tion port of the bronchoscope, both above and below the vocal cords. The patient tolerated the procedure well, while maintaining spontaneous respiration and he did not cough or experience oxygen desaturation. Anesthesia was intravenously induced after the tracheal intubation and the patient remained stable throughout the three-hour operation. Tracheal extubation took place when the patient was fully awake at the end of procedure.

The gag reflex is often stimulated during awake, fibreoptic intubation and accounts for much of the procedural discomfort. Activation of the glossopharyngeal nerve results in spasmodic and uncoordinated muscle movements.[1] Physical stimuli may induce gagging in some patients, while psychological stimuli (e.g., anxiety) may induce gagging in others. Techniques to reduce gagging include relaxation, hypnotherapy, acupuncture and "hypnopuncture", all of which target the neural pathways between the gagging centre and cerebral cortex.[2–4] Accordingly, patient-controlled airway insertion, in contrast to physician-assisted insertion, may be an easy and reliable method to reduce gagging in this population. By allowing patients to self-insert the oral airway, they are provided the ability to control the rate of entry, and to control the situation whenever they feel they are about to gag. The lidocaine coating of the airway provides additional topicalization, as the airway directly contacts the oropharynx tissue during the procedure.

Patients with a known difficult airway may benefit from fibreoptic intubation using oral intubating airways. Providing clear instructions for "patient-controlled" insertion may improve the patient's comfort level and the overall procedural efficiency.

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References

1 *Finucane BT, Santora AH.* Principles of Airway Management, 3rd ed. New York: Springer-Verlag; 2003: 79–112, 215–33.
2 *Bassi GS, Humphris GM, Longman LP.* The etiology and management of gagging: a review of the literature. J Prosthet Dent 2004; 91: 459–67.
3 *Fiske J, Dickinson C.* The role of acupuncture in controlling the gagging reflex using a review of ten cases. Br Dent J 2001; 190: 611–3.
4 *Eitner S, Wichmann M, Holst S.* "Hypnopuncture"- A dental-emergency treatment concept for patients with a distinctive gag reflex. Int J Clin Exp Hypn 2005; 53: 60–73.

Combined use of ultrasound and nerve stimulation for phrenic nerve block

To the Editor:
We previously reported that nerve stimulation may be used to facilitate phrenic nerve block to treat hiccups.[1] However, we recognize that it may be difficult to locate the phrenic nerve, as it is a relatively thin nerve which transverses a small space between the sternocleidomastoid and the scalenus anterior muscles. Whereas ultrasound localization has been shown to be effective in identifying the brachial plexus and the femoral and sciatic nerves, its sensitivity in locating finer nerves has not been established.[2] We recently used ultrasound, in combination with nerve stimulation, to locate and block the phrenic nerve of a 60-yr-old male (weight 74 kg, height 160 cm) who was referred to our department for treatment of chronic hiccups.

In this case, fluoroscopy showed that hiccups were associated with contractions of both hemidiaphragms. To locate the left phrenic nerve, we inserted the 100-mm 21G needle tip (Stimuplex; B.Braun, Melsungen, Germany) underneath the sternocleidomastoid muscle, while we applied an electric current (1.5 mA; 2-Hz) using an electric nerve stimulator (InnerveTOR272®, Fisher & Paykel, Auckland, New Zealand). We failed to obtain diaphragmatic responses, probably because the patient had a thick neck. We then attempted to locate the phrenic nerve using ultrasound (MicroMAX; Sonosite, Tokyo, Japan). Although we were able to identify the space between the sternocleidomastoid and the scalenus anterior muscles, the phrenic nerve was difficult to identify. Therefore, we used the nerve stimulator in combination with ultrasound localization. With the ultrasound probe directed in the axial oblique plane, at the level of the C-7 vertebra (Figure), we introduced the 100-mm 21G needle tip in-line (longitudinally) with the ultrasound probe; and we confirmed correct placement of the needle tip, in the space between the sternocleidomastoid and the anterior scalenus muscles. While we applied an electric current (0.8 mA; 2-Hz) to the needle, we adjusted the position of the needle tip within the space. It was then possible to obtain diaphragmatic contractions. As the contractions readily synchronized with the stimulation frequency, it was easy to differentiate stimulation-induced diaphragmatic contractions from hiccups. We

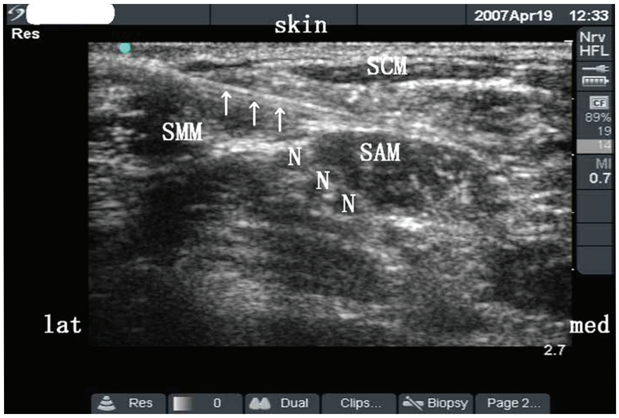

FIGURE Transverse sonogram, at the level of the C-7 vertebra, showing the needle location between the sternocleidomastoid and the scalenus anterior muscles. SCM = sternocleidomastoid muscle; SMM = scalenus medius muscle; SAM = scalenus anterior muscle; N = brachial plexus; ↑ = needle.

injected 3 mL of 1% lidocaine through the needle; and the resulting ultrasound image showed that the injection had expanded the space. Furthermore, within one minute, the diaphragmatic contractions were successfully suppressed.

In many instances, ultrasound may not allow localization of relatively small nerves, such as the phrenic nerve. However, ultrasound is often adequate to delineate relevant, surrounding anatomical structures (such as the surrounding muscles in this case) which have known anatomical relationships to the nerve, thus providing surrogate marking to the nerve. Under combined ultrasound and nerve stimulation guidance, the needle position can be approximated within the vicinity of the nerve, as determined by viewing the related anatomical structures, and by using the appropriate motor response to stimulation in order to confirm the nerve localization. In this manner, the combined use of ultrasound and nerve stimulation may be used to facilitate phrenic nerve block.

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References

1 *Okuda Y, Kitajima T, Asai T.* Use of a nerve stimulator for phrenic nerve block in treatment of hiccups. Anesthesiology 1998; 88: 525–7.

2 *Marhofer P, Greher M, Kapral S.* Ultrasound guidance in regional anaesthesia. Br J Anaesth 2005; 94: 7–17.

The GlideScope®-specific rigid stylet to facilitate tracheal intubation with the Glidescope®

To the Editor:

I read with interest the report entitled "The GlideScope®-specific rigid stylet and the standard malleable stylet (MS) are equally effective for GlideScope® use".[1] This study showed that, within a group of experienced operators using the Glidescope®, the dedicated Glidescope® rigid stylet (GRS) and the standard endotracheal tube (ETT) MS are equally effective in facilitating endotracheal intubation. In this study, the staff and house staff were able to participate, only if they had successfully completed a minimum of 15 tracheal intubations using the GlideScope® videolaryngoscope (GVL). While the authors demonstrated proficient use of the GlideScope® with both stylets, they also indicated that the anesthesiologists were dissatisfied with the GRS more frequently than they were when using the MS. Furthermore, in one case, the patient's trachea was successfully intubated utilizing the MS, after an unsuccessful attempt using the GRS.

Having used the GVL on numerous occasions, my impression is that tracheal intubation is easier using the GRS as compared with using the MS. This is also the prevailing opinion of other attending anesthesiologists in our department, who have considerable experience using the GVL. The report[1] does not fully detail the technique of airway management using the GRS. It has been my observation that passage of the endotracheal tube is facilitated by grasping the endotracheal tube, with the second through fourth fingers near the proximal end of the tube, and with the tip of the thumb located firmly on the black flange of the stylet (Figure). As the distal end of the tube passes through the vocal cords, the tube is rotated towards the right, to reduce the anterior angulation of the ETT, and to facilitate alignment of the tube with the axis of the trachea. As the tube is rotated, the thumb pushes up on the black flange, which helps to advance the ETT through the vocal cords into the trachea. Using this technique, I have not had any instances where the ETT could not be advanced into the trachea once the vocal cords were visualized. Finally,