Reply

We appreciate Chawla et al.'s interest in our article. Succinylcholine may be associated with an increase in heart rate, corresponding with elevation of plasma norepinephrine.[1] Indeed, in the control group in our study, heart rate was significantly elevated one minute after intubation.[2] Therefore, it is unlikely that succinylcholine augmented the negative chronotropic response observed in the landiolol groups. However, since we administered vecuronium immediately after intubation, we cannot exclude the possibility that this drug may have attenuated catecholamine release after succinylcholine, resulting in smaller changes in heart rate and blood pressure.[1, 2] We recognize that perioperative β–blocker administration to obtain perioperative hemodynamic optimization must be done selectively. The use of short-acting β–blockers including landiolol, may confer specific benefits in the setting of brief, but intense periods of autonomic stimulation in patients with coronary artery disease.

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2 *Yamazaki A, Kinoshita H, Shimogai M, et al.* Landiolol attenuates tachycardia in response to endotracheal intubation without affecting blood pressure. Can J Anesth 2005; 52: 254–7.

A long endotracheal tube to facilitate intubation via the Fastrach™ laryngeal mask airway

To the Editor:

Although the laryngeal mask airway (LMA) is a definitive tool for fibreoptic endotracheal intubation, standard endotracheal tubes are limited by their short length when securing the position of the endotracheal cuff via this technique.[1-3] As a potential solution to this problem, we propose the use of a long endotracheal tube to secure intubation via the LMA.

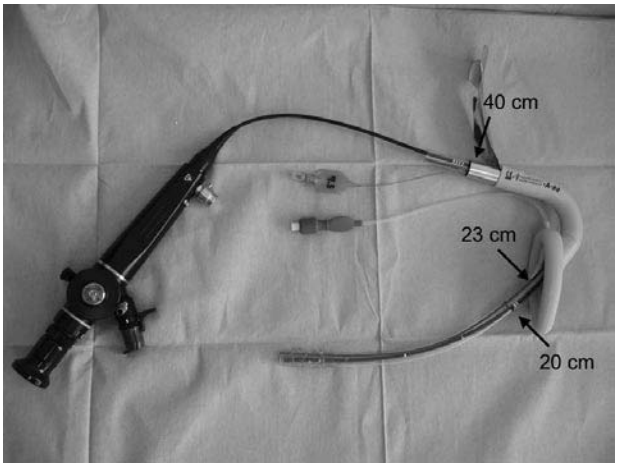

FIGURE During removal of the laryngeal mask airway from an adult patient, the operator is capable of holding 20 to 23 cm from the distal end of the tube to avoid unintentional extubation. The proximal portion of the endotracheal tube can be advanced easily while performing this procedure.

The Institutional Review Board of the Japanese Red Cross Society Wakayama Medical Center approved publication of the personal health information from this case, and written informed consent was obtained from the patient. A long endotracheal tube made from polyvinyl chloride was prepared, and the quality of the tube was evaluated with the cooperation of Smiths Medical Japan Ltd. A 60-yr-old male patient, with a predicted difficult airway, was scheduled for the repair of a fractured clavicle. General anesthesia was induced with propofol 2 mg·kg^{-1} and butorphanol 20 μg·kg^{-1} *iv*, followed by the oral insertion of a #4 Fastrach™ LMA. After establishing ventilation with the Fastrach™ LMA using 3% sevoflurane in 100% oxygen with a fresh gas flow 6 L·min^{-1} for three minutes, a long endotracheal tube (44 cm in length and 7.5 mm internal diameter, Figure) was advanced over a fibreoptic bronchoscope (Olympus™ LF-DP, Tokyo, Japan; 3 mm outer diameter and 60 cm in length) into the ventilator lumen of Fastrach™. The long endotracheal tube was uneventfully advanced into the trachea, and thereafter the bronchoscope and Fastrach™ LMA were simultaneously removed.

During removal of Fastrach™, the anesthesiologist was capable of holding the middle portion of the long tube (about 23 cm from distal end of the tube, Figure) and pushing the proximal end of the tube so as to avoid unintentional extubation.

We chose a 44-cm length for the long endotracheal tube, because the operator is capable of holding it 20 to 23 cm from the distal end to avoid unintentional extubation during removal of the LMA from adult patients. It is also easy to push the proximal portion of the tube when one needs to advance the tube while performing this procedure (Figure). In addition, after the endotracheal tube is secure, one may cut the proximal portion of the tube to standard length (about 30 cm), to avoid additional mechanical dead space. Alternatively, the long tube may be used as a stent to re-insert the LMA following the operation, prior to emergence from anesthesia. We conclude that our prototype long endotracheal tube may facilitate endotracheal intubations guided by the LMA.

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Air humidification might help to prevent irritation and damage to the vocal cords during intermittent positive pressure ventilation using a laryngeal mask airway

To the Editor:
We read with interest the recent correspondence by Hemmerling *et al.*[1] We agree that a small dose of a non-depolarizing neuromuscular blocking drug may improve intermittent positive pressure ventilation (IPPV) with a laryngeal mask airway (LMA). We titrate non-depolarizing NMBDs (e.g., rocuronium 0.5 X ED_{95}) whenever patients "fight" against mechanical ventilation, or when patients emit snoring or other high-pitched sounds during IPPV with an LMA, even when patients are already partially paralyzed (Figure).

Other strategies may be helpful in dealing with vocal cord irritation with the LMA. During prolonged anesthesia, intermittent exposure to cold fresh gas flow may induce micro-trauma to partially-abducted, or non-paralyzed cords. The cords may act like unidirectional valves that offer resistance to pressure, provided by the flow of gases during forced inspiration.[2] In Hemmerling's report, flow volume is not mentioned. We hypothesize that with higher gas flows during IPPV, there is a greater propensity to involuntary vibration and irritation of the un-paralyzed vocal cords which may lead to further irritation and potential injury.

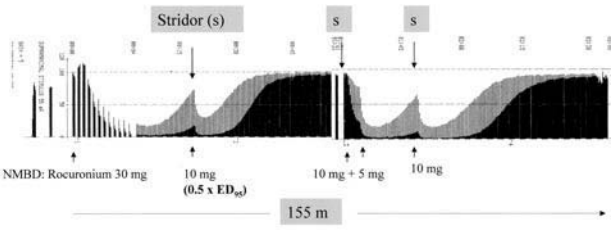

FIGURE An electromyographic tracing at the adductor pollicis muscle is shown for a 155-minute general anesthetic for achilles tendon surgery managed with a laryngeal mask airway. Whenever high-pitched snoring sounds occurred during surgery, the first twitch response was > 50% of control, and the train-of-four ratio was less than 0.25. Despite adequate surgical relaxation, phonation occurred intermittently. Small doses of rocuronium 5 to 10 mg *iv* resolved the stridor and facilitated smooth intermittent positive pressure ventilation. Arrows show where stridor (S) occurred, and where neuromuscular blocking drug (NMBD) muscle relaxant was administered.