To the Editor—We read with interest the article by Santoni et al.1 Maintaining manual in-line stabilization for direct laryngoscopy in patients with known or suspected cervical spine injury is a practice which would benefit from further research. However, we believe the protocol design in this study has limited the clinical relevance of the data generated.

The authors designed a prototype pressure-sensing laryngoscope blade specifically for this study. The protocol for intubation in this study was regulated by limitations of these pressure sensors. The research team prohibited external laryngeal manipulation and prohibited use of a stylet. Use of bougie was not mentioned. Both external laryngeal manipulation and use of stylet/bougie are accepted techniques to assist intubation when laryngoscopy is difficult, and are part of the difficult airway algorithm.2,3 Both of these techniques are commonly used in patients with suspected cervical spine injuries.4

The approach used in the study, which does not represent normal clinical practice, resulted in an increased burden of risk to the patients in this study (three failed intubations and one dental trauma in ten subjects), so that the trial was abandoned. The clinical benefit of a study in humans needs to be balanced against the risk assumed by the subjects. It would be valuable to repeat the study in a more realistic clinical setting, allowing clinicians to intubate the patient in whatever manner they are used to, and using intubation aids as required. It would be interesting to see if manual in-line stabilization still resulted in a doubling of applied pressure in that scenario.


References
4. Lavery GG, McCloskey BV. The difficult airway in adult critical care. Critical Care Medicine 2008; 36:2163–73

(Accepted for publication April 22, 2009.)

Balancing the Force of Direct Laryngoscopy with Manual In-Line Stabilization

To the Editor—Manual in-line stabilization (MILS) is employed during direct laryngoscopy in patients with known or potential cervical spine instability to try to stabilize the spine. A recent article by Santoni et al. evaluated how MILS affected the pressure against the tongue and jaw during direct laryngoscopy.5 Pressure was measured with sensors attached to the upper surface of a Macintosh 3 blade. In nine anesthetized paralyzed patients, institution of MILS increased the pressures during laryngoscopy almost two-fold, as compared with pressures measured without MILS. Although MILS is intended to stabilize the cervical spine during laryngoscopy, the authors proposed that “secondary increases in pressure application with MILS have the potential to increase pathologic crano-cervical motion.”

In the absence of MILS, upward and forward force exerted on the airway will be transmitted in some part to the cervical spine and the spine will move, as Dr. Todd and his group have demonstrated.2 The force will also compress the tongue, contributing to exposure of the vocal cords with laryngoscopy.3 However, it is not clear how much movement-generating force, if any, will be applied to the spine if MILS is instituted as described. Santoni et al. explain that MILS is performed by an assistant holding the patient’s occiput and applying “forces equal and opposite to those created by the anesthesiologist.”1 One might expect that matching laryngoscopy force with an equal and opposite force would result in no net force on the head, thus reducing the force and movement of the cervical spine, as compared with the situation with no MILS. In fact, Santoni et al. list the goal of the MILS as preventing or minimizing head and neck movement.

How MILS actually works in practice is another issue. The assistant performing the task is guided by feel without any measurement of force. Thus, MILS may not balance the force of laryngoscopy and may not minimize movement. The Santoni group may be correct that MILS does not accomplish the objective. However, they only measured the pressure on the laryngoscope and did not evaluate the force exerted by MILS. Thus, they do not know what the net force was and cannot say one way or another from this body of research whether MILS had the potential to reduce or increase the craniocervical motion.

The observation that MILS worsened glottic visualization, a finding also reported by other investigators, is interesting and could be an outcome of the way the MILS was executed. The increased force on the tongue with MILS should lead to greater compression of the tongue, increase the space in the airway and, if anything, improve the glottic view rather than impairing it. In a study examining simulated cervical spine precautions, we showed several years ago that having an assistant hold a patient’s head firmly against the table during laryngoscopy significantly reduced the amount of head extension necessary to expose the vocal cords compared to the state with no head stabilization.4 We suggested that less head extension was needed because the downward pressure on the head allowed the laryngoscopist to lift more forcibly and achieve greater displacement of the tongue from the field of view. Some additional factor must be operative in the Santoni study to worsen the view with MILS. Perhaps the main effort of the assistants was to resist head

Supported by the Anesthesia Patient Safety Foundation, UCSD School of Medicine, San Diego, California.