Correspondence

The StyletScope® facilitates tracheal intubation with the GlideScope®

To the Editor:

The GlideScope® (Diagnostic Ultrasound Corporation, Bothell, WA, USA) is a videolaryngoscope that could have a profound impact on clinical airway management. The flange of the blade has a 60° angle, resulting in a better exposure of the larynx than traditional Macintosh blades.¹ However, one limitation of the device is that the flange of the blade is angled in such a way that it may be difficult, or occasionally impossible, to pass the endotracheal tube (ETT) through the glottis, despite complete visualization of the glottis.²⁻⁴ Glottic exposure is likely to elevate the glottis anteriorly, requiring a steeper curve of the styletted-ETT. This increases the angle between the axis of the ETT tip and the tracheal axis. The tip of the ETT sometimes collides with either the anterior commissure of the glottis or the anterior wall of the cricoid cartilage, preventing advancement of the ETT into the trachea. Several maneuvers may resolve this "hesitation of the tube": i) relaxing the elevation of the laryngoscope;⁵ ii) withdrawal of the laryngoscope 1–2 cm;⁵ iii) withdrawal of the stylet approximately 4 cm;⁵ and iv) clockwise rotation of the ETT.⁴ When these maneuvers fail, we used the StyletScope® (Nihon Kohden Co., Tokyo, Japan). This device has a flexible tip stylet, the angle of which is completely controlled by the power of a handgrip (Figure). The angle of the ETT tip can be adjusted between 30° and 90°. Once a satisfactory view of the glottis is obtained on the monitor screen of the GlideScope®, while gripping the handle of StyletScope® strongly, the tip of the ETT is delivered to the glottis (Figure A). A slight release of the handgrip makes the ETT tip face downward, resulting in alignment of the axis of the ETT tip with the tracheal axis (Figure B). Once the two axes are aligned, the ETT is advanced through the glottis, and into the trachea (Figure C). This maneuver avoids impacting the ETT tip on the anterior commissure of the glottis or the anterior wall of the cricoid cartilage. Finally, while fully releasing the handgrip, the StyletScope® is smoothly extracted from the ETT. This procedure has been very helpful in managing tracheal intubations with GlideScope® at our institution.

FIGURE Left) Laryngeal exposure and the distal tip of the endotracheal tube (ETT). Right) The StyletScope® with an ETT. A) The handgrip is held forcibly with the ETT tip facing upwards at 90°. The tip of the ETT collides with the anterior commissure of the glottis. B) A slight release of the handgrip can adjust the ETT tip to bend at a favourable angle. The axis of the ETT tip is aligned with the axis of the trachea; this avoids impacting the ETT tip on the anterior commissure of the glottis or the anterior wall of the cricoid cartilage. Note the space in the anterior portion of the glottic orifice (arrow). C) Full-release of the handgrip provides smooth removal of the StyletScope® from the intubated-ETT.

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Avoiding awake intubation by performing awake GlideScope® laryngoscopy in the preoperative holding area

To the Editor:

The GlideScope® is a novel laryngoscope that has a 60° distal anterior angulation and an embedded digital video camera that allows the user to “see around the corner” of the tongue, and potentially provides a better image of the glottic aperture than direct laryngoscopy.¹ Some anesthesiologists believe that the GlideScope may serve to redefine the requirement for an awake fiberoptic intubation in patients with a suspected difficult airway.²

In the course of our routine practice, we recently used the GlideScope preoperatively to examine the glottis of seven patients, in order to predict whether or not a potentially difficult airway would make it difficult to intubate the trachea under general anesthesia with the GlideScope. Awake fiberoptic intubation had been considered in all of these patients because of a non-reassuring airway examination. We surmised that if a GlideScope examination showed that a good portion of the glottis was visible with the patient awake, then intubation of the trachea would be possible with the patient anesthetized and paralyzed with muscle relaxants. We identified patients with potentially difficult airways in our routine preoperative assessment using such criteria as reduced neck range of motion, large neck circumference, high Mallampati score, or reduced thyromental distance. Patients were not part of a prospective study. Rather, we began using the technique on clinical grounds and realized that other anesthesiologists and patients might benefit from our experience. Permission to publish summary findings of these cases was obtained in accordance with local institutional guidelines.

In the preoperative holding area, after discussing with each patient the potential risks and benefits, an *iv* cannula was inserted. Each patient's airway was topicalized with 5 mL 4% nebulized lidocaine for 20 min, after which five to ten intra-oral lidocaine sprays (10 mg per spray) were administered. In addition, the blade of the GlideScope was liberally coated

with 2% lidocaine jelly. Glycopyrrolate 0.2 mg *iv* was administered to reduce secretions, but no sedation was given. Monitoring in the holding area consisted of the continuous presence of an anesthesiologist. The GlideScope blade was slowly introduced, and advanced until the arytenoid cartilages, posterior commissure of the vocal cords, and the tracheal opening were visible. If the patient became uncomfortable, the GlideScope was removed immediately. No attempt was made to advance an endotracheal tube at this time.

Six patients tolerated GlideScope laryngoscopy without any discomfort or coughing. One patient coughed, which resolved with additional topical lidocaine. A complete glottic view (Cormack & Lehane grade I) was observed in three patients. In the other four patients, a Cormack & Lehane grade II glottic view was obtained. Under general anesthesia with muscle relaxation, a Cormack & Lehane grade I view was obtained in all seven patients using the GlideScope. Endotracheal tube placement was uneventful in all cases, and each patient expressed satisfaction with the procedure, and pleasure to have avoided awake tracheal intubation.

Although no adverse events were observed in this small series, there exists a potential for problems such as vagally-mediated bradycardia, tachycardia from airway stimulation, and aspiration due to an anesthetized airway. However, since these patients would have received similar airway topicalization for an awake intubation, the potential risk of aspiration would have been no different with the described technique. Monitoring commensurate with patients' medical comorbidities should be applied as necessary.

Our approach using the GlideScope preoperatively in patients with a potentially difficult airway may have avoided unnecessary and potentially uncomfortable awake airway instrumentation, by establishing the glottic grade before patients entered the operating room. We recognize that the main reason to perform an awake endotracheal intubation is for safety considerations if there are potential difficulties in ventilation and oxygenation when the patient is rendered unconscious (e.g., morbidly obese patients, and those with a mass lesion obstructing the upper airway). While these patients had none of the latter concerns, with adequate topical anesthesia, awake GlideScope laryngoscopy is technically feasible, well-tolerated, and easy to accomplish in a busy clinical setting. Because airway topicalization and laryngoscopy occur in the preoperative holding area, no operating room delay is imposed by this procedure when adequate staff resources are available.