We therefore suggest that the inspired gases should be humidified and warmed routinely with heat and moisture exchangers. The use of low-flow or minimal-flow anesthesia and heat and moisture exchangers may potentially reduce irritation or trauma to the vocal cords with the LMA,[3–5] and avoid unnecessary use of neuromuscular blocking drugs.

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Reply:

We thank Drs. Fabregat and De Arce for their interest in our article.[1] It is interesting to see the tracing of neuromuscular monitoring at the adductor pollicis muscle in the case they present; it demonstrates the rather inadequate relevance of this muscle for estimating laryngeal relaxation. Whereas train-of-four (TOF)-monitoring at this muscle showed surgical relaxation with a TOF-ratio less than 0.25, the patient emitted high-pitched snoring sounds from the larynx demonstrated inadequate relaxation of the larynx.

We would agree with their explanation that intermittent exposure to air flow during positive pressure ventilation – which has become more and more popular with the use of laryngeal mask airways – can cause microtrauma at the vocal cords which is aggravated when these cords are not fully relaxed. Whether air temperature has an influence on incidence or severity of these microtraumas can only be speculated upon. We would assume that the amount of air flow, especially the pressure with which a given volume is applied, plays the dominant role in not only the occurrence of vocal cord microtrauma, but also the incidence of 'snoring sounds'.

It is true that the flow volume was not stated in our case report. In order to diminish the pressures and the air volume, a principle of 'low volume – high frequency – ventilation' has been adopted. We usually opt for a ventilation frequency of 14 to 16·min^{-1} *min to achieve inspiratory pressures of less than 20 mmHg. In our view, this not only reduces the incidence of vocal cord microtrauma but also the risk of accidental insufflation of air into the esophagus and stomach, as well as displacement of the laryngeal mask airway. It is our view that proper insertion of a laryngeal mask airway should provide a sufficiently "tight" seal so that the expired volume approximates the ventilator setting with no audible air leakage. Low-flow anesthesia and the use of humidified gases should - as Drs. Fabregat and De Arce recommend - be a standard in modern anesthesia.*

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Transient postoperative aphonia following instillation of bupivacaine into the shoulder joint

To the Editor:
The acute onset of aphonia after surgery is a worrisome event, and the differential diagnosis include cerebral vascular events, laryngeal trauma during endotracheal intubation, and rarely paralysis caused by local anesthetic administered in the vicinity of the laryngeal nerves. We describe a patient who developed transient aphonia after emerging from general

anesthesia. Consent for publication of this report was obtained in accordance with our Research Ethics Board guidelines.

A 58-yr-old female underwent left shoulder arthroscopy under general anesthesia. The vocal cords were visualized and tracheal intubation was atraumatic. In order to facilitate postoperative rehabilitation, the surgeon implanted a catheter into the shoulder joint for local anesthetic administration. Before the end of surgery we injected 20 mL of 0.5% bupivacaine with 1:200,000 epinephrine through the catheter and then started an infusion of the same solution at a rate of 2 $mL \cdot hr^{-1}$. In the recovery room, the patient was talking and reported no pain. Thirty-six minutes later she became visibly upset, and then was suddenly unable to speak. Vital signs, electrocardiogram, chest radiogram, and electrolytes were all within normal limits. She was able to follow commands and express her thoughts in writing. She was able to move her lower extremities on command as well. Cranial nerve examination revealed no deficits. Pupils were equal and reactive with no gaze deviation, and funduscopic examination was normal. Deep tendon reflexes in her right arm and lower extremities were within normal limits. She understood and followed commands, but was unable to vocalize. The neurologist further noted that she had preserved sensation to pinprick in both legs and left hand, but somewhat diminished in the right arm, therefore, he ordered a computerized tomography scan, magnetic resonance imaging of the head, and a cerebral angiogram, all of which were normal. Approximately seven hours after the initial onset of aphonia she started to vocalize words, and by the eighth hour, full function of speech had returned.

The acute inability to speak has rarely been reported in association with the use of local anesthetics, i.e., after axillary block,[1] following release of tourniquet in a patient receiving *iv* regional anesthesia,[2] during retrobulbar nerve block,[3] or stellate ganglion block.[4] In this patient, transient aphonia presented as an isolated sign upon emergence from general anesthesia and lead to an extensive "negative" neurological work-up. The resolution of aphonia within the expected duration of bupivacaine block, as well as absence of obvious neurologic findings during diagnostic work-up, suggests a possible underlying mechanism of laryngeal nerve paralysis from the local anesthetic bolus, which diffused to the laryngeal nerve causing immobility of the vocal cords.

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Intubation with the GlideScope® videolaryngoscope using the "gear stick technique"

To the Editor:
Obtaining a view of the glottis using the GlideScope® videolaryngoscope (GSVL) is easier than delivery of the endotracheal tube (ETT) to the glottis and its subsequent placement into the trachea.[1–4] Various malleable stylet configurations have been described to facilitate ETT insertion.[1–3,5] A recently published letter describes insertion of a gum elastic bougie using the GSVL with subsequent guiding of the ETT into the trachea.[4] We would like to describe an alternative stylet configuration, the technique of ETT insertion, and an alternative use of a tube introducer that we have successfully employed while intubating with the GSVL.

We use a styleted ETT bent to a 90° angle in the sagittal plane at the proximal cuff, a "straight to the cuff" configuration. The proximal end of the stylet is bent 90° to the right to form a "handle" (Figure A). The GSVL blade is inserted per manufacturer's guidelines.[5] Once a satisfactory view of the glottis is obtained, while holding "the stylet handle" like an automobile gear shift lever, the tip of the ETT is inserted via the right corner of the mouth past the right side of the GSVL blade. If necessary, the GSVL blade can be displaced slightly to the left in order to provide more space for the ETT. Once the ETT tip is in front of the GSVL camera, while observing