Facilitating tracheal intubation in pediatric patients with the Airtraq[®] optical laryngoscope

He Ping Liu, MD · Fu Shan Xue, MD ·
Jian Hua Liu, MD · Yu Jing Yuan, MD ·
Xin Ling Guo, MD · Xu Liao, MD

Received: 5 November 2010 / Accepted: 19 November 2010 / Published online: 4 December 2010
© Canadian Anesthesiologists' Society 2010

To the Editor,

The Airtraq[®] optical laryngoscope (Airtraq) (Prodol Meditec S.A., Vizcaya, Spain) is a relatively new disposable tracheal intubation device with an anatomically shaped blade that has two parallel channels, the optical channel and the guiding channel, which accommodates the endotracheal tube (ETT). The Airtraq incorporates a guiding channel to the right of the viewing axis to solve the challenge of passing the ETT through the glottis.¹ However, delivering the ETT through the gap between the end of the guiding channel tube to the glottis may not be straightforward. The guiding channel tube and viewing axis are somewhat incongruent, because the direction of ETT advancement from the guiding channel is defined by the configuration of the guiding channel tube and the ETT angulation.² When attempting to advance the ETT through the laryngeal aperture with the Airtraq during tracheal intubation, it has been reported that a posterior tube tip location can be problematic,^{3,4} especially for pediatric patients.⁵

On the basis of our cumulated experience with the Airtraq, which includes more than 500 pediatric patients to

date, another possible difficulty in advancing the ETT through the glottis, especially in infants and young children with smaller airways, is a left tube tip location. This potential problem arises because the Airtraq is designed with the guiding channel at the right of the viewing axis, and a left-oriented slope at the right side of the distal opening of the guiding channel is devised to direct the tube tip into the glottis in the midline (Figure, Panel A). This design results in ETT advancement from the guiding channel towards the left. Consequently, during advancement of the ETT, the tube tip may move across the midline (Figure, Panel B) towards either the left vocal cord or the left laryngeal vestibule rather than align the ETT towards the midline of the glottis (Figure, Panel C). Whenever this problem arises, our practice has been to withdraw the ETT by approximately 0.5 cm and to exercise one of four available options: 1) slightly rotate the Airtraq in a clockwise direction; 2) advance the Airtraq downwards; 3) gently apply leftwards laryngeal pressure with external laryngeal manipulation, then re-attempt ETT advancement; and 4) in the very rare occasions the above measures fail, withdraw the ETT from the guiding channel and introduce a pediatric bougie into the visualized glottis via the guiding channel. The ETT is then railroaded along the bougie through the larynx, and the Airtraq is used to monitor the progress of the ETT advancement. Over the previous two years, we have used these maneuvers quite successfully to facilitate advancing the ETT into the glottis with the Airtraq device in pediatric patients with uncomplicated and difficult airways alike.

Competing interests No author has received financial support from the manufacturer of Airtraq[®] and there are no potential conflicts of interest related to this work.

Fu Shan Xue and He Ping Liu-contributed equally to this work.

H. P. Liu, MD · F. S. Xue, MD (✉) · X. L. Guo, MD
Xinxiang Medical College, Xinxiang, Henan, People's Republic of China
e-mail: fruitxue@yahoo.com.cn

F. S. Xue, MD · J. H. Liu, MD · Y. J. Yuan, MD · X. Liao, MD
Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, People's Republic of China

Fig. 1 Reasons for difficulty in passing the endotracheal tube (ETT) through the glottis with the Airtraq® optical laryngoscope during tracheal intubation in pediatric patients. **A** The distal end of a pediatric Airtraq optical laryngoscope shows a left-oriented slope at the right side of the distal opening of the guiding channel (black

arrow). **B** When moved ahead from the guiding channel, the ETT tends to travel left and move across the midline (vertical red line). **C** The ETT is directed towards the left laryngeal vestibule rather than towards the glottis in the midline (vertical red line)

References

1. Niforopoulou P, Pantazopoulos I, Demestiha T, Koudouna E, Xanthos T. Video-laryngoscopes in the adult airway management: a topical review of the literature. *Acta Anaesthesiol Scand* 2010; 54: 1050-61.
2. Dimitriou VK, Zogogiannis ID, Douma AK, et al. Comparison of standard polyvinyl chloride tracheal tubes and straight reinforced tracheal tubes for tracheal intubation through different sizes of the Airtraq laryngoscope in anesthetized and paralyzed patients: a randomized prospective study. *Anesthesiology* 2009; 111: 1265-70.
3. Dhonneur G, Abdi W, Amathieu R, Ndoko S, Tual L. Optimising tracheal intubation success rate using the Airtraq® laryngoscope. *Anaesthesia* 2009; 64: 315-9.
4. Xue FS, He N, Liu JH, Liao X, Zhang YM. A simple maneuver to facilitate tracheal intubation using the Airtraq® laryngoscope with the reinforced endotracheal tube. *Can J Anesth* 2010; 57: 278-9.
5. Xue FS, Liao X, Zhang YM, Luo MP. More maneuvers to facilitate endotracheal intubation using the Airtraq® laryngoscope in children with difficult airways. *Pediatr Anesth* 2009; 19: 916-8.