REFERENCE

1 *Hannallah R, Rosales JK.* A hazard connected with re-use of the Bain's circuit. A case report. Can Anaesth Soc J 1974; 21: 511–3.

# *Intubation and cervical spine injury*

To the Editor:

I write concerning the Occasional Review by Suderman *et al.*[1] From their retrospective review of the neurologic outcome in 150 patients with unstable cervical spine injuries they concluded that "the admonition to avoid oral tracheal intubation in spine-injured patients remains unfounded," and that oral tracheal intubation performed after induction of general anesthesia "remains an excellent option for elective airway management" in these patients. I suspect that those conclusions will run contrary to the beliefs of many clinicians, and I think that those readers whose practices are challenged will be helped in evaluating those conclusions by some additional information about the patient population.

Many of us have been taught that laryngoscopy in an awake patient is inherently less hazardous than laryngoscopy performed in a patient who is anaesthetized and paralyzed. It has been my training that there are two potential (though unproven) benefits of awake techniques: access to the patient's subjective and objective neurologic response to the intubation manoeuvres, which provides the best possible warning of impending neurologic injury; and muscle tone, especially when there is pain/spasm, which serves as a physiologic splint. Before adjusting my practices on the basis of the report by Suderman *et al.*, I would like to know how the decision to intubate a patient awake or anaesthetized was made. It is my belief that the patients at greatest risk are those with an upper cervical, especially an atlanto-occipital, injury who are submitted to laryngoscopy and intubation in an anaesthetized state. The authors' latitudes with respect to drawing conclusions may be reduced considerably if those patients with high cervical column injuries and/or those patients perceived to have the most unstable injuries were "filtered off" and submitted to awake techniques. The readership might also be helped by a definition of "unstable." It is my understanding that there are radiologic patterns that are indicative of a potentially unstable injury but that in many instances confirmation of instability requires provocative manoeuvres.

Reduced to its simplest terms my question is: were there enough patients with *bona fide* high risk, unstable injuries who were intubated in the anaesthetized state to permit a firm conclusion that laryngoscopy and intubation under anaesthesia do not entail a risk of cord injury? It may well be that it is only a small subset of patients with "unstable" cervical spine injuries who are at significant risk if direct laryngoscopy is performed under anaesthesia. However, quadriplegia is a devastating complication (no matter how low the incidence) and I am reluctant to see promulgated the idea that it is acceptable to put "all comers" with cervical spine injuries to sleep for their laryngoscopy unless the available data clearly excluded the presence of a subset whose risk of neurologic injury would be diminished by awake intubation.

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REFERENCE

1 *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. Drummond's letter. He raises issues that are of concern to many clinicians. Traditional teaching has advanced and reinforced the tenet that awake laryngoscopy and intubation is less likely to result in secondary neurological injury in cervical spine-injured patients than the same procedure performed in an anaesthetized and paralysed patient. However, given that no outcome data have been advanced in support of this doctrine, perhaps it is time to evaluate the principles on which it is based.*

*The belief that muscle pain and spasm serve as an effective spinal "splint" and prevent secondary neurological injury is not supported by clinical data documenting a high incidence of such injury in patients who are not recognized to have a cervical spinal injury at presentation and who do not have spinal immobilization performed at the outset. Failure to limit neck movement results in secondary injury in patients who are not subjected to laryngoscopy, intubation and surgery. Thus, there is no good evidence to suggest that the cervical muscles provide effective cord protection and this cannot be advanced as a justification for awake intubation.*

*We do not know what data Dr. Drummond would cite to support his belief that the level of injury is an independent predictor of instability following neck injury. We are not aware of data that suggest higher level injuries of the same magnitude are inherently more unstable than those in the lower cervical spine. In fact, cord injury appears to be more frequent in surviving trauma victims with cervical injuries below $C_2$ compared with those with injuries between $C_1$ and $C_2$ suggesting, perhaps, that the inverse is true.*[1,2] *Anatomically, this may be explained by the greater lumimal area in the upper cervical spine relative to cord size than in the lower cervical spine.*

*No patients were "filtered off" from our review. The care offered to the patients was not restricted by any protocol and was*