Manual In-Line Stabilization Is Not Helpful in Cadavers with Unstable C-Spines

Movement of the unstable C-spine during intubation was similar with and without use of this currently recommended technique.

Given that direct laryngoscopy (DL) can cause motion of the cervical spine in normal or uninjured patients, the technique has been suggested, but not proven, to cause or exacerbate C-spine injury in patients with unstable C-spines. Manual in-line stabilization (MILS) of the C-spine is recommended to mitigate this possibility. In this study, unstable C-spine injuries were created at C4–C5 in 10 adult cadavers via surgical disruption of the anterior and posterior longitudinal ligaments, the disc, and the annulus. A single experienced anesthesiologist intubated the cadavers in random order with a 7.0-mm wire-reinforced endotracheal tube by either DL (Macintosh blade) or a Bullard rigid fiber-optic laryngoscope (BL), with and without MILS. Digital still images from video fluoroscopy were used to measure changes from baseline in motion before, three times during, and at the completion of intubation.

In analyses that combined data for DL and BL intubations, no significant differences in subluxation, angulation, and distraction were observed between intubations performed with MILS and those performed without MILS. Similarly, when data for intubations performed with and without MILS were combined, no differences in median maximal motion were observed between DL and BL intubations. However, DL intubation was associated with significantly greater variance in maximal subluxation than BL intubation.

**Comment:** The substantive finding of this study is that manual in-line stabilization had no effect on the amount of subluxation, angulation, or distraction of the C-spine during intubation in cadavers with surgically created unstable C-spine injuries. The finding is important because manual in-line stabilization increases the time and number of personnel required for intubation and, moreover, can result in a poor view of the airway. The recommendation by the American College of Surgeons Committee on Trauma to utilize this technique warrants greater scrutiny.

— *John A. Marx, MD, FAAEM*

*Published in Journal Watch Emergency Medicine August 14, 2009*

**Citation(s):**


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