

Combined use of an Airtraq[®] optical laryngoscope, Airtraq video camera, Airtraq wireless monitor, and a fiberoptic bronchoscope after failed tracheal intubation

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To the Editor,

Optical technology and fiberoptic systems have resulted in significant advances in management of the difficult airway. Optical laryngoscopes, such as the Airtraq[®] (Prodol Meditec S.A., Vizcaya, Spain), provide an improved indirect view of the upper airway, achieving a higher intubation success rate than direct laryngoscopy. However, insertion and advancement of the endotracheal tube (ETT) may occasionally fail. The fiberoptic bronchoscope (FOB) remains the gold standard for the management of difficult intubation. Nevertheless, in rare circumstances, even fiberoptic intubation fails.¹ We present the simultaneous use of an Airtraq optical laryngoscope, Airtraq video camera (AVC), Airtraq wireless monitor (AWM), and a FOB in an airway that was grossly distorted due to compression by a cervical tumour.

The patient was a 48-yr-old 150-kg male with morbid obesity (body mass index: 52 kg m^{-2}) and obstructive sleep apnea syndrome. He was scheduled for a total thyroidectomy. Preoperative airway assessment included a Mallampati grade 3, an upper lip bite test² class II, macroglossia, a thick neck, and a large left cervical mass that compressed and displaced laryngeal structures and the upper tracheal lumen (Figure, Panels A and B). Following application of standard monitors, pre-oxygenation with a facemask, administration of a nasal vasoconstrictor, and

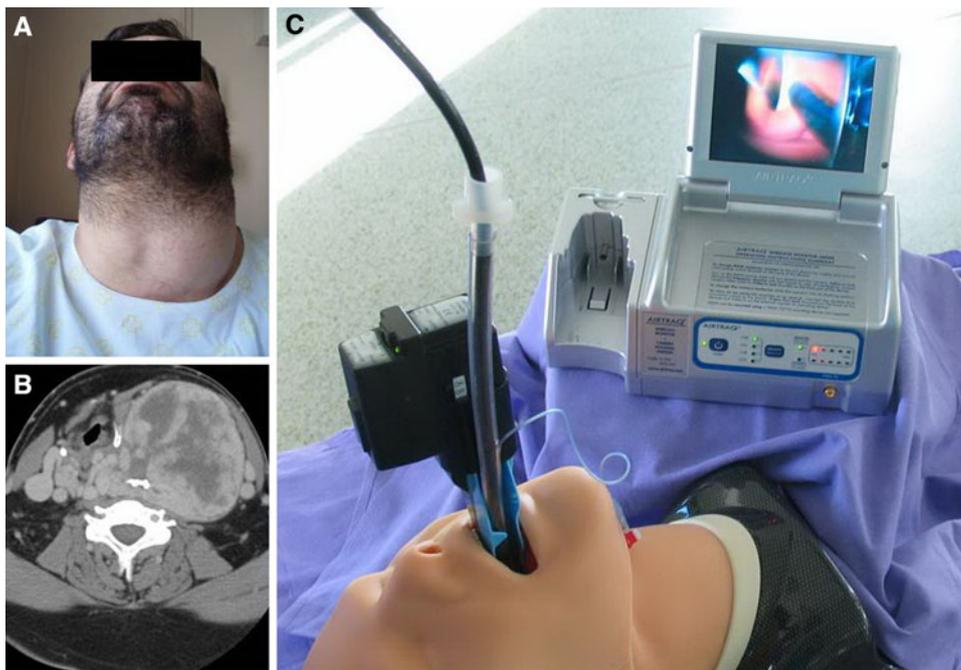
topical anesthesia of the naris, oropharynx, and nasopharynx, the patient was sedated with midazolam 1 mg iv and remifentanyl at $0.15 \text{ } \mu\text{g kg}^{-1} \text{ min}^{-1}$. Attempts were made to insert the FOB through the patient's nose and mouth, but his vocal cords could not be visualized. The Airtraq was inserted without increasing sedation or administering extra topical analgesia. Guided by bubbling secretions during spontaneous ventilation, this step allowed partial visualization of the glottis in the upper right corner of the viewfinder. Additional maneuvers were ineffective in optimizing visualization and centring the glottis in the middle of the viewfinder, hence, intubation was deemed impossible. Without removing the Airtraq, a FOB was inserted through the size 7.0 ETT mounted in the guiding channel. By viewing the FOB tip in the vicinity of the glottis through the AVC in the AWM, rotating the body of the FOB, and manipulating the tip control lever, the FOB was inserted into the patient's trachea and the ETT was advanced over the FOB. The procedure was carried out uneventfully.

Cervical masses may lead to serious airway compromise resulting from anatomical distortion secondary to obstruction of the pharynx or deviation of the larynx,¹ scenarios where any airway device can be fallible. Passage of a FOB to expose the glottis may be very difficult. On the other hand, the Airtraq optical laryngoscope can be effective in managing difficult airways; however, successful intubation requires optimal positioning of the glottis in the middle of the viewfinder. In patients with a large tongue, obesity, or a cervical mass, combined use of the Airtraq and the FOB may compensate each others' limitations.³ The Airtraq can provide an unobstructed airway for the FOB, allowing its tip to be sited in the immediate vicinity of the glottic opening. At the same time, the Airtraq provides visualization of the ETT advancing over the FOB⁴ while the FOB

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Figure (A) Patient before the surgery. (B) Thyroid TC scan shows a severely enlarged left thyroid lobe (approximate dimensions of $12 \times 9 \times 15$ cm) that compressed larynx structures and the esophagus and displaced them to the right. (C) Procedure of orotracheal intubation of a mannequin using the four devices



negotiates the sharp angle between the tip of the ETT and the glottis.³

In three published case reports, combined use of the Airtraq and the FOB has been described in similar scenarios in which both devices had failed separately.³⁻⁵ Two anesthesiologists were necessary in all cases, one to place the Airtraq while observing the location of the FOB tip by the viewfinder and the other to manage the FOB while manipulating the device according to verbal feedback from the anesthesiologist managing the Airtraq. By using a third device, the AVC, tracheal intubation can be performed by a single operator with the support of an assistant holding the Airtraq in position. This approach makes manipulation of the FOB tip more precise under visualization with an external monitor (Figure, Panel C). The AVC is an optional accessory of Airtraq that can be used to transmit the images to the AWM by radiofrequency. We consider this system, which was designed initially for training or teaching purposes, as a useful complement in difficult airway management.

No single airway instrument is perfect in all circumstances. While failure of the devices described herein is uncommon, operator experience should be considered carefully. As always, appropriate steps must be taken to

ensure oxygenation and ventilation, and alternate plans to secure the airway must be immediately available.

Competing interests None declared.

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