Protection of the airway with the LMA during upper airway surgery

To the Editor:

We read with interest the recent publication by Ahmed and Vohra¹ and we agree with their conclusions that the laryngeal mask airway (LMA) provides a safe and reliable airway, although our findings of LMA contamination were rather different.

Following a personal communication with one of the authors (Vohra) we incorporated their scoring system into a study that we were conducting involving the use of laryngeal masks in outpatient pediatric dental surgery.

We recruited 71 patients (ASA I or II, age range 2–15 yr) who were undergoing routine extractions for carious teeth under general anesthesia. The patients were anesthetized with propofol (3–4 mg·kg⁻¹), or via an inhalational induction (O₂/N₂O/sevoflurane) depending on the ease of venous access and patient preference/compliance. Anesthesia was maintained by spontaneous ventilation with O₂/N₂O/sevoflurane. Following the extraction of teeth by experienced dental surgeons the LMA was removed when the patients were fully awake. The LMA was immediately examined by one of the authors (Dolling) and scored accordingly.¹

Our results are markedly different (Table). Short-lived desaturations below 94% were seen in ten of our patients during recovery [three with score 1, four with score 2, three with score 3 (no statistical significance)]. All patients uneventfully met our discharge criteria.

Several articles^{2,3} have shown that the LMA protects the larynx from fluids above but this may not always be the case. We used standard, rather than reinforced LMAs, which may be associated with increased movement of the LMA during surgery and subsequent reduction in the integrity of the protective seal. Also, our surgeons used only dental packs to stem the flow of blood. This is likely to result in more blood in

the airway than in nasal or septal surgery, with subsequently increased pooling above the cuff. An alternative explanation, of the differing results, could simply be that the LMAs were contaminated by intra-oral blood on removal (unlike the Ahmed/Vohra study, no intra-oral suction was performed prior to removal to minimize stimulation).

It would be interesting to clarify the reasons for our different results using reinforced LMAs or a fibreoptic scope to examine the underside of the LMA prior to its removal.

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References

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- 2 John RE, Hill S, Hughes TJ. Airway protection by the laryngeal mask. A barrier to dye placed in the pharynx. *Anaesthesia* 1991; 46: 366–7.
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REPLY:

We thank Dolling *et al.* for their comments and appreciate this opportunity to reply. We note fundamental differences in the methodology of the study by Dolling and ours:¹

- rigid vs reinforced laryngeal mask airway (LMA);
- oral vs nasal surgery;
- spontaneous vs controlled ventilation;
- pediatric vs adult patients;
- no suctioning vs suctioning at the end of the procedure.

All of which may have contributed to the differing results.

The LMA protects the airway by covering it and movement of the LMA will reduce this protection. Oral surgery and a rigid LMA are likely to result in increased LMA movement. Increased LMA movement, combined with the negative pressure created by spontaneous breathing, will encourage blood to breach the LMA barrier and contaminate it from the inside.

The shape of the LMA is based on adult anatomy and pediatric masks are the downsized version of adult masks. It can be postulated that pediatric masks do not make an

TABLE Comparison of LMA soiling scores in our study with Ahmed/Vohra's

Soiling score*	Dolling/Anders/Rolfe	Ahmed/Vohra
0	1.4% (1)	87%
1	52.1% (37)	11%
2	38.1% (27)	2%
3	8.4% (6)	0%

LMA = laryngeal mask airway. *0 = no blood; 1 = staining on the cuff; 2 = staining on inside of mask; 3 = blood in the tube.