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.

R. Williamson MB FRAPCS
University of Natal
Durban
South Africa

REFERENCES

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 fibreoptic 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.

E.T. Crosby MD FRCPC
Ottawa

Difficult laryngoscopy – "BURP"

To the Editor:

I wish to make some comments re: "Difficult laryngoscopy" by Dr. R.L. Knill.[1] 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.