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*In Reply:*—We thank Uda *et al.* for their comments. We would like to mention that we also read their study with interest.

First, our study was planned according to the studies in which the incidence of pain when propofol was injected at 4°C or 37°C was less than that of pain when propofol was injected at room temperature. So we kept the propofol at 4°C and 37°C, as described by McCirrick and Hunter<sup>1</sup> and Fletcher *et al.*,<sup>2</sup> respectively.

Second, whatever the cause of pain in veins, the perception of pain is the same because of the polymodal nociceptors that transmit their information *via* A $\delta$  fibers<sup>3</sup>; to abolish the injection pain of propofol, a method that can block A $\delta$  fibers must be used. Unfortunately, we do not think that propofol at 4°C or 37°C has such an effect. So we do not think that the effect of changes in the temperature of propofol are relevant.

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## Fastrach Uses a Low-volume, High-pressure Cuff for the Endotracheal Tube System

*To the Editor:*—It has been our experience that the armored endotracheal tube (ILM endotracheal tube; Euromedical) that is provided with the intubating version of the laryngeal mask airway (LMA Fastrach; LMA North America, San Diego, CA) uses a low-volume, high-pressure cuff. This is not made clear in any of the literature that is provided with the Fastrach system. The use of an endotracheal tube with a low-volume, high-pressure cuff would be inappropriate for prolonged mechanical ventilation, which is the situation we encountered on two occasions with the same patient.

The patient was a 52-yr-old man who underwent a repeated operation to stabilize his cervical spine. He underwent general anesthesia for the procedure, and the airway management consisted of blinded endotracheal intubation using a #7.5 ILM endotracheal tube through a #5 Fastrach LMA. This was performed easily under general anesthesia with muscle relaxation. Placement of the endotracheal tube was verified by auscultation, and the cuff was inflated until no leak was heard using a minimal volume technique. The surgery consisted of both anterior and posterior fusions and proceeded without complication. The patient remained intubated and ventilated because of severe edema of the head and neck, but he was extubated on postoperative day 3 after an uneventful course in the intensive care unit. On postoperative day 6, he had an upper

airway obstruction and trouble clearing secretions. The surgeons requested endotracheal intubation, which was accomplished easily again using the #5 Fastrach LMA and #7.5 ILM endotracheal tube.

We noted that air leaked out of his mouth during positive-pressure ventilation, and continuous positive airway pressure was only 5 cm water. The pilot balloon of the endotracheal tube felt full but not particularly tight when it was palpated, but it registered pressures >100 cm water. A chest radiograph showed that the tip of the endotracheal tube was located in the middle of the trachea. A clean endotracheal tube of the same type was tested *in vitro* and found to register pressures off the scale (>120 cm water) with as little as 5-7 ml of injected air. The cuff was inflated further until no leak was detected.

We measured the pressure-volume relation of Fastrach 7.0 and 7.5 endotracheal tubes and compared them with the same size regular endotracheal tubes (Mallinckrodt Medical Intermediate Hi-Lo). Increments of air (2-5 ml) were injected by syringe into the cuff system *via* a stopcock. The resulting air pressure in the cuff was measured after equilibrium was reached using a device called a Cufflator tracheal cuff inflator and manometer (J. T. Posey). Data are presented in figure 1.

Euromedical was contacted by telephone and confirmed our observation that the endotracheal tube was a low-volume, high-pressure