

## Letters to the editor

### **Use of a new videolaryngoscope (Airway Scope) in the management of difficult airway**

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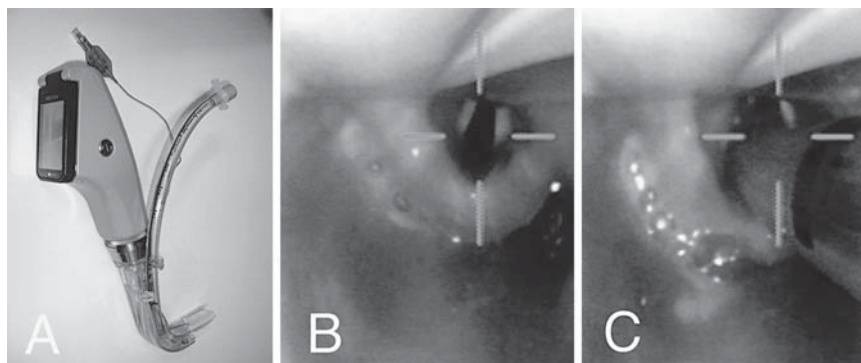
*To the editor:* Although rigid fiberoptic laryngoscopes (e.g., the Bullard laryngoscope [ACMI; Circon, Santa Barbara, CA, USA], the WuScope System [Achi, San Jose, CA, USA], and the Upsherscope Ultra [Mercury Medical, Clearwater, FL, USA]), offer the advantage of providing a non-line-of sight view of the airway and visual control of endotracheal tube advancement, these devices are not widely used in normal or difficult airways, perhaps in part because they are perceived as being difficult to use [1]. The Airway Scope (AWS; Pentax, Tokyo, Japan; Fig. 1A) is a new intubation device that allows visualization of the glottis without requiring alignment of the oral, pharyngeal, and tracheal axes [2]. We recently used the AWS in patients with difficult airways. Details of our experience with two patients follow.

A 36-year-old female (weight, 100kg; 157-cm tall; body mass index, 40.6kg/m<sup>2</sup>) presented for elective transurethral lithotripsy of urethral calculus. She provided a history of hydronephrosis, chronic glomerulonephritis, and hypertension. On examination, she had a class III Mallampati view and a short neck. Anesthesia was induced with fentanyl and propofol following oxygenation. Once airway patency was accomplished with a mask, vecuronium was administered. Macintosh laryngoscopy revealed the glottis was Cormack-Lehane (C-L) grade III. An anesthesia resident inserted the AWS into the mouth, and the glottic opening was readily visualized (C-L grade I); endotracheal intubation was accomplished within 24s.

A 63-year-old female (weight 39kg; 150-cm tall) presented for elective hysterectomy because of carcinoma in situ. She had suffered from rheumatoid arthritis for 10 years. On examination, she had a class III Mallampati view and a thyromental distance of 5 cm. Anesthesia was induced with fentanyl, propofol, and vecuronium following oxygenation. Macintosh laryngoscopy, performed by a supervisor, revealed the glottic opening was C-L grade III. A non-anesthesia resident, after having received 2 months of training, inserted the AWS, and C-L grade I glottic exposure was easily obtained. The tracheal intubation procedure was completed in 23s.

The AWS has a built-in charge-coupled device (CCD) camera and light-emitting diode (LED) attached to its tip. The image is transmitted to a 2.4-inch liquid crystal display (LCD) color monitor built at the top of the hand grip (Fig. 1A). This built-in monitor screen has a wide viewing angle and is readily visible both from behind and from the side of the scope. The curved-shaped blade has a side channel which acts as a housing for the placement and insertion of the tracheal tube. Once the target signal shown on the monitor has been aligned with the glottic opening (Fig. 1B), the tracheal tube is passed through the vocal cords and held in place, and the device is removed. A view of the glottis and tracheal tube is maintained throughout the intubation process and the tracheal tube does not obstruct the view of the vocal cords (Fig. 1C).

There are several potential advantages of the AWS, in comparison with conventional rigid fiberoptic laryngoscopes and/or flexible fiberoptic bronchoscopes. First, the AWS seems easier to use than the conventional fiberoptic endoscopes, which generally require a significant amount of experience to achieve proficiency. The operators reported here were both residents who had no prior experience of performing tracheal intubation with the AWS. A short demonstration of the AWS device was the only requirement for successful intubations. Second, the high-resolution CCD camera provides an excellent view of the airway with a wide-angle view of the glottis



**Fig. 1.** **A** Photograph of the Airway Scope (Pentax) with a tracheal tube in place in the side channel. **B** View of the glottic opening in a 63-year-old female with rheumatoid arthritis. Note that the target signal is aligned with the glottic opening. **C** The position of the tracheal tube can be confirmed at the level of the vocal cords

and surrounding structures. The viewing angle of the CCD camera is 90°, which angle is significantly wider than that of conventional fiberoptic endoscopes. Third, all individuals involved can view the intubation. Supervisors and other individuals, apart from the airway operator, can verify the tracheal intubation process. The target signal shown on the monitor is also helpful for teaching. Fourth, the method is less affected by secretions and blood compared with flexible fiberoptic bronchoscopes. Fifth, the AWS is significantly more rugged than flexible fiberoptic bronchoscopes, with easy maneuverability and less susceptibility to damage. Finally, the blade is for a single-use device. This removes the potential risk of contamination and infection.

## References

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2. Koyama J, Aoyama T, Kusano Y, Seguchi T, Kawagishi K, Iwashita T, Okamoto K, Okudera H, Takasuna H, Hongo K (2006) Description and first clinical application of Airway Scope for tracheal intubation. *J Neurosurg Anesthesiol* 18:247-250

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