Letter to the Editor

Korean J Anesthesiol 2013 January 64(1): 87-88
http://dx.doi.org/10.4097/kjae.2013.64.1.87

Pentax-AWS videolaryngoscope for nasotracheal intubation in patients with difficult airways

Eun-Jin Moon, Mi-Kyeong Kim, and Keon-Sik Kim

Department of Anesthesiology and Pain Medicine, College of Medicine, Kyung Hee University, Seoul, Korea

It is difficult to intubate with Macintosh laryngoscope or fiberoptic bronchoscope in patients with narrow oropharyngeal space, deformed oro-pharyngeal-larynx structures, or restricted neck movement. The Pentax-AWS (AWS®, Pentax, Tokyo, Japan) (Fig. 1) is a rigid video laryngoscope for intubation, which consists of a disposable transparent blade (Pblade), a camera, and a monitor. A target mark on the monitor suggests the tracheal tube direction of advance, facilitating easy and accurate intubation.

We report on the use of the AWS® for nasotracheal intubation in two patients with oropharyngeal lesions, in whom Macintosh laryngoscopic and fiberoptic bronchoscopic intubation had failed.

Fig. 1. Photograph of the Pentax-Airway scope with Pblade separated.

The first patient was a 56-yr-old man (163 cm, 64 kg), who was presented with right facial palsy after a right radical parotidectomy about 8 months ago due to an adenocystic parotid cancer. He had limited neck motion, which was expected due to the radiation therapy and prior neck dissection. For tensor fascia lata sling operation, anesthesia was induced with a bolus of propofol (2 mg/kg) and rocuronium (0.8 mg/kg) intravenously. We tried to insert a 7.0 mm ID nasal RAE™ tracheal tube through the nose, because the nasotracheal intubation offers more convenience for surgical maneuvering. Nasotracheal intubation with Macintosh laryngoscope was attempted, but visualization of the glottis was impossible (Cormak and Lehane [C/L] grade 3). Secondly, with passing the fiberoptic bronchoscope (LF-TP, Olympus, Fukushima, Japan) (diameter; 5.0 mm) through the nasal RAE™ tube, we tried to locate the tip of the fiberoptic bronchoscope to the glottis. But it was impossible to see the glottis mainly due to swelling in the pharynx. Next, nasal intubation, with the AWS®, was attempted. With the nasal tube in place, the AWS® was easily inserted orally with its tip toward the glottic side of the epiglottis, and a full view of the glottis was displayed on the videoscreen. The Magill forceps could not be used because when the AWS® was in the mouth, there was not enough space to manipulate a Magill forceps. Also, without any introducer, the tube was smoothly advanced into the trachea without any difficulty by external pressure to the neck for targeting symbol mark. Nasotracheal intubation using the AWS® was achieved within 20 seconds.

The second patient was a 71-yr-old woman (153 cm, 48 kg), who was scheduled with an operation for a wide excision of

Corresponding author: Keon-Sik Kim, M.D., Department of Anesthesiology and Pain Medicine, Kyung Hee University Medical Center, Hoegi-dong, Dongdaemun-gu, Seoul 130-702, Korea. Tel: 82-2-958-8591, Fax: 82-2-958-8580, E-mail: keonsik@hanafos.com

the recurred right tonsillar cancer. We induced anesthesia with propofol (2 mg/kg) and rocuronium (0.8 mg/kg), intravenously. Then, a 6.0 mm ID reinforced endotracheal tube was passed through the nose, securing the space for the operation. Nasotracheal intubation with Macintosh laryngoscope was attempted, but it failed due to a large cancer hindering a visualization of the glottis (C/L grade 3). Secondly, fiberoptic bronchoscope was passed through the tube, but it was not available to advance the fiberoptic bronchoscope to the glottis, due to interfered passage by the large tonsillar mass. We made several attempts, but that failed. So we decided to stop using the fiberoptic bronchoscope as a fear of pharyngeal edema. A final attempt was made to intubate with the AWS®. With a nasal tube in place, instead of holding on the tube groove on the Pblade, oral insertion of the AWS® was easily done, and a full view of the glottis was obtained with reserving space pushing the tonsil lesion by the Pblade. With external pressure to the neck, the tube was gently advanced into the trachea, without using any introducer and the Magill forceps. Total time taken for a successful tracheal intubation with the AWS® was within 15 seconds.

The AWS® has the Pblade that fits the oropharyngeal anatomic configuration and is wide and rigid enough to push away the structures around the larynx, facilitating a visualization of the glottis and tracheal intubation by making sufficient room in the pharyngeal space. Also, the image of the glottis, captured near the tip of the laryngoscope before the device insertion, makes it possible to easily locate the tip of an endotracheal tube.

Enomoto et al. [1] reported that, in patients with restricted neck movements, the AWS® provided a better view of the glottis and a higher success rate of the oro-tracheal intubation, compared with the Macintosh laryngoscope. Asai et al. [2] studied concerning the effectiveness of the AWS® in patients with difficult airways because of several different anatomical or pathological changes, such as restricted neck movement, deformity of the airway, and tumors in the airways. The authors demonstrated that intubation with the AWS® was successful in 268 of the total 270 patients with difficult Macintosh laryngoscope.

Fiberoptic intubation has to accompany with assistance, skills and experience, especially under the condition of a narrowing oropharyngeal space and an unpredictable anatomical structure. It is reported that owing to several specialties of the AWS® and no particular special skills required to use the AWS®, even a naive operator can quickly and easily perform successful tracheal intubation [3].

In this letter, we intend to demonstrate that with the use of the AWS®, successful nasotracheal intubation can also be done, instead of orotracheal intubation, in difficult airways. In one case report, the AWS® was used for an awake nasal intubation in patients with unstable necks [4]. The AWS® was initially designed for orotracheal intubation. However, that report suggests that the AWS® may be a useful for nasotracheal intubation in cervical immobilization. Besides, Hirabayashi [5] reported the safety and availability of the AWS® in nasotracheal intubation. In this study, the nasotracheal intubating time, performed by non-anesthesia residents, using the AWS® is within 56 ± 11 seconds, compared to that by Macintosh laryngoscope and Magill forceps, which was within 114 ± 37 seconds.

In summary, our cases show that the AWS® may be useful for a safe nasotracheal intubation and has potential advantages over the Macintosh laryngoscope and the fiberoptic bronchoscope in patients with narrowing pharyngeal space, due to pharyngeal edema or mass and restricted neck movement. We should consider that nasotracheal intubation with the AWS® may be useful in patients who have predicted difficult airways to undergo a head and neck surgery.

References

1. Enomoto Y, Asai T, Arai T, Kamishima K, Okuda Y. Pentax-AWS, a new videolaryngoscope, is more effective than the Macintosh laryngoscope for tracheal intubation in patients with restricted neck movement: a randomized comparative study. Br J Anaesth 2008; 100: 544-8.
2. Asai T, Liu EH, Matsumoto S, Hirabayashi Y, Seo N, Suzuki A, et al. Use of the Pentax-AWS® in 293 patients with difficult airways. Anesthesiology 2009; 110: 898-904.
3. Hirabayashi Y, Seo N. Tracheal intubation by non-anaesthetist physicians using the Airway Scope. Emerg Med J 2007; 24: 572-3.
4. Asai T. Pentax-AWS videolaryngoscope for awake nasal intubation in patients with unstable necks. Br J Anaesth 2010; 104: 108-11.
5. Hirabayashi Y. Nasotracheal intubation with the aid of the Airway Scope. J Clin Anesth 2007; 19: 563.