The Oesophageal Vent-Laryngeal Mask

Sir,—Dr Akhtar proposed a modified laryngeal mask, the “Oesophageal Vent-Laryngeal Mask”, for prevention of aspiration [1]. The modified device described by him, which had been considered and abandoned previously by Dr Brain [2], has several theoretical problems.

One of the crucial points in the safe use of the laryngeal mask airway (LMA) is that the tip of the mask is inserted correctly into the hypopharynx. The modified device consists of a tracheal tube (obturator) which is fixed to the dorsum of the LMA, the mask is likely to be driven in an anterior direction during placement. In addition, because the large-bore obturators are inserted through the hypopharynx into the oesophagus before placement of the mask, the obturators may prevent the tip of the mask from occupying its correct position in the hypopharynx. In both situations, the tip of the mask is likely to press down the epiglottis, obstruct the glottis or impact upon the arytenoid cartilages, leading to failed ventilation or laryngospasm. In fact, laryngospasm occurred in two of 16 patients in his study.

Furthermore, placement of the modified LMA would be more difficult than the standard one in patients in whom movements of the head and neck are restricted because of the greater length of the two combinated tubes and reduced flexibility.

Dr Akhtar suggests using the modified LMA after failed tracheal intubation in patients at increased risk of aspiration.

Cricoid pressure is necessary when anaesthesia is induced in this group of patients, because, as he reports, regurgitation can occur immediately after induction of anaesthesia. However, temporary release of cricoid pressure is necessary for placement of the modified LMA, because the obturators cannot be inserted when the oesophagus is compressed by cricoid pressure. In addition, although the number of patients studied is too small to make comparative data of the success rate of placement of the standard LMA and the modified masks, it seems that the success rate is lower and the incidence of complications higher with the modified advice. This may be true because of the above-mentioned theoretical problems. Therefore, placement of the modified device may require release of cricoid pressure and cessation of ventilation for a longer period than the standard one. This implies that placement of the modified device may be associated with a higher incidence of both aspiration and hypoxia.

The incidence of regurgitation while the LMA is in place in patients at low risk of regurgitation is not clear [3-4]. The incidence in his study cannot be attributed entirely to the presence of the LMA, as the presence of the obturators in the oesophagus also may induce regurgitation. Two patients hiccuped in the study. Although he did not state if the patients who hiccuped also regurgitated, hiccuping is frequently associated with regurgitation [5]. When the LMA is placed correctly, that is when the tip of the mask occupies the hypopharynx, the oesophagus should not be seen in the aperture of the mask. It is doubtful that preventing regurgitation by placing a tube into the oesophagus can be justified in this group of patients.

Another theoretical problem is that the obturators may be inserted into the trachea. This might not be a problem as the lungs can be ventilated through the obturator, but the length of the protruding part of the obturators is too short so that the cuff of the obturator may be positioned between the vocal cords. The incorrectly positioned cuff cannot always prevent aspiration and may damage the vocal cords, particularly when the cuff is inflated with more than 20 ml of air.

Unless the above-mentioned problems are overcome, attempts at placement of any modified device in patients at increased risk of aspiration is not advisable. Dr Brain has considered another aspiration is not advisable. Dr Brain has considered another...
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the lungs of a patient who has a tube in the oesophagus if the proximal end of the tube is brought under the rim of the face masks.

In patients with limited mouth opening, our technique may be easier than insertion of the Oesophageal Vent-Laryngeal Mask, as the oesophageal tube can be moved over to the left side of the mouth. Clearly, further assessment and comparison of these techniques in cases of difficult and failed tracheal intubation would be interesting.

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Sirs.—The modified laryngeal mask described by Akhtar [1] reflects a line of enquiry pursued by the inventor of the laryngeal mask airway (LMA) between 1983 and 1987. Figure 1 shows one of the patented designs, which closely resembles Akhtar's modification, but has a communication between the two cuffs, permitting simultaneous inflation from a single inflation port. The modification, but has a communication between the two cuffs, permitting simultaneous inflation from a single inflation port. The device, which was made entirely from silicone, can be seen in the LMA Museum at the Royal Berkshire Hospital, Reading. The reasons for not continuing with this development may be of interest. The addition of an integral oesophageal tube increases the difficulty of insertion, the invasiveness of the procedure and the complexity (and hence the likely price) of the device. Such a development therefore is not likely to be attractive as a general-purpose airway. If it is desired to pass a tube into the oesophagus, this can be done easily after placing a standard LMA using a well-lubricated tracheal tube. The LMA is only moderately inflated (for example 25 ml in a size 4) and the tracheal tube is passed blindly and gently with the head extended. Not only is this easier, but there is a further advantage in that the mask serves to shield the glottis from the tube as the latter is passed downwards, guiding it into the upper oesophageal sphincter. A characteristic pressure is felt as the tube encounters and passes through the sphincter, so that it is not difficult to judge the level of tube placement.

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Sir,—Thank you for the opportunity to reply to the comments made on the Oesophageal Vent-Laryngeal Mask. The device described is only a prototype that requires refinement to allow better conformation to the oropharyngeal anatomy which could make placement no more difficult than the standard laryngeal mask airway (LMA).

I note Dr Brain's comments but remember him describing a new modification of the LMA that has a tube attached to the dorsum of the LMA (not penetrating the oesophagus) for the drainage of regurgitated contents, at a conference on "The Use of Laryngeal Mask for Resuscitation" in London, January 13, 1994. Hiccups under general anaesthesia may increase the incidence of regurgitation but two patients that hiccuped in my study did not regurgitate. The presence of the LMA anterior to the oesophageal tube encourages it to slide along the posterior wall of the pharynx and the oesophagus, making tracheal intubation most unlikely. Search for a better design of the LMA (and various other techniques) to prevent regurgitation however, continues.

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Ferrous distortion during MRI

Sirs,—The presence of ferromagnetic material in the proximity of magnets during magnetic resonance imaging (MRI) may produce unwanted interference and degradation of image quality [1]. Standard tracheal tubes may become kinked in patients undergoing head and neck procedures or in association with changes in patient position. Reinforced tracheal tubes are used in these situations to prevent intraoperative hypoxaemia and increases in airway pressure. We report a case of image distortion caused by a stainless steel reinforced tracheal tube.

A 49-year-old female presented for stereotactic biopsy of a right temporal space-occupying lesion. Anaesthesia was induced with fentanyl 2 μg kg⁻¹ and thiopentone 4 mg kg⁻¹; and vecuronium 0.1 mg kg⁻¹ was administered to facilitate tracheal intubation with a 7.5-mm cuffed reinforced tracheal tube. Anaesthesia was maintained with nitrous oxide and isoflurane in oxygen and normocapnic controlled ventilation. A stereotactic frame was applied and imaging commenced. However, marked image distortion was observed. A biopsy specimen of the targeted lesion was reported as normal brain tissue. An open brain biopsy was required to obtain histological specimens which revealed glioblastoma multiforme.

This is the first reported case of a reinforced tracheal tube producing image distortion during an MRI procedure. Image distortion associated with armoured tracheal tubes has major clinical implications. We suggest the use of a nylon reinforced tube when a non-kinkable tube is indicated during MRI procedures. Extra anaesthetic vigilance is warranted because such tubes may be more prone to kinking. This case report confirms previous experience that any metal object, if sufficiently close to the region to be scanned, may cause image distortion [2].

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Fig. 1. One of the patented designs of the laryngeal mask airway.