

CORRESPONDENCE

2. Oswalt CE, Gates GA, Homstrom FMG: Pulmonary edema as a complication of acute airway obstruction. *JAMA* 238:1833-1835, 1977

3. Verghese C, Smith TGC, Young E: Prospective survey of the use of the laryngeal mask airway in 2359 patients. *Anaesthesia* 48: 58-60, 1993

4. Brodrick PM, Webster NR, Nunn JF: The laryngeal mask airway: A study of 100 patients during spontaneous breathing. *Anaesthesia* 44:238-241, 1989

(Accepted for publication April 12, 1993.)

Anesthesiology
79:185, 1993
© 1993 American Society of Anesthesiologists, Inc.
J. B. Lippincott Company, Philadelphia

Laryngeal Mask Airway and Pulmonary Edema: III

To the Editor:—We were concerned by the recent correspondence from Ezri *et al.*¹ describing two cases of pulmonary edema associated with use of the laryngeal mask airway (LMA).

A common factor in each case was that difficulty was encountered during LMA insertion. Unfortunately, the reasons for this are not described. It would be unusual if three attempts were required to insert the LMA in a patient with a normal airway under deep anesthesia, particularly as the airway had been apparently unobstructed while the face mask was being used. This suggests that undiagnosed airway obstruction may have been present before LMA insertion, possibly associated with abnormal anatomy; anesthetic depth was inadequate; or there was inexperience with LMA insertion.

We also would like to comment further about the implications of malposition of the LMA. This is an anatomic diagnosis not directly related to function, as many of the early clinical studies assumed.² It is widely accepted that abnormal anatomic positioning has little effect on clinical function.³ It is also true that airway obstruction may occur in the presence of a perfectly placed LMA, if inadequate anesthetic depth leads to laryngospasm. A further point regarding malpositioning is that it is not linked to aspiration, as the authors state. Aspiration with the LMA is almost entirely related to its inappropriate use in at-risk patients.⁴

As with any other form of airway management, there exists a risk of airway obstruction in some circumstances. However, the LMA has been shown to provide a clearer and more secure airway than the face mask,⁵ and we believe that LMA-related pulmonary edema must be a rare and largely preventable complication. A recent prospective study of 2,359 patients reported successful insertion in 99.6% of patients,⁶ and there have been no previous case reports relating use of the LMA with pulmonary edema, despite several million uses worldwide.

We would like to suggest that, if difficulty is experienced with LMA insertion or if airway obstruction develops, the rapid use of fiberoptic endoscopy may help differentiate between a malpositioned LMA and the presence of laryngospasm and guide appropriate management.⁷ The LMA should be removed if airway obstruction caused by poor positioning is detected and an alternative airway management technique instituted. Airway obstruction secondary to laryngospasm might be better managed by increasing anesthetic depth, continuous positive airway pressure and 100% O₂. Reinsertion may be attempted if anesthetic depth is adequate and if it is thought that the final position

of the LMA could be improved. Finally, we would recommend that the standard insertion technique is adhered to for the first attempt.⁸ Alternative insertion techniques may be useful should the standard fail.

J. Brimacombe, M.B., Ch.B., F.R.C.Anaes.
Senior Lecturer

A. Berry, M.B., Ch.B., F.R.C.Anaes.
Senior Registrar
Department of Anaesthesia
Royal Perth Hospital
Wellington Street
Perth 6001, Australia

References

1. Ezri T, Priscu V, Szmuk P, Soroker D: Laryngeal mask and pulmonary edema (letter). *ANESTHESIOLOGY* 78:219, 1993
2. Brodrick PM, Webster NR, Nunn JF: The laryngeal mask airway: A study of 100 patients during spontaneous breathing. *Anaesthesia* 44:238-241, 1989
3. Benumof JL: Laryngeal mask airway: Indications and contraindications. *ANESTHESIOLOGY* 77:843-846, 1992
4. Brimacombe J, Berry A: Aspiration and the laryngeal mask airway: A survey of Australian intensive care units. *Anaesth Intensive Care* 20:534-535, 1992
5. Smith I, White PF: Use of the laryngeal mask airway as an alternative to the face mask during outpatient arthroscopy. *ANESTHESIOLOGY* 77:850-855, 1992
6. Verghese C, Smith TGC, Young E: Prospective survey of the use of the laryngeal mask airway in 2359 patients. *Anaesthesia* 48: 58-60, 1993
7. Brimacombe J: Laryngoscopy through the LMA: A useful skill to acquire. *Anaesth Intensive Care* 20:535, 1992
8. Brimacombe J, Berry A: Insertion of the laryngeal mask airway: A prospective study of four techniques. *Anaesth Intensive Care* 21: 89-92, 1993

(Accepted for publication April 12, 1993.)