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A simple technique to secure the endotracheal tube over an intubating fibroscope

To the Editor:

We use the Intubation Fiberscope (Pentax FI-10P2; Tokyo, Japan) in patients with anticipated difficult airways and in situations where neck movement should be avoided during intubation, including all causes of atlantoaxial instability. The technique of intubation with the fibroscope consists of placing the shaft of the bronchoscope tube in the trachea under indirect vision, followed by railroading the endotracheal tube over the insertion tube. Before intubation, the endotracheal tube is loaded on the bronchoscope up to the proximal end of the insertion tube of the fibroscope. The endotracheal tube is then secured at the proximal end by sliding up the tube firmly, with its position being maintained by a twisting motion or use of adhesive tape. However, not infrequently, the endotracheal tube slides down the fibroscope shaft during bronchoscopy, and additional assistance may be required to

FIGURE The endotracheal tube is held in position by a rubber band sling, with a figure-of-eight around the blue connector and instrument channel inlet; the inset shows an enlarged view of the blue connector of the endotracheal tube and instrument channel on the control body of the intubation fibroscope.

secure its position during the endoscopic procedure to prevent interference and to facilitate proper positioning of the fibroscope within the trachea.

We have adapted a simple technique that easily and reliably secures the endotracheal tube at the proximal end of the insertion tube. The fibroscope control-body has an instrument channel, the proximal end of which protrudes like a hook. From this instrument channel, the endotracheal tube may be easily secured by placing a rubber band at its proximal end around the 15 mm blue connector. Thereafter, the endotracheal tube is threaded over the shaft of the intubation fibroscope. Once positioned, the rubber band is rotated to achieve a figure-of-eight, and is then slid over the proximal end of the instrument channel (Figure). The rubber band firmly secures the endotracheal tube in place, and the tube can be released easily after the fibroscope has been correctly positioned. We have found this method of temporary securing of the endotracheal tube to be effective and reliable during fiberoptic intubation.

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Airway Scope®: initial clinical experience with novice personnel

To the Editor:

The Airway Scope® (AWS; Pentax Corporation, Tokyo, Japan) (Figure 1A-B) is a novel system for tracheal intubation that provides a view of the glottis without requiring alignment of oral, pharyngeal, and laryngeal axes.¹ The AWS has a charge-coupled device image sensor and light-emitting diode attached to its tip. The image is transmitted to a 2.4-inch built-in liquid crystal device (LCD) colour monitor at the top of the grip. The curve-shaped blade has a side channel that acts as the housing for placement and insertion of the endotracheal tube. Once the target signal shown on the monitor has been aligned with the glottic opening (Figure 1C), the endotracheal tube is advanced through the vocal cords (Figure 1D), held in place, and the device is removed. The views of the glottis and endotracheal tube are maintained throughout the intubation process, and the endotracheal tube does not obstruct the view of the vocal cords (Figure 1C). The target signal on the monitor may be of particular benefit to novice laryngoscopists. This new intubating device recently received regulatory approval in Japan.

We compared the success rates and times required for airway instrumentation using the AWS *vs* direct laryngoscopy (DL) amongst novice residents receiving one to two months of anesthesia training, but not anesthesia residents. After obtaining Ethics Committee approval and written informed consent from each subject, we studied 40 adult patients aged 21–88 yr who required endotracheal intubation for surgery. Excluded were patients with a history of previous difficult intubation, patients with cervical spine fracture or cervical spine instability. Sixteen trainees received a short demonstration of the AWS device and were allowed five to six practice intubations using a Laedal® airway management trainer (Laedal Medical, Japan) before using the new device clinically. Anesthesia was induced with fentanyl 2 µg·kg⁻¹, propofol 2–2.5 mg·kg⁻¹ and vecuronium 0.15 mg·kg⁻¹. After establishing mask ventilation, airway instrumentation was

FIGURE 1 Photograph of the Airway Scope® with a tracheal tube in place in the side channel. A) Front view. B) Lateral view. The device is held in the left hand and passed into the mouth over the tongue, and the tip is placed under the epiglottis. C) View of the glottis of a 33-yr-old female, which was obtained during tracheal intubation using the Airway Scope®. The target signal shown on the monitor is aligned with the glottic opening. D) A cuffed tube is passed from its position in the channel through the vocal cords. E) The position of the tracheal tube is confirmed at the level of the cords.

undertaken using either the AWS ($n = 20$) or DL using a #3 Macintosh blade ($n = 20$). Group allocation was randomized, and allocation concealment was achieved using sealed envelopes.

Patients were comparable with respect to age [AWS group: 48 ± 19 (mean $\pm$ SD) *vs* DL group: 54 ± 17 yr], weight (55 ± 11 *vs* 56 ± 11 kg) and height (157 ± 8 *vs* 161 ± 9 cm). After obtaining glottic visualization, the airway operators secured and verified the endotracheal tube position within the trachea. A staff anesthesiologist supervised each laryngoscopy and an independent observer recorded the duration of tracheal intubation attempts. If the first intubation attempt failed, the patient's lungs were ventilated again with 100% oxygen via bag-mask ventilation, and the duration of the second attempt was added to the time of the first attempt to secure the airway. Endotracheal intubation was achieved in 33 ± 12 (range: 19–68) sec with the AWS, while requiring 59 ± 29 (27–148) sec with DL ($P < 0.001$, Student's *t* test). Endotracheal intubation was successful on the first attempt in all patients using the AWS, while first attempt intubation was unsuccessful