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An Efficient Technique for Tracheal Intubation Using the StyletScope Alone

To the Editor:—The StyletScope (NihonKoden Corp., Tokyo, Japan) is a new device for tracheal intubation. It is a light-weight stylet with a fiber-optic view, maneuverability of its distal tip, and a built-in light source. Previously, we reported that the StyletScope, in combination with a standard laryngoscope, allows successful intubation in patients with simulated difficult airway.[1] A similar fiber-optic device was reported to function well without a laryngoscope[2]; however, it remains unclear whether the StyletScope can be used for tracheal intubation without the aid of a standard laryngoscope. We prospectively assessed a new procedure for tracheal intubation using the StyletScope alone.

After obtaining approval from the Ethics Committee for Research of our institution and the informed consent of each patient, 11 patients undergoing general surgery participated in this study. Mean age, height, and weight values were 56 yr (range, 25–72 yr), 160 cm (range, 143–176 cm), and 56 kg (range, 38–77 kg), respectively. Using the Mallampati test modified by Samsoon and Young,[3] seven patients were classified as class I, three patients were classified as class II, and one patient was classified as class III.

Patients were premedicated with 0.01 mg/kg atropine and 0.5 mg/kg hydroxyzine. After preoxygenation, general anesthesia was induced with 2.0 μg/kg fentanyl and 1.0 mg/kg propofol, with subsequent infusion at a rate of 10 $mg \cdot kg^{-1} \cdot h^{-1}$ propofol and 0.15 mg/kg vecuronium. With the patient's head and neck in the sniffing position and the lower jaw held upward by an assistant, an endotracheal tube (ETT) with the StyletScope was inserted into the mouth. At this point, the back of epiglottis could be viewed through the eyepiece of the StyletScope (fig. 1). By advancing the tip into the space between the epiglottis and the posterior wall of the pharynx and depressing the lever of the StyletScope gently to bend the tip of the ETT anteriorly, we could obtain the view of laryngeal structure and insert the ETT into the glottic opening during visual control. During the intubation procedure, all views of pharyngolaryngeal structures were obtained through the StyletScope.

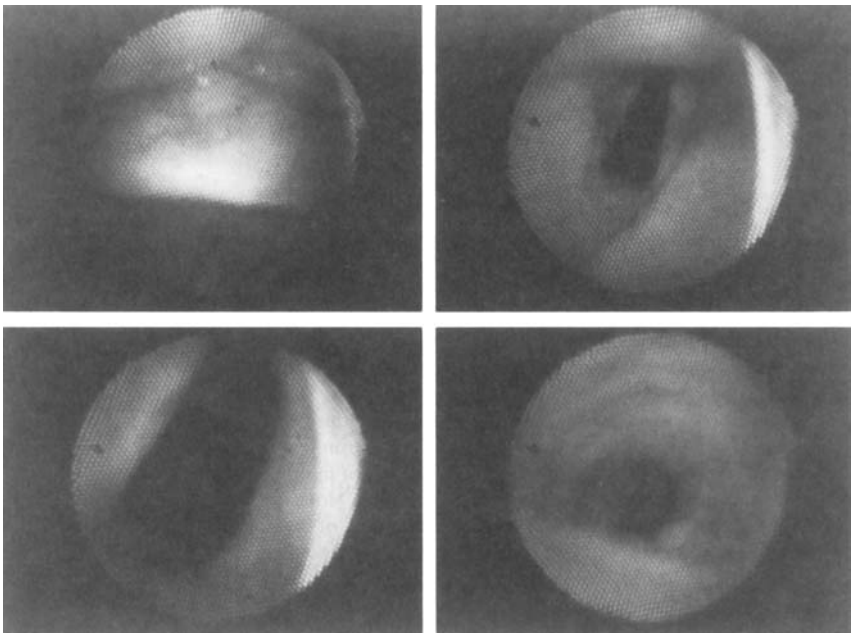

Fig. 1. Views of the laryngeal structure through the StyletScope during the intubation procedure. These photographs were taken by a charge-coupled device camera attached to the eyepiece of the StyletScope. The image guide of the StyletScope is 3,500 pixels; views of the back of epiglottis (*upper left*), the glottis (*upper right*), the vocal cords (*lower left*), and the trachea (*lower right*) are clear enough for tracheal intubation.

The success rate of tracheal intubation at the first attempt was 10 of 11 cases; the failed instance, caused by mucus secretions on the lens was successfully intubated at the second attempt. The mean time necessary for tracheal intubation (*i.e.,* from the moment of ETT insertion with the StyletScope to the time the StyletScope was removed from the ETT) was 22 ± 11 s (mean ± SD) in all cases. Changes in hemodynamics were within acceptable ranges, and oxygen saturation by pulse oximetry (Sp_{O_2}) was maintained above 99% during the intubation procedure in all patients. No adverse effects were observed; however, one case of a slight sore throat and one case of slight hoarseness were observed on the first postoperative day.

The advantage of this intubation procedure is to eliminate the risk of dental trauma and soft tissue damage caused by the manipulation of the standard laryngoscope. Moreover, the StyletScope may be a useful alternative to tracheal intubation in patients with a restriction of the mouth opening, if an ETT can be inserted into the mouth. Our additional experience of intubation using the StyletScope alone suggests that it is possible to perform this procedure safely with the patient's head and neck in a neutral position, and without an assistant in elevating the patient's jaw.

In conclusion, tracheal intubation using the StyletScope alone is an efficient technique in patients with normal airway anatomy. Although we have not tested this technique for patients with a difficult airway, we speculate that the StyletScope may circumvent difficult airway problems.

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