The Pentax-AWS Video-Laryngoscope: The First Experience in One Hundred Patients

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We studied the efficacy of the Pentax-AWS (Tokyo, Japan), a new portable, battery-operated video-laryngoscope, in 100 patients. It was possible to insert the blade of the Pentax-AWS and to see a full view of the glottis on the first attempt in 99 of 100 patients. In the remaining patient, insertion of the Pentax-AWS was abandoned because of a risk of damaging teeth that were already loose. Tracheal intubation was successful in 98 patients. The median time taken for tracheal intubation was 35 s (range, 5–120 s).

The Pentax-AWS (Pentax, Tokyo, Japan) (Fig. 1) is a new video-laryngoscope consisting of a disposable transparent blade (PBLADE®), a 12-cm cable with a charge-coupled device (CCD) camera, and a 2.4-inch liquid crystal device monitor display (Figs. 1 and 2).1–3 The main unit (Fig. 2) is waterproof, facilitating cleaning with water or a disinfectant, such as ethanol. The device is light (290 g without batteries). The image is displayed on a full-color screen. A tracheal tube can be attached to the right side of the blade (Fig. 1). There is a green target symbol on the monitor display, which indicates the direction of the tracheal tube tip. The PBLADE blade has a port through which a suction catheter can be passed. The distal aperture of the suction port is near the CCD camera, so that the tip of the suction catheter will come into view.

The Pentax-AWS has been commercially available in Japan since July 2006, and has been described in a limited number of patients.1–3 The purpose of this study was to evaluate the efficacy of the Pentax-AWS in 100 anesthetized patients.

METHODS

We obtained several Pentax-AWS video-laryngoscopes soon after the devices were licensed for clinical use.

RESULTS

Of 100 patients, 53 patients were males and 47 were females (Table 1). It was possible to insert the blade of the Pentax-AWS and to see a full view of the glottis on
the first attempt in 99 of 100 patients. In the remaining patient, insertion of the Pentax-AWS was abandoned because the anesthesiologist judged that it might damage teeth that were already loose. Tracheal intubation was successful in 98 patients (in 96 patients on the first attempt and in 2 patients on the second attempt). In the remaining patient, intubation failed because the tube kept impacting on the arytenoids. The median time for tracheal intubation was 35 s (range, 5-120 s). The only equipment malfunction was tracheal tube dislodgement from the blade during an attempt at intubation (with a successful intubation). There was no damage to teeth, bleeding from the oropharynx, or hypoxia.

**DISCUSSION**

It was generally easy to insert the Pentax-AWS, to obtain a full view of the glottis, and to intubate the trachea, without major complications. Previous videolaryngoscopes have suffered from difficulty in advancing the tracheal tube into the trachea because the glottis was not under direct view, requiring frequent need to adjust the shape of the tracheal tube with a stylet.4,5 In contrast, with the Pentax-AWS, a tracheal tube can be attached to the side of the blade, and the tip of the tube is already shown on the monitor display. In our patients, once the glottis was positioned in the target symbol, it was easy to advance the tube into the trachea in 98 of 99 patients.
The Pentax-AWS may be difficult to use in patients with limited mouth opening because the maximum width of the blade is approximately 2.5 cm. Another possible disadvantage is that there is a theoretical risk of blurred images by fogging. Nevertheless, in our patients, this was rare. The manufacturer suggests that fogging is infrequent, because the CCD camera will not be exposed to humid air in the oropharynx, and because the blade is slightly warmed by the camera light. Lastly, the single-use blade costs 2500 yen or approximately 20 dollars, and thus its routine use may be restricted. There have been several reports of successful use of videolaryngoscopes in patients with difficult airways. If the Pentax-AWS is effective in patients with difficult airways, this expenditure may be justifiable.

REFERENCES