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Confirmation of endotracheal tube placement: Comparison of ultrasound based versus conventional methods-An exploratory study

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Statement of the Problem: Correct positioning of endotracheal tube (ETT) is necessary to ensure adequate ventilation. Various methods are used for this purpose. Ultrasonography (USG) is a useful, quick and non-invasive method for identification of ETT placement. Three USG methods have been described in literature viz., direct USG visualization of ETT in trachea, "sliding lung sign" and diaphragmatic dome movement. However, the time taken for each of these methods to correctly identify the ETT position has not been previously studied. This study is designed to compare the time taken and the accuracy of detection of position with the three USG methods, conventional auscultation and capnography techniques.

Methodology & Theoretical Orientation: This prospective, randomized controlled trial was conducted on ninety ASA I/II patients, 18–60 years requiring general anesthesia (GA) with tracheal intubation. Patients were randomized on the basis of a computer generated table into three groups depending upon the USG probe position: Group T (tracheal), Group P (pleural) and Group D (diaphragmatic). The time taken for confirmation of ETT placement was recorded.

Findings: Time taken to identify ETT placement was significantly less in Group T compared to the other two groups (p=0.000). The time taken in Group P and Group D was less than that required for confirmation by capnography but was more compared to auscultation.

Conclusion & Significance: All three USG techniques could accurately confirm ETT placement. Real time passage of ETT through the trachea was the fastest amongst the three USG techniques. It was faster than conventional auscultation and capnography techniques. We recommend the use of real time USG visualization of trachea for confirmation of ETT placement especially in trauma victims and patients who are at high risk of aspiration, as it does not require ventilation and hence avoids gastric insufflations in case of accidental esophageal intubation.

Recent Publications

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2. Adi O, Chuan T W and Rishya M (2013) A feasibility study on bedside upper airway ultrasonography compared to waveform capnography for verifying endotracheal tube location after intubation. Crit Ultrasound J. 5(1):7.
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Biography

Choro Athiphro Kayina is working as a Senior Resident Doctor, Department of Anesthesiology and Critical Care, All India Institute of Medical Sciences, Delhi, India. She graduated from the Regional Institute of Medical Sciences, Imphal, India, and was awarded a gold medal for her Excellence in Obstetrics and Gynecology. She received her MD (Anesthesia) in 2016 from the University College of Medical Sciences, Delhi. Her interest is in Airway Management and Obstetric Anesthesia.

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