Application of Gum Elastic Bougie to Nasal Intubation

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Gum elastic bougie (GEB), a useful device for difficult airway management, has seldom been used for nasotracheal intubation. Among 632 patients undergoing dental procedures or oral surgery, GEB was used successfully in 16 patients in whom conventional nasal intubation had failed because of anatomical problems or maldirection of the tip of the tracheal tube. We recommend that GEB should be applied from the first attempt for nasal intubation in patients with difficult airways.

Key Words: Gum elastic bougie; Nasal intubation; Difficult intubation.

In conventional nasal intubation, a tracheal tube is gently introduced into the nostril, followed by direct laryngoscopy. If the glottis cannot be visualized or the tube does not enter the glottis, the patient's head may be extended or flexed, or use of Magill forceps may be required.¹

However, despite multiple attempts, occasionally the tube cannot be passed into the trachea because the tip of the nasotracheal tube does not advance anteriorly into the larynx and trachea but courses posteriorly into the esophagus, or it could be passed between the vocal cords but not through the subglottic region because of anatomical reasons. In these cases, the gum elastic bougie (GEB) can be used as an intubating aid and allows rapid and successful tracheal intubation. This application of GEB for nasal intubation was performed in 16 patients whose tracheas could not be intubated by conventional technique, among 632 patients undergoing dental procedures or oral surgery. The use of GEB for difficult oral intubations is well documented,²⁻⁶ but GEB is seldom applied for

nasal intubation. We report the clinical application of GEB for difficult nasal intubation.

When nasal intubation by the conventional technique as mentioned above is unsuccessful, a tube is placed into the nose and the other nostril, and the mouth is occluded by hand. The tube is connected to an anesthetic circuit, and the lungs are manually ventilated. After adequate oxygenation, the circuit is disconnected. Direct laryngoscopy is performed in the usual fashion. The nasal tube is pulled back until only the tip of the tube is visualized in the pharynx (Figure 1). Spraying 8% lidocaine into the tube facilitates smooth insertion of a GEB. The tip of the GEB is pointed toward the glottis or the area where the glottis is likely to exist. The GEB is advanced through the vocal cords with the use of Magill forceps if required (Figure 2). After the correct position of a GEB has been visualized, the tracheal tube is gently threaded down into the trachea over the GEB. Finally, the GEB is withdrawn, and the correct position of the tracheal tube is confirmed. Capnography may be used to confirm tracheal intubation, along with auscultation of bilateral breath sounds.

With this technique, the crucial point is that the tip of the GEB has to protrude approximately 4 to 5 cm beyond the tip of the tube, which makes it easy to maneuver the GEB. The GEB and the nasal tube are then inserted into the trachea with a single movement. On

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Figure 1. The nasal tube should be pulled back until only the tip of the tube is visualized in the pharynx.

the contrary, when the tip of the nasal tube is located near the laryngeal inlet, the movement of the GEB is limited.

Use of several mechanical aids, including suction catheters, nasogastric tubes, stylets, and nasal flexible laryngeal masks, for nasal intubation has been reported.^{7–10} When mouth opening is limited or prohibited, and therefore intubation by direct laryngoscopy is not usually possible, fiberoptic intubation represents an effective approach to intubation. However, fiberoptic intubation is often time consuming. In our experience with use of these methods, this GEB technique is very quick, safe, inexpensive, and easy to perform. Thus, we recommend the use of GEB from the first attempt for nasal intubation in patients with difficult airways.

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Figure 2. Magill forceps can be used to direct the gum elastic bougie (GEB) into the glottis.