Pentax-AWS videolaryngoscope for awake nasotracheal intubation in patients with a difficult airway

Editor—We read with interest the recent case report and agree with the author’s view that the Pentax-AWS videolaryngoscope (AWS) is useful for nasotracheal intubation (NTI) in awake patients with restricted neck movement. The AWS may also serve as a useful tool for teaching airway topical anaesthesia. When awake intubation is performed using the AWS, the awake patient and subsequent successful instrumentation can be achieved using a MADgic laryngoscope (Wolfe Tory Medical Inc., Salt Lake City, UT, USA) or a tracheal spray tube (Hakko, Tokyo, Japan). Also, the plastic delivery tube to the glottis can easily be achieved using a MADgic laryngoscope, a device similar to the AWS.

However, several issues in this report should be clarified. In all three cases, the topical anaesthesia to the oropharynx, larynx, and trachea was not performed before intubation and awake NTI caused mild or severe coughs (Cases 1 and 3). During awake intubation, it is very important that once tracheal intubation has been achieved, the patient is relaxed and comfortable, so that the tracheal tube position can be confirmed and general anaesthesia then can proceed under controlled conditions. In the pathological conditions associated with cervical spine instability, moreover, coughing resulting in neck movements must be avoided throughout the intubation procedure. Awake patients rarely allow the airway to be instrumented without adequate airway topical anaesthesia. Thus, effective airway topical anaesthesia is mandatory for the comfort of the awake patient and subsequent successful instrumentation. When awake intubation is performed using the AWS in patients with a difficult airway, airway topical anaesthesia can easily be achieved using a MADgic laryngoscope (Wolfe Tory Medical Inc., Salt Lake City, UT, USA) or a tracheal spray tube (Hakko, Tokyo, Japan) passed through the tube channel or dedicated ‘suction channel’ of the disposable blade (PBlade). Also, the procedure is well tolerated by the awake patient because only minimal lifting force is needed to expose the airway structures by the AWS.

In Case 2, a bougie was passed through the nasotracheal tube to correct deviation of the tube tip from the target symbol. However, inserting a bougie through the nasotracheal tube, with its distal acute curve, can result in inappropriate bending of the distal portion which is unfavourable to insertion of the bougie into the laryngeal aperture. Because of its elastic properties, the bougie also tends to resume its linear form shortly after it has been configured to the patient requirement. Inserting a fiberoptic bronchoscope (FOB) through the nasotracheal tube under direct view on the videoscreen of the AWS is a more effective measure to solve this problem, because the AWS can provide the best possible view of the glottis, the anaesthesiologist may manipulate the FOB to direct it into the larynx and then the trachea under guidance of the AWS image, and the AWS can be used to monitor placement of the nasotracheal tube and find the cause of any resistance to advance the nasotracheal tube over the FOB. This method has also been successfully used to facilitate the NTI using the Airtraq laryngoscope, a device similar to the AWS.

Like the Glidescope, a most crucial disadvantage with the AWS for the NTI is that design of its PBlade may render use of the straight Magill forceps very awkward. Therefore, the most important aspect of success with the NTI with the AWS is to guide the tube tip towards a visualized glottis with some auxiliary manoeuvres. Besides the fibroscope-assisted technique above-mentioned, inserting an intubating stylet into the nasotracheal tube before intubation to facilitate curving of the tube, inflation of the nasotracheal tube cuff, external laryngeal manipulations, rotating the tube, adjusting the patient’s head position according to the images on the videoscreen during intubation are useful measures to overcome the uncorrected tube position during the NTI using the AWS. Because the AWS has only one fixed-size blade, a second limitation is that in some patients, it can be difficult to position the PBlade tip inferior to the epiglottis. This is probably because the distance from the mouth to the larynx of the patient is longer than the designed length of the PBlade.

A third shortcoming is that the length of the AWS may make its insertion difficult in patients with fixed flexed necks and it is not suitable for patients with severe limited mouth opening because of the large PBlade. Finally, there is currently only one PBlade size which is not suitable for small children. Development of different-sized PBlades of the AWS, including ones sized for children, would be useful.

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Editor—I fully agree with Dr Xue and colleagues’ comment that effective topical anaesthesia is mandatory for the comfort of awake patients and subsequent successful instrumentation, and I usually do this. Nevertheless,
I also had to take another factor into consideration—pulmonary aspiration. Airway reflexes are necessary to minimize aspiration, and to expel out aspirated materials from the airway, if aspirated. Therefore, while inhibition of the airway reflexes (by topical anaesthesia, sedation, or both) would reduce the stress to awake patients, it also increases the risk of aspiration. All three patients reported were at high risk of aspiration, and thus I applied topical anaesthesia only to the nasal cavities.

When it is unsuitable to give topical anaesthesia to the airway or unsuitable to give sedatives (like in these cases), one should find the least stressful and reliable method to achieve tracheal intubation. Insertion of the Airway Scope does not require extension of the head and does not distort the anatomical structures as much as the Macintosh laryngoscope does, and thus insertion should be less stressful. All three patients tolerated insertion of the Airway Scope and no marked straining was observed.

The Eschmann’s tube exchange catheter (gum elastic bougie) is designed to insert into the trachea by adjusting direction of its angulated tip. Therefore, the claim that inappropriate bending of the distal portion is unfavourable for insertion into the trachea is unwarranted.

As Dr Xue and colleagues point out, a fiberoptic bronchoscope may be used to guide the tube into the trachea. I did not use this, because at least two anaesthetists would be required. In contrast, the use of the bougie requires only one person, and is simpler.

While a recent letter states that the blade of the Airway Scope is frequently too short to reach the epiglottis, none of the major formal studies reports this problem. For example, in a study of 293 patients with predicted or known difficult tracheal intubation using the Macintosh laryngoscope, tracheal intubation using the Airway Scope was successful in 290 patients, and in none of the patients was it necessary to be aided by a fiberoptic bronchoscope, or did the blade of the Airway Scope fail to reach the epiglottis.

At an early stage of using the Airway Scope, I experienced difficulty in reaching the blade tip to the epiglottis when the patient’s head and neck were placed to the sniffing position. The shape of the Airway Scope blade is designed based on the curve of the oropharyngeal cavity, with the head and neck in the neutral position. Therefore, it may be that the blade did not reach the epiglottis in the correspondence letter, because the patient’s head and neck were not properly placed to the neutral position.

As Dr Xue and colleagues indicate, none of the devices and manoeuvres is perfect, and thus we should continue to devise a method of least-stressful awake tracheal intubation in patients who are at high risk of pulmonary aspiration and whose airway is difficult to manage.

Conflict of interest

T.A. has received an honorarium from the manufacturer for giving lectures, but has not received any payment for research or evaluation of the Pentax-AWS or any other equipment from other companies.

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3 Lai HY, Chen A, Lee Y. Nasal tracheal intubation improves the success rate when the Airway Scope blade fails to reach the larynx. Br J Anaesth 2008; 100: 566–7

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Paediatric Airtraq for adult nasal intubation in anaesthetized patients

Editor—We read with interest the report of the successful use of the Pentax-Airway Scope (AWS) videolaryngoscope (Hoya Co., Tokyo, Japan) for awake nasal intubation in patients with unstable necks. In the three cases described, the technique appears to have provided a swift and well-tolerated solution to three predictably difficult airway scenarios. A variety of optical devices have been developed in recent years to facilitate tracheal intubation. These include the Airtraq (Prodol Ltd, Vizcaya, Spain) and the Glidescope (Verathon Medical, Bothell, WA, USA), and the Pentax-AWS.

There is a growing body of evidence supporting their use in the management of patients with predicted and