Esophageal and Endobronchial Intubation in Prehospital Care

Seventeen percent of tubes were placed in the esophagus or mainstem bronchus by undertrained, underequipped physicians in this German study.

Previous studies have documented misplacement of endotracheal tubes during out-of-hospital intubation, with unrecognized esophageal placement rates of up to 25% (Journal Watch Emergency Medicine Jul 28 2004; Sep 24 2003; Mar 21 2001). Investigators in Germany determined the incidence of endotracheal intubations by surgeons, anesthesiologists, and internists from local hospitals who participated in emergency services at least 1 day per month in addition to their usual clinical responsibilities.

After the responding physician completed prehospital intubation and confirmed tube placement by physical examination only (auscultation, chest movement), an anesthesiologist (study physician) with 300 or more emergency calls or 3 years of ground-based ambulance experience and specialized airway training accompanied helicopter transport personnel to evaluate tube placement by laryngoscopy, colorimetric or continuous end-tidal CO₂ monitoring, physical examination, and an esophageal detector device (in patients receiving cardiopulmonary resuscitation). None were qualified emergency physicians.

Of 149 patients (mean age, 57) intubated during the 5-year study, 14% received CPR, 56% were trauma patients, and 30% were intubated for other medical conditions. Overall, 26 (17.4%) tubes were misplaced: 10 (6.7%) in the esophagus and 16 (10.7%) in the mainstem bronchus. The study physician repositioned all endobronchial tubes and corrected all esophageal intubations (9 in one attempt and 1 in two attempts). Eight of the 10 esophageal-intubation patients had grade I or II Cormack-Lehane views during laryngoscopy.

Comment: This is science? Internists, surgeons, and anesthesiologists without specialized emergency training who are not equipped with common, standard-of-care endotracheal tube confirmation devices (end-tidal CO₂ detection devices and esophageal detector devices) often misplace tubes. The biggest mystery is how an investigational review board approved this protocol, which allowed an average of 17 minutes to elapse before providing simple common devices that have been widely available and used for more than 15 years to reliably identify catastrophic esophageal intubations. Another puzzle is how an otherwise responsible journal, presumably after peer review, published a "study" that was methodologically weak (for example, no gold standard verification that the suspicion of "mainstem bronchus intubation" was correct), misleading (the physicians were not emergency physicians, unless one is talking about North America circa 1965), and poorly described (no information was provided on the number, specialty, and experience of primary responders or their frequency of intubation). We have a right to expect better in both regards.

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CITATION(S):
