

## Regurgitation through a laryngeal mask

To the Editor:

Dr. Brain<sup>1</sup> advised to watch for fluid that may suddenly appear inside the laryngeal mask for early warning of regurgitation. It is somewhat difficult to see the busy anaesthetist looking at the laryngeal mask all the time waiting for regurgitation. I would like to suggest the paratracheal audible respiratory monitor<sup>2,3</sup> to do this job or, if you don't have one, attach a stethoscope to the patient's paratracheal area ... but in this case you should also be attached to it.

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### REFERENCES

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- 3 Eldor J, Guedj P, Adler D, Mahler Y, Olshwang D. Un appareil pour la surveillance peranesthesique de la ventilation: le moniteur pretracheal. *Ann Fr Anesth Reanim* 1990; 9: 9-98.

### REPLY

*Fluid seen in the transparent tube of the laryngeal mask (LM) during the course of anaesthesia should be regarded as evidence that regurgitation is actually occurring (alert anaesthetist) or has already occurred (no so alert anaesthetist), but not that it is about to occur. A paratracheal audible respiratory monitor may indeed provide such a warning, but this is not because regurgitation is easier to hear than to see. In fact, it may help detect signs of inadequate anaesthesia, such as sudden cessation of breath sounds in spontaneously breathing patients, or sounds of gas leakage at the mask-to-larynx seal in ventilated patients. In the former, high intrathoracic negative pressures may be transmitted to the oesophagus and in the latter gas may be diverted into the stomach. Both can lead to regurgitation, but both can be prevented by carefully matching the anaesthetic requirement to the level of surgical stimulation throughout the procedure. It is the exercise of this fundamental anaesthetic responsibility which, hopefully, is keeping Dr. Eldor's anaesthetist so busy.*

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## Tracheal intubation and cervical injury

To the Editor:

In recent correspondence Drummond<sup>1</sup> and Crosby<sup>2</sup> seem at cross purposes because their concerns are for different case scenarios. Drummond asks about a case for elective surgery and Crosby<sup>2</sup> refers to head injury, urgency, ventilation and resuscitation. Differing circumstances, priorities, indications and justifications would seem to apply between unconsciousness/emergency/resuscitation/airway obstruction as against awake/elective/surgery. One of Drummond's worries I believe, with reason, is that the employment of modes of management applicable to the particular conditions of one area may be taken as arguments for their use in other areas with quite different conditions, or even for their blanket use.

Drummond very rightly points out that Crosby<sup>3</sup> did not describe how the levels of spinal fractures in his cases related to the distribution of usage of (i) awake vs general anaesthesia intubation and (ii) the various intubation methods employed. In their letters Crosby<sup>2</sup> utilizes the term "airway" five times, for each of which "intubation" could be substituted and is probably meant, and Drummond not once. The need to limit or avoid head and neck movements in the injured cervical spine patient may increase difficulty of laryngoscopy/intubation. This is generally recognized and highly emphasized. What seems to get forgotten or ignored is that it also compromises the potential for airway control and maintenance after general anaesthesia is induced.

Most of us have experienced an instance of mask general anaesthesia, in an apparently normal patient possessing full unrestricted head and neck movements where keeping an unobstructed airway proved difficult or even impossible with a need to relieve by endotracheal intubation. Conversely if general anaesthesia ( $\pm$  muscle relaxants) is induced under conditions of excluded head and neck movements how can it be certain that the airway will remain or can be kept unobstructed and oxygenation continued? If intubation proves difficult or fails and further oxygenation is needed what then? Does one move the head and neck? How much movement does one make to acquire, what can't even so be guaranteed, a clear airway and oxygenation? It is fair to say that the approach takes the airway for granted and depends on the intubation being straightforward and successful.

The injured cervical spine patient should be regarded, and managed, as a combined compromised airway and difficult laryngoscopy situation. The anaesthesia preceding intubation should rather be based on airway considerations and not on intubation conceptions. The air-

way and anaesthesia have to be maintained until intubation is achieved, and afterwards also if the latter should prove difficult or fail. Awake intubation seems a reasonable choice for Drummond's case. If anaesthetic drugs are used, for the uncooperative patient, urgent situations, or other reasons, the possibility of difficulty with airway maintenance because of the restraints on head and neck movements, etc. and that a risk and gamble are being taken, must be kept fully in mind.

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- 1 Drummond JC. Tracheal intubation and cervical injury. *Can J Anaesth* 1992; 39: 1000-1.
- 2 Crosby ET. Tracheal intubation and cervical injury (Reply). *Can J Anaesth* 1992; 39: 1001.
- 3 Suderman VS, Crosby ET, Lui A. Elective oral tracheal intubation in cervical spine-injured adults. *Can J Anaesth* 1991; 38: 785-9.

#### REPLY

Thank you for the opportunity to respond to Dr. Williamson. A proportion of head-injured trauma patients will arrive in the emergency rooms hypoxic, acidotic and haemodynamically compromised. These conditions as well as untoward movements of the head and neck in a patient not recognized to have an injured spine increase the risk for a secondary neurological injury. However, urgent intubation, ventilatory support and haemodynamic resuscitation are mandated and during these interventions, the patients should be assumed to have a CSI and be managed accordingly. All techniques of airway management result in some cervical spinal movement but the clinical experience of many centres, worldwide, utilizing a variety of airway management techniques in traumatized patients, has shown that these movements do not lead to secondary neurological injury. Again this is provided that the patients are recognized to be at risk for CSI and managed appropriately. If necessary, in order to ventilate a patient effectively or to achieve intubation in this scenario, one moves the head and neck but one does it as little as is necessary to achieve these ends. An airway should not be abandoned because of an unwillingness to move the head or neck. The technique of intubation is not particularly relevant in terms of preventing secondary neurological injury as careful application of many techniques is associated with similar outcomes. These techniques include flexible fiberoptic laryngoscopy, rigid direct and indirect (Bullard) laryngoscopy, retrograde intubation, blind nasal intubation or via establishment of a surgical airway.

In the situation where elective intubation is planned for a patient with CSI, the circumstances differ but the goals remain the same. The aim is to effect tracheal intubation and avoid secondary neurological injury. The preoperative assessment of the patient should include examination of the spinal injury and determination of the risk of secondary injury. High-risk

groups for secondary injury after CSI are not well identified but probably include those with little canal reserve such as elderly patients with spinal spondylosis and pre-existent cervical myelopathy or patients with ankylosing spondylitis. Patients with near-total or total ligamentous disruption and perhaps those with extensive bone destruction as occurs with osteolytic (metastatic) spinal lesions may also constitute higher-risk patients. Following the assessment of the neck, which includes discussion with the neurosurgeon, it is apparent that, although most patients have a diminished protective reserve following injury, they will readily tolerate the spinal movement necessary to effect intubation. The airway should then be assessed. Provided that the airway examination reveals little potential for a difficult intubation and the spinal injury constitutes a low-risk injury, the trachea should be intubated with care, with every effort taken to limit spinal movement. The technique chosen for intubation and whether or not general anaesthesia and muscle relaxants are used to effect intubation is not, to my mind, relevant. If the assessment of the airway indicates the potential for difficult intubation, then the patient should be managed with an awake intubation.

If it is felt that the neck is so unstable that the cord will be threatened with even the modicum of spinal movement that will result from endotracheal intubation, then the patient should be intubated awake, by whatever technique the anaesthetist has the highest degree of experience and comfort. The patient is not intubated awake because the neck is moved less nor because the cervical muscles splint the neck as there is no data to support that either is true. The trachea is intubated and the patient is positioned for surgery before induction of general anaesthesia so that a neurological evaluation may be carried out after tracheal intubation and positioning and the patient may be demonstrated to be intact. Access to the patient's subjective and objective neurological response to the intubation manoeuvres and positioning may provide useful clinical information especially if the patient is to be operated in the prone position for posterior stabilization. Appropriate airway topicalization and adequate sedation allows most patients to tolerate these manoeuvres very well.

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## Difficult laryngoscopy – “BURP”

To the Editor:

I wish to make some comments re: “Difficult laryngoscopy” by Dr. R.L. Knill.<sup>1</sup> The article describes what many anaesthetists practice. The steps affectionately named “BURP” should be used in all but the easiest cases of intubations.

During laryngoscopy – using the curved blade – the anaesthetist causes displacement of the larynx by these manoeuvres:

- 1 pushing the tongue to the left
- 2 forcing the floor of mouth anteriorly – with the tip of the blade in the vallecula.