

Pentax-AWS airway Scope as an alternative for awake flexible fiberoptic intubation of a morbidly obese patient in the semi-sitting position

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Abstract

For anesthesia induction in a morbidly obese patient with a full stomach, awake flexible fiberoptic bronchoscope (FOB) intubation in the semi-sitting position may be a suitable choice. A new rigid indirect videolaryngoscope, the Pentax-AWS system, has a unique feature of an adjustable built-in monitor and is designed to be used in patients in various positions. However, the efficacy of its use in such situations has not been investigated or reported. We used the Pentax-AWS system for the intubation of a morbidly obese patient (body mass index >50) who was at risk of regurgitation, anticipated difficult intubation, and supine hypotensive syndrome due to inferior vena cava compression by a huge ovarian cyst. The patient was placed in the sitting position during the intubation procedure. The patient's trachea was intubated with the Pentax-AWS by an anesthesiologist positioned at the patient's right and facing her. The Pentax-AWS offered easy intubation under good visualization of the glottic aperture as a consequence of its adjustable integrated monitor, in contrast to difficult intubation with other videolaryngoscopes which require an external monitor. This report illustrates that the Pentax-AWS is useful as an alternative for flexible fiberoptic intubation under these circumstances, as a consequence of its adjustable built-in monitor and integrated tube channel.

Key words Pentax-AWS airway Scope · Difficult airway · Intubation

A morbidly obese patient with a full stomach sometimes requires anesthetic induction in a semi-sitting position, and intubation with a conventional direct laryngoscope would be difficult. In such cases, flexible fiberoptic bronchoscope (FOB) intubation has been the standard technique, with the practitioner positioned at the patient's right side facing the patient. Awake intubation with the Airtraq (Prodol, Vizcaya, Spain) is also used in such

patients [1]. The Pentax-AWS airway Scope system (AWS; Hoya, Tokyo, Japan) is a new rigid indirect videolaryngoscope with integrated tube guidance; it has an adjustable built-in monitor with which the practitioner can orient, allowing ease of the intubation maneuver [2].

The authors used the AWS as an alternative to the FOB or Airtraq and illustrated that AWS has advantages over the FOB or Airtraq for a morbidly obese patient with a full stomach and suspected difficult laryngoscopy.

A 33-year-old woman (weighing 136 kg, height 164 cm, body mass index 50.6 kg·m²) was scheduled for emergency surgery due to torsion of the pedicle of a giant ovarian cyst. A computed tomography scan revealed that the cyst was 25 cm in diameter, and her stomach was full. The airway assessment indicated that she was anticipated to have a difficult airway (neck circumference = 43 cm, snoring at night, and history of sleep apnea). We did not attempt the rapid sequence technique with cricoid pressure, because it was anticipated that she would have a difficult airway with the risk of regurgitation.

Due to her obesity we were aware that we should prepare for rapid onset of hypoxemia during the apneic period of intubation and carry out a rapid intubation maneuver, as reported previously [3]. She did not tolerate the supine position due to dyspnea and preferred to be in the left lateral position. First, we anticipated that the supine position during intubation would cause inferior vena cava compression from her giant cyst. The semi-sitting position was adopted for her intubation. Thus, we planned awake intubation in the sitting position using the AWS. Her airway was topicalized with 8% lidocaine sprayed on to the base of the tongue and anterior oropharyngeal wall, including the anterior surface of the epiglottis. Then the anesthesiologist, positioned at the patient's right and facing her, gently inserted the AWS into her oral cavity. Oxygen

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(6 l·min⁻¹) was administered via the tracheal tube set in the channel. The angle of the built-in monitor screen was adjusted and a good inverted view of the larynx was obtained. An additional external monitor was attached. The image on this monitor was “normal” orientation for standard intubation for a laryngoscopist standing at the head end of the patient, but was an inverted image for the laryngoscopist facing her. The center of the cross hairline on the built-in monitor was aligned to the glottic opening, and the tracheal tube prepositioned in the integrated tube channel was safely inserted into the trachea at its optimal depth under vision. Anesthesia was then induced with propofol and maintained with sevoflurane. The patient was placed in the supine position and her hip was elevated 10 cm with a pillow until the tumor (5 kg in weight) was removed. The surgical procedure was completed uneventfully. The patient subsequently complained of slight hoarseness but the symptom disappeared within 48 h.

In the case presented, awake intubation in the semi-sitting position had many advantages compared to the supine position. First, the risk of inferior vena cava compression by the huge cyst could be avoided. Second, the sitting position will improve pulmonary mechanics to maintain oxygenation. Third, extension at the atlanto-occipital joint can be easily achieved, which maintains proper pharyngeal-lumen patency to facilitate awake intubation.

When a patient is in the semi-sitting position, the use of awake flexible FOB intubation is a standard technique. The AWS is a new intubation device which offers easy and reliable intubation with good laryngeal exposure when the patient is supine. It has an adjustable built-in monitor and is designed to be used in patients in various positions. We have used the AWS for awake intubation in a manner similar to the use of the FOB and Airtraq, and consider that the AWS has distinct advantages over these two intubation techniques.

1) The built-in monitor shows a clear image of the airway anatomy. Proper display orientation to the practitioner facilitates easy observation and maneuvering of the tracheal tube toward and between the vocal cords. In contrast to the built-in monitor, the

“normal” but inverted image, for the laryngoscopist facing the patient, displayed on the external monitor, made maneuvering more difficult. This would also be a disadvantage of the FOB, Airtraq, or other videolaryngoscopes.

- 2) The AWS blade facilitates easy navigation through soft tissue, and allows direct elevation of the epiglottis to visualize the vocal cords.
- 3) The rigidity of the AWS allows rapid control of the position of the tip of the device.
- 4) Alignment of the cross hair line on the screen with the glottic opening facilitates reliable tube advancement into the trachea from the integrated tube channel.
- 5) Unexpected laryngeal damage due to forceful advancement of the tube (such as tube impingement onto the arytenoids) [4] will be avoided, because passage of the tube between the vocal cords is under visual control.
- 6) Patients can breathe more easily during tube insertion compared to the FOB. The AWS requires no stylet or other devices in the tube lumen; therefore, the cross-sectional area will not be diminished [5].

The AWS has distinct advantages for patients who require sitting-position intubation.

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