Avoiding oesophageal ventilation with the intubating laryngeal mask airway: predictive value of the air aspiration test compared with capnography

Editor—Early identification of tracheal intubation and exclusion of oesophageal intubation is necessary when blind intubation is performed via the intubating laryngeal mask airway (ILMA). Blind intubation increases the risk of oesophageal placement with a consequent risk of hypoxia. Around six tidal volume breaths must be administered before oesophageal intubation may be confidently identified,1–3 so there is also a high risk of gastric insufflation and regurgitation. The frequency of oesophageal ventilation can be reduced by either rapidly identifying tracheal intubation or by early exclusion of oesophageal intubation. Capnography is the technique of choice in identifying tracheal tube position when intubation is performed by direct laryngoscopy. When intubation is performed 'blindly' via the ILMA, the risk of oesophageal intubation is much greater. Techniques better suited to rapidly identify oesophageal intubation include the air aspiration test.4–6 It may be performed rapidly and there is no need to ventilate the patient until oesophageal intubation is excluded. The air aspiration test offers the potential to detect oesophageal intubation but has not been used in conjunction with the ILMA.

We studied 21 ASA I–II patients scheduled for elective surgery under anaesthesia that required tracheal intubation. Laryngoscopy was performed and grade of view recorded.6 An ILMA (LMA-Fastrach™) of appropriate size was inserted and ventilation was confirmed with capnography. A tracheal tube (Euromedical) was passed through the ILMA. Insertion of the ILMA and the tracheal tube was performed by an experienced anaesthetist. Aspiration of air was performed and the capnograph then attached to confirm tracheal intubation. If five tidal volume breaths failed to record CO₂ on the capnograph, the ILMA was removed and the patient ventilated via a facemask. The ILMA was inserted a maximum of three times. If capnography was negative after the third insertion, the airway was secured using an alternative method.

On each insertion of the ILMA, the air aspiration test was performed with a 50 ml ‘catheter tip’ syringe. If 50 ml of air was aspirated, this was recorded as predicting tracheal intubation, whereas if <10 ml air was aspirated then this was recorded as predicting oesophageal intubation. Capnography was used as the control. Five tidal volume breaths were delivered following intubation. If a ‘square-wave’ trace was obtained then tracheal intubation was recorded. If this trace was not obtained, oesophageal intubation was recorded.

The results of air aspiration tests (1st, 2nd and 3rd) and the total number of patients successfully intubated are shown in Table 1 and Figure 1, respectively. On one occasion, oesophageal intubation was suggested by the air aspiration (Wee’s) test while capnography suggested tracheal intubation (Table 1). Auscultation in this patient revealed bronchial intubation. This is known to give a false-negative result in the air aspiration test if the tracheal tube bevel abuts against the tracheal wall.7,8 On no occasion did air aspiration suggest tracheal intubation when capnography would

Table 1 Type of intubation, tracheal (T) or oesophageal (O), according to the type of test: Wee’s test (W) or capnography (C)

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<th>No. of tests</th>
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DOI: 10.1093/bja/aeg641
have indicated oesophageal intubation. The air aspiration test has a predictive value of 97% (95% CI 91–103%). Sensitivity is 94% and specificity is 100%. In our study, eight out of 21 (38%) patients had at least one oesophageal intubation.

We recommend that the air aspiration test is used immediately following intubation via the ILMA. If no air can be aspirated, oesophageal placement should be assumed and the misplaced tracheal tube should be removed. If air can be aspirated, then oesophageal placement is very unlikely and ventilation can be commenced with minimal risk of regurgitation. Capnography can then be used as definitive confirmation of tracheal intubation.

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DOI: 10.1093/bja/aeg642