Bedside Transtracheal Ultrasound Accurately Confirms Endotracheal Tube Placement

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In a meta-analysis, transtracheal ultrasound was highly sensitive and specific for detecting tracheal placement during emergency intubation.

In the emergency department (ED), colorimetric or quantitative capnography is the gold standard for confirmation of endotracheal tube placement. Capnography may be unreliable in patients with severe pulmonary obstruction, greatly reduced pulmonary circulation, or cardiac arrest. Secondary means of confirming proper tube placement include aspiration devices (which are uncommon in most EDs), physical exam (auscultation), and chest x-ray. Transtracheal ultrasound imaging with a linear or curvilinear probe placed transversely at the cricothyroid membrane has shown promise for confirming tube placement when capnography is unavailable or thought to be unreliable.

To evaluate the diagnostic accuracy of transtracheal ultrasound for detecting tracheal intubation, researchers performed a meta-analysis of human studies that compared ultrasound and capnography. Eleven studies (969 intubations), of which eight (713 intubations) evaluated emergency intubations, were included in the analysis. Ultrasound was predominantly performed by emergency physicians. The pooled sensitivity and specificity of ultrasound for detecting tracheal intubation were 98% and 98%, respectively, for all intubations and 98% and 94%, respectively, for emergency intubations.

Comment: Transtracheal ultrasound is simple and fast, provides real-time results, and uses a technology available in most EDs. Ultrasound, in addition to auscultation, should be used as an alternative method of confirming successful endotracheal tube placement when capnography is either not immediately available or thought to be unreliable.

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