

Kinking of the flexible laryngeal mask airway in the pharynx

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To the Editor:

The flexible laryngeal mask airway (FLMA) has a flexible, wire-reinforced airway tube, which resists kinking. However, we experienced two adult cases of FLMA kinking at a specific position.

The first case was a 73-year-old woman (weight, 58 kg; height, 145 cm). A size 4 FLMA with no apparent damage at pre-use inspection was inserted under general anesthesia, and the lungs were mechanically ventilated. Neither high airway pressures nor capnographic abnormality was found. During surgery in a supine position with the head and neck in neutral position, a fiberscope having a 3.4-mm diameter became stuck in the middle of the tube and a narrowing lumen was seen (Fig. 1A). Direct observation in the oral cavity disclosed a kink of the tube at a portion facing the posterior pharyngeal wall (Fig. 1B). The second case was a 62-year-old woman (weight, 78 kg; height, 155 cm) with a size 4 FLMA in a lateral position with the head and neck in neutral position. The kinking tube without any respiratory problems was found through a similar history to the first case. After anesthesia, inspection of these FLMAs, which had been used nearly 40 times (the

recommended maximum number of uses by the manufacturer), demonstrated that the tube easily kinked and invaginated at the distal end of the tapering segment associated with bending to approximately 90° (Fig. 2A). However, bending to more than 90° at the same site in a brand-new FLMA did not compromise the surface or lumen of the tube (Fig. 2B).

The kinking of the airway tube reported here did not result in a compromised airway. However, difficult ventilation may result from a narrowing lumen in patients with morbid lungs. Neck flexion, a gag, and oral surgery all have the possibility to exacerbate kinking. The tube is passed by a fiberscope for viewing the larynx or introducing a guidewire into the trachea for intubation. A bougie as a tube exchanger is also inserted into the trachea through the tube. Kinking of the tube would disturb these functions if airway patency is not critical.

Because the tapering segment of the airway tube consists of thicker silicone rubber and is less flexible than the other part of the tube, the distal end of the segment (~2.5 cm from the cuff-tube junction of the size 4 FLMA) could be a flexion point. This point corresponds to a tube segment facing the posterior pharyngeal wall when the cuff is in the optimal position in adults. Degradation of the tube materials with repeated use and sterilization may promote kinking at the flexion point. This region is also easily damaged by the patient biting during premature removal of the tube. The pre-use check test of the capability of the tube to be looped into a figure-of-eight without kinking is recommended [1], but this test is not always sensitive to the kinking at the site in question. The author recommends direct 90° bending at the distal end of the tapering segment to detect any susceptibility to kinking before using the FLMA.

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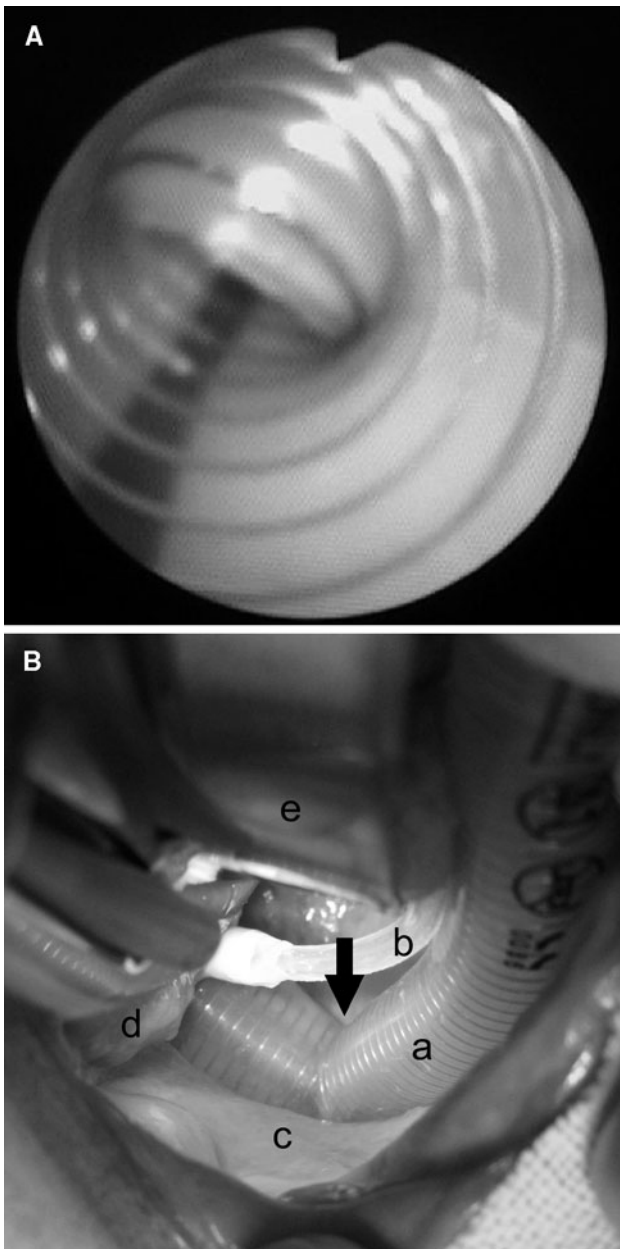


Fig. 1 A fiberoptic view of the narrowing lumen of the flexible laryngeal mask airway (A) and a direct view of the kinking airway tube (arrow) at the posterior pharyngeal wall (B). a, airway tube; b, inflation line; c, posterior pharyngeal wall; d, tongue; e, Macintosh blade

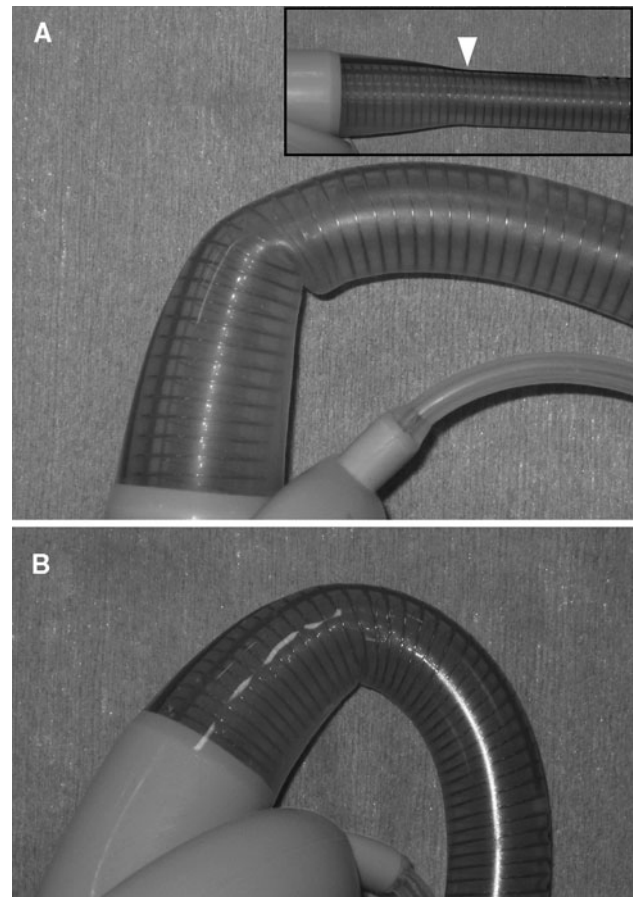


Fig. 2 Intentional bending at the distal end of the tapering segment (arrowhead in the inset) of the airway tube of a repeatedly used flexible laryngeal mask airway (FLMA) (A) and a brand-new FLMA (B). Note that kinking and invagination are seen in the former (A)

Reference

1. Brimacombe JR. Pre-anesthesia phase. Laryngeal mask anesthesia: principles and practice. Second ed. Philadelphia: Saunders; 2005. p. 177–89.