. He could be ventilated easily by mask and bag.

Direct laryngoscopy revealed a Cormack-Lehane grade 3 airway. The view did not improve after using the BURP maneuver and using a straight blade. The BURP maneuver utilizes external laryngeal manipulation by applying backward, upward, and rightward pressure to help improve the view during laryngoscopy. Orotracheal intubation was difficult, but a size 8.0-mm cuffed tracheal tube was negotiated into the trachea over a malleable stylet on the second attempt. The position of the tube was confirmed by auscultation and capnography. Then, a size 8.0-mm cuffed tracheal tube was inserted nasally and guided into the oropharynx. An Eschmann bougie was then passed via this nasal tube and guided to the glottic aperture with the aid of Magill forceps during direct laryngoscopy after applying external laryngeal pressure. Thereafter, the cuff of the orotracheal tube was deflated and the nasal Eschmann bougie was further advanced into the trachea alongside the orotracheal tube. Another Eschmann bougie was then passed through the orotracheal tube, followed by removal of the orotracheal tube, leaving the oral bougie in situ in the trachea.

Thereafter, the nasal tracheal tube was advanced into the trachea over the nasal Eschmann bougie. The nasal Eschmann bougie was removed and the endotracheal

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position of the tube was confirmed by auscultation and capnography. Soon thereafter, the oral bougie was also removed. The patient remained hemodynamically stable and did not have any episodes of desaturation during this procedure. The rest of the perioperative course was uneventful.

Following the algorithm by Piepho et al² for safe nasotracheal intubation, we resorted to conversion from orotracheal to nasotracheal intubation rather than direct nasotracheal intubation in a patient with difficult airway. Such conversion can be challenging, especially with a difficult airway. Many strategies have been described which involve the use of a flexible fiberoptic bronchoscope, tracheal tube exchanger, and gum elastic bougie.^{6,7} However, with use of these techniques, one is at risk of losing airway control if, after removing the oral tube, one fails to secure the airway by nasal route due to accidental dislodgement of the nasal tube during changeover. Our technique avoids this hazard. The nasal Eschmann bougie facilitated nasotracheal intubation, while the oral bougie served as a standby for immediate reintubation by oral route in case the nasal tube could not be safely secured. This technique could also be useful for a trauma patient who initially is intubated orally for life-saving surgery and who then later comes to the operating room for facial fracture surgery requiring nasal intubation.

In summary, conventional direct laryngoscopic examination and orotracheal intubation prior to attempting nasotracheal intubation and use of the two bougie technique enhances the safety of nasotracheal intubation in patients with difficult airways.

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