Use of the laryngeal mask airway in the prone position

Stephen Usher

The prone position is a challenge to the anaesthetist because of the inaccessibility of the airway once the patient is turned. Traditionally the patient is intubated supine and the endotracheal tube (ETT) well secured so that the airway will not be compromised during the procedure. The patient is then repositioned, with care being taken to protect pressure points and to allow free movement of the abdomen so as not to compromise ventilation or cardiovascular stability. More cases are now being performed as day case surgery so increasing the need for rapid turnover of patients and the need for low morbidity during the anaesthetic.

LARYNGEAL MASK AIRWAY

The laryngeal mask airway (LMA) was first introduced into British anaesthetic practise in 1988 as a general purpose airway which was not as invasive as the ETT. The main advantages of using the LMA are the ease of use and a decrease in the morbidity associated with intubation such as failed intubation, sore throat and local tissue trauma, as well as improved haemodynamics at induction and increased oxygenation at emergence. However, the LMA does not secure the airway as effectively as the ETT, giving an increased risk of aspiration if the patient regurgitates. The LMA has gained widespread acceptance for routine surgery and as anaesthetists become more experienced has become increasingly used for cases for which it was not originally intended.

The LMA was first described for use in the prone position over 10 years ago for short radiotherapy procedures as a way of securing the airway and monitoring ventilation without the morbidity associated with repeated intubation. The patients were induced supine before being repositioned, with padding placed for the chest and pelvis to allow for diaphragmatic movement (Ngan Kee, 1992). In an editorial in *Anaesthesiology*, however, the LMA is relatively contraindicated in the prone position because there could be malposition, or regurgitation and aspiration without being able to rapidly intubate the trachea (Benumof, 1992).

In the LMA instruction manual there are recommendations for use in the prone position. It is suggested that by patients positioning themselves prone pre-induction so as to be comfortable, there could be a reduction in morbidity from back pain. It is advised that adequate anaesthesia should be maintained if repositioning to avoid stimulating the airway reflexes and developing laryngospasm.

As the LMA may become kinked they suggest using the flexible LMA (FLMA), although this would be harder to replace in case of airway difficulties. Owing to the increased length of the FLMA there is increased work of breathing and so spontaneous ventilation should not be allowed for more than 1 hour (Brimacombe et al, 1999). Positive pressure ventilation after muscle relaxation could be a solution for longer cases, however, it does not appear to have been attempted yet in these circumstances.

After previous experience of over 600 cases without significant adverse effects Ng et al decided to prospectively audit 73 patients requiring general anaesthesia in the prone position. All patients were positioned prone pre-induction with the head being lifted to enable the LMA to be inserted. The classic LMA was used rather than the FLMA. There were only 12 problems encountered, and all were minor and easily remedied by deepening the anaesthesia or manipulating the LMA. With care to allow for movement of the abdomen there does not appear to be major adverse effects on ventilation or oxygenation, and cardiovascular stability is maintained (Ng et al, 1992).

CONCLUSIONS

Prospective audit indicates that using the LMA in the prone position is a safe technique in the hands of the frequent user. At present, as with other non-conventional uses of the LMA, there have been no randomized controlled trials to evaluate the risk from adverse events and until there are it will be difficult to recommend it to the occasional user. Ng et al are using their audit as the basis for such a study and their results are eagerly awaited. They comment that their success relies on experience and also the knowledge that in emergency the patient should be turned supine. HM

Benumof JL (1992) Laryngeal mask airway: Indications and contraindications. *Anesthesiology* **77:** 843–6

Brimacombe JR, Brain AIJ, Berry AM (1999) *The laryngeal mask airway instruction manual.* 4th edn. Intavent Research Limited, Reading, Berkshire, UK: 31

Ng A, Raitt DG, Smith G (2002) Induction of anaesthesia and insertion of a laryngeal mask airway in the prone position for minor surgery. *Anesth Analg* **94:** 1194–8

Ngan Kee WD (1992) Laryngeal mask airway for radiotherapy in the prone position. *Anaesthesia* **47:** 446–7

Dr Stephen Usher is Specialist Registrar in Anaesthetics, The Middlesex Hospital, London W1T 3AA

Anaesthetic and critical care dilemmas are coordinated by **Dr Robert Self** and **Dr Pete Bishop**, Research Fellows at the Centre for Anaesthesia, UCL, London

Ideas for future dilemmas can be sent to Rebecca Linssen hmed@markallengroup.com