Airway Techniques in Patients with Unstable Cervical Spines: Which Is Best?

Rapid sequence intubation with in-line stabilization has emerged as the preferred method for intubation of patients with potential cervical spine injury in the ED. Researchers in Australia created posterior instability at C3 in 10 fresh cadavers, then measured posterior and sagittal displacement of C3 during simulation of 6 airway management techniques: Face mask ventilation with chin lift and jaw thrust, oral endotracheal intubation, insertion of the esophageal tracheal Combitube, fiberoptic nasotracheal intubation, intubating laryngeal mask airway (LMA) with fiberoptic intubation, and LMA insertion, all performed with manual in-line stabilization.

No method produced significant sagittal displacement. Fiberoptic nasotracheal intubation alone produced no significant posterior displacement (0.1 mm); the other methods produced displacements ranging from 1.7 mm to 3.2 mm. The LMA with fiberoptic intubation and LMA produced less posterior displacement than the esophageal tracheal Combitube (1.7 mm and 1.7 mm vs. 3.2 mm), but no other differences among the methods were significant. Maximal posterior displacement induced by full flexion and extension without in-line stabilization was 3.7 mm and 1.8 mm, respectively.

Comment: This cadaver study has obvious limitations but reinforces a role for fiberoptic intubation in patients with unstable cervical spine injury. The poor performance of the Combitube is troubling because this device is used in some prehospital care systems. Neither this nor any other study demonstrates that rapid sequence intubation with in-line stabilization is unsafe, but the availability of a variety of new airway devices argues that the traditional "one size fits all" approach using only oral endotracheal intubation should be questioned.

— RM Walls

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Brimacombe J et al. Cervical spine motion during airway management: A cinefluoroscopic study of the posteriorly destabilized third cervical vertebrae in human cadavers. *Anesth Analg* 2000 Nov 91 1274-1278.