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In Reply:—We agree with the comments made by Dr. Busoni and Dr. Messeri. We chose the L3–L4 interspace because of its accessibility. However, as they suggest, there may be reasons for using the lower interspaces.

Other clinical reports describe the use of interspaces below L4^{1–4} as well as the L3–L4 interspace.^{4–6} It is of note that Bailey *et al.*⁷ reported high spinal anesthesia in an infant whose block was performed at L5–S1, and the authors attributed the result to the other factors. As our report suggests, several factors may influence the eventual level of spinal anesthesia, and thus we emphasize the need for caution when performing this block in small infants.

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The Laryngeal Mask May Be a Useful Device for Fiberoptic Airway Endoscopy in Pediatric Anesthesia

To the Editor:—The laryngeal mask airway (LMA) was introduced as an alternative to conventional mask anesthesia or tracheal intubation¹ and is becoming increasingly common in pediatric anesthesia.² Its successful use has been reported in patients in whom tracheal intubation was difficult or impossible.³ To avoid laryngeal trauma that is likely caused by repeated intubation, Grebenik *et al.*⁴ have successfully applied the LMA to infants receiving radiotherapy under general anesthesia. The diameters of infants' airways are small, and fiberoptic airway endoscopy through an intubated endotracheal tube, which is narrower than tracheae of the patients, is therefore limited. In this setting, we would like to propose another application of the LMA. We present two cases of infants who successfully underwent diagnostic fiberoptic airway endoscopy using the LMA instead of the endotracheal tube. To our knowledge, this is the first report concerning this procedure.

Case 1. A 2-month-old girl weighing 5.8 kg underwent diagnostic fiberoptic airway endoscopy for dyspnea. Her chest x-ray revealed that the questionable focal stenotic area was in the lower trachea. Anesthesia was induced and maintained with halothane, nitrous oxide, and oxygen *via* a mask. After induction, a size-1 LMA, whose tube has an internal diameter of 5.0 mm, was inserted. Since there was no airway leak or obstruction, the tube was in its proper position. A flexible fiberscope (BE3C4[®], Olympus, Japan) with an external diameter of 3.6 mm was passed through the Y-connector between the tube of the LMA and the corrugated tube of anesthesia machine (Mapleson D circuit). It was advanced into the tube of the LMA and passed smoothly through the vocal cords down to the lower portion of the trachea. After detailed observation of the trachea and bronchi, the fiberscope was retracted to obtain a view of the larynx, including the vocal cords. During the

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70 min of anesthesia, the adequate space between the wall of the trachea and the fiberscope allowed for the safe and simple manipulation of the positive pressure ventilation using the Mapleson D circuit through the LMA. The oxygen saturation, which was measured with a pulse oximeter, was maintained within the range of 99–100% throughout the examination.

Case 2. An 8-month-old, 8.4-kg boy underwent diagnostic fiberoptic bronchoscopy through the LMA for a detailed examination for atelectasis of right upper lobe. Induction of anesthesia was accomplished with halothane and nitrous oxide in oxygen *via* a mask. After induction, a size-1 LMA was inserted. The fiberscope was then inserted through the LMA, and a detailed observation was performed for 20 min. Secretions in the right upper bronchi, perhaps causing atelectasis, were aspirated.

The advantages of using the LMA for fiberoptic airway endoscopy in infants over the conventional method of using an endotracheal tube are as follows: 1) The fiberscope with an external diameter of 3.5–4 mm, a strong light, a suction channel, and tip control enables anesthetists to perform more detailed and satisfactory observations compared to the conventional technique, which uses a fiberscope with a diameter of only 2–2.5 mm; 2) the larynx, including the vocal cords and the upper portion of the trachea, can be observed, and in addition, the movement of the vocal cords can be monitored if muscle relaxants are not used; 3) since the LMA has a lower airway resistance compared to the endotracheal tube, ventilation can be achieved easily; 4) The facilitated ventilation allows for uninterrupted observation; and 5) finally, with the conventional method, there is a risk that tracheal or laryngeal stenosis may be aggravated mechanically by the intubated endotracheal

tube during the examination, which alone can result in a life-threatening obstruction of the airway.

We conclude that the fiberoptic airway endoscopy through the LMA may be a very useful procedure for the diagnosis of respiratory diseases and for the removal of secretions in infants and possibly even neonates. However, much work still is needed to assess the possibilities and limitations of the LMA in this procedure.

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