Malposition of the epiglottis after tracheal intubation via the intubating laryngeal mask

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The intubating laryngeal mask (ILM) has been reported to be an effective tracheal intubation guide.1-5 But advancement of the tracheal tube via the laryngeal inlet into the trachea cannot be seen. Damage to the larynx or other tissues may occur during blind passage of a tracheal tube. We report a case in which the tracheal tube, advanced blindly, tucked the epiglottis into the laryngeal inlet, resulting in oedema of the epiglottis. This case illustrates the potential for airway obstruction after extubation when using the intubating laryngeal mask as a blind intubation guide.

Keywords: intubation tracheal; equipment, masks anaesthesia; complications, airway trauma

Accepted for publication: July 2, 1999

The intubating laryngeal mask (ILM) has been reported to be an effective tracheal intubation guide.1-5 But advancement of the tracheal tube via the laryngeal inlet into the trachea cannot be seen using the ILM. Thus damage to the larynx may occur if the tracheal tube impacts on laryngeal structures during its blind passage. However, there are no reports of pharyngolaryngeal complications related to the ILM. We report a case in which malposition of the epiglottis occurred during blind intubation via the ILM which resulted in epiglottic oedema.

Case report

A 52-yr-old, 147-cm, 38-kg woman was scheduled for anterior cervical fusion. At the preoperative visit, her head and neck movement was moderately limited but examination of the airway was otherwise unremarkable. We planned to intubate the trachea using the ILM to prevent movement of the head and neck.1,4

The patient received triazolam 0.25 mg and pirenzepine 25 mg orally, 2 h before induction of anaesthesia. Standard monitors were applied. General anaesthesia was induced with propofol 2.2 mg kg⁻¹ and neuromuscular block was produced with vecuronium 0.1 mg kg⁻¹. Her lungs were ventilated with 4% sevoflurane in oxygen via a face mask. After the train-of-four response evoked by ulnar nerve stimulation was abolished, a size 3 ILM was inserted in the neutral head and neck position using the method described by the manufacturer.4 The cuff was inflated with 20 ml of air and adequate ventilation was obtained without manipulation of the ILM. A lubricated 7.0-mm id cuffed reinforced tracheal tube (Fuji System, Tokyo, Japan) was then passed blindly via the airway tube of the ILM. The tracheal tube met with slight resistance approximately 1.5 cm from the entry point of the ILM but rotating its bevel enabled easy advancement into the trachea. After successful intubation was confirmed by capnography during manual ventilation, the ILM was removed. The operation proceeded uneventfully and lasted 105 min.

To assess the status of the pharyngolarynx at the end of surgery, a fibreoptic bronchoscope (FOB)–video camera system was used, as described previously.5 A 4.9-mm FOB (BF-P30 Olympus, Tokyo, Japan) attached to a video camera (OTV-S5 Olympus) was passed into the nasopharynx and a view of the larynx was displayed on the television screen. Fibrescopy revealed that the laryngeal inlet could not be seen because the mildly oedematous epiglottis was completely tucked into the laryngeal inlet (Fig. 1). The normal position of the epiglottis was restored using a McCoy No. 3 laryngoscope blade under video–visual control while the patient was still anaesthetized. The laryngeal inlet appeared normal except for mild oedema of the epiglottis (Fig. 2). The trachea was extubated using a 2.3-mm id tube exchange catheter (Cook, Bloomington, IN, USA) as a jet styllet after the patient recovered from anaesthesia. As the FOB–video camera system demonstrated airway patency after extubation, the catheter and FOB were removed. The postoperative course was uneventful except for a moderately severe sore throat which improved gradually.

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Epiglottis malposition caused by an ILM

Fig 1 Fibreoptic view of the larynx after blind tracheal intubation via the intubating laryngeal mask. Note that the laryngeal inlet is not seen because the epiglottis is tucked completely into it.

Fig 2 Fibreoptic view of the larynx after the normal position of the epiglottis is restored using a McCoy No. 3 laryngoscope blade.

Discussion

In this patient, the tracheal tube, advanced blindly via the ILM, tucked the epiglottis into the laryngeal inlet. We suggest that the mechanism for this malposition of the epiglottis was that when the ILM was inserted, the epiglottis was folded downwards as resistance was felt during passage of the tracheal tube. The degree of epiglottic downfolding must have been mild because adequate ventilation via the ILM was obtained easily. The tracheal tube pushed the epiglottic elevating bar of the ILM aperture and impacted upon the downfolded epiglottis. Then, the tracheal tube tucked the epiglottis into the laryngeal inlet.

The ILM is designed to intubate the trachea in a blind manner.1-4 Previous investigators reported that resistance was encountered when attempting to pass the tracheal tube blindly via the ILM into the laryngeal inlet in 20–50% of patients.1-3 Although various adjustments can be used to prevent the impact of the tracheal tube onto laryngeal tissues, the manoeuvres are not always successful.1-3 In addition, advancement of the tracheal tube cannot be seen. There is therefore a potential for damage to laryngeal and other structures. In our patient, despite successful intubation via the ILM without difficulty using an appropriate adjusting manoeuvre, the epiglottis became oedematous because of malposition. This was discovered by chance when the status of the upper airway was assessed routinely after operation as anterior cervical spine surgery can result in pharyngo-laryngeal oedema.6 Fortunately, this complication did not result in airway obstruction after extubation. However, if this problem had remained unnoticed, the injury to the epiglottis could have worsened, particularly if the operation had been long. This complication could result in airway obstruction on extubation.

Several investigators have demonstrated successful use of the ILM for tracheal intubation in patients with difficult airways.7-9 In these patients, epiglottic oedema caused by malposition is potentially an even more serious problem. To avoid this, the tracheal tube should not be forcefully advanced if resistance is encountered when attempting to pass the tracheal tube. We recommend that the laryngeal inlet is inspected using the fibreoptic bronchoscope when resistance is felt and adjustment performed as required.

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