

Parker Flex-Tip Tube[®] facilitates intubation when the Pentax-AWS[®] fails to reach the larynx

Tadahisa Ohmura · Akihiro Suzuki ·
Atsushi Kurosawa · Kazuhiro Fujimoto ·
Takayuki Kunisawa · Hiroshi Iwasaki

Received: 1 November 2009 / Accepted: 12 July 2010 / Published online: 7 August 2010
© Japanese Society of Anesthesiologists 2010

To the Editor:

Pentax-AWS Airway Scope (AWS: Hoya, Tokyo), a new rigid, indirect videolaryngoscope with integrated tube guidance, has been successfully used in patients with both normal and difficult airways. In some case, however, the blade tip cannot be advanced beneath the epiglottis, even after multiple attempts [1], and the intubation frequently fails due to blade configuration [2]. Several authors proposed the use of tube introducer (elastic bougie) to solve the problem [3]. We propose the use of the Parker Flex-Tip Tube[®] to facilitate intubation under this situation. Preoperative airway assessment of a 61-year-old man scheduled for general anesthesia indicated a risk of difficult intubation because of relatively small mandible, his thyromental distance being 4 cm. Since the patient did not have risk factors of difficult mask ventilation, he was anesthetized with propofol and rocuronium. After complete paralysis was confirmed with the peripheral nerve stimulator, laryngoscopy was performed with a Macintosh no. 4 blade, but only the epiglottis was visualized, and it was graded as Cormack–Lehane grade 3b.

We next used the AWS for the second intubation attempt. However, the tip was not able to be advanced beneath the epiglottis but inserted into the vallecula. The epiglottis was indirectly elevated, and the laryngeal exposure was approximately 80% of the glottic opening.

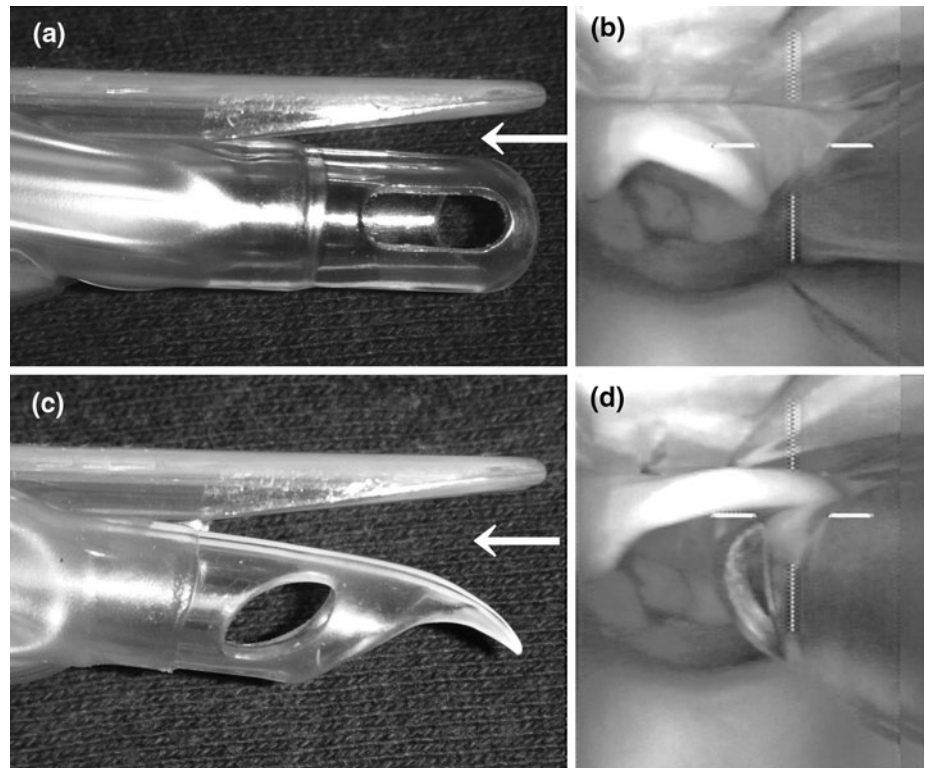
We tried to insert the standard bevel tube (Phycon[®] Tube, Fuji System, 7.5 mm ID, 10 mm OD) set in the channel, but the tube tip impinged onto the epiglottis, and intubation failed. Next, we used the Parker Flex-Tip Tube[®] (Kobayashi Medical, 7.5 mm ID, 10 mm OD), and the tube was inserted smoothly into the glottis without trapping on the arytenoids. The Parker Flex-Tip Tube[®] has a tapered, curved tip and has been shown to facilitate intubation with the Bullard laryngoscope [4] and fiberoptic bronchoscope [5]. The advantage of using the Parker tube in combination with the AWS has not been well evaluated. Figure 1 shows the two tubes, with the same outer diameter as those used in this case, protruding from the channel. We can see more space from the blade tip to the Parker tube than with the standard tube. It seems that this space allows the Parker tube to be advanced without impinging upon the epiglottis, and the tapered, curved tip glides on the posterior surface of the epiglottis to lead the tube into the trachea.

We tested this hypothesis using a mannequin (Airsim multi, TruCorp, Belfast, UK). Fifteen anesthesiologists who have more than 30 intubation experiences with the AWS were enrolled. The order of the tubes used for the trial was randomized. During laryngoscopy, the AWS tip was inserted into the vallecula. After obtaining good laryngeal exposure, the tube set in the channel was advanced. If the laryngoscopist felt abnormal resistance or if epiglottis folding occurred during tube advancement at the first intubation attempt, the anesthesiologist was allowed to withdraw the tube and redirect the AWS tip position. If the intubation was not completed in two attempts, intubation was determined as failed. Mannequin study revealed that even when the blade tip was inserted into the vallecula, the Parker tube was successfully intubated in 14 of 15 cases, whereas the standard tube was successful in two of 15

T. Ohmura (✉)
Department of Anesthesiology and Critical Care Medicine,
Asahikawa Medical College, Midorigaoka Higashi 2-1-1-1,
Asahikawa, Hokkaido 078-8510, Japan
e-mail: raohmura@gmail.com

A. Suzuki · A. Kurosawa · K. Fujimoto · T. Kunisawa ·
H. Iwasaki
Asahikawa Medical College, Asahikawa, Japan

Fig. 1 **a** Standard bevel tube (Phycon tube, Fuji Systems, Tokyo) set in the channel. *Arrow* indicates the space between the tube and the blade tip. **b** The tube frequently impinges onto the epiglottis when the Pentax AWS tip is inserted into the vallecula. **c** Parker tube (Kobayashi Medical, Tokyo, Japan) set in the channel. There is more space between the tube and the blade tip (*arrow*). **d** The Parker tube can be smoothly inserted into the trachea in high frequency, even when the AWS tip could only be inserted into the vallecula



cases ($p < 0.01$, chi-square test). This effect is not caused by the direction of the bevel but the tip design of the Parker tube. When the standard tube was set in the channel with the bevel faced posterior, the tube was advanced leftward due to the nature of the Magill curve, and the counter-clockwise rotation of the standard tube may not result in successful intubation. Therefore, the results obtained from this mannequin study can explain the advantage of the Parker tube tip configuration compared with the standard tube when combined with the AWS. Although further human study is warranted, the use of the Parker tube can be an alternative solution when the AWS fails to reach the larynx.

References

1. Sasano N, Yamauchi H, Fujita Y. Failure of the Airway scope to reach the larynx. *Can J Anaesth.* 2007;54:774–5.
2. Suzuki A, Abe N, Sasakawa T, Takahata O, Iwasaki H. Pentax-AWS® (Airway scope) and Airtraq®: big difference between two similar devices. *J Anesth.* 2008;22:191–2.
3. Suzuki A, Kunisawa T, Iwasaki H. Pentax-AWS and tube selection. *Can J Anaesth.* 2007;54:773–4.
4. Suzuki A, Tampo A, Abe N, Minami S, Takahata O, Henderson JJ, Iwasaki H. The Parker Flex-Tip tracheal tube makes endotracheal intubation with the Bullard laryngoscope easier and faster. *Eur J Anesth.* 2008;25:43–7.
5. Kristensen MS. The Parker Flex-Tip tube versus a standard tube for fiberoptic orotracheal intubation. *Anesthesiology.* 2003;98:354–8.