

Comparing Combitube, EasyTube, and LTS to ventilation with a tracheal tube in a bench model

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Background and Goal of Study: The oesophageal-tracheal Combitube (Kendall), the Easytube (Ruesch) and the Laryngeal Tube Suction LTS (VBM) are three similar looking airway devices with a large proximal (pharyngeal) cuff and a smaller distal cuff. The single use Combitube and EasyTube allow ventilation in oesophageal and tracheal position, the tip of the reusable LTS has to be placed in the oesophageal inlet. Ventilation with the three devices is compared with tracheal tube ventilation in a bench model.

Materials and Methods: 3-minute ventilation cycles (10 per device, total 60 cycles) were performed with tracheal tube (7.5), Combitube (37 Fr., tracheal and oesophageal position), Easytube (41 Fr., tracheal and oesophageal position) and LTS (#4) in a bench model consisting of a Ambu Megacode Station connected to a PC (Megacode software 2.23). Standardised ventilation (intermittent positive pressure ventilation, respiratory rate 12 per minute, tidal volume 750 ml) was performed with a Draeger Oxylog 3000 (Draeger medical). Cuff pressures were adjusted to 80 cm H₂O. Tidal volumes and peak airway pressures were measured. The t-test was used for statistical analysis of the data.

Results and Discussions.: No gastric insufflation of air could be detected with any device. Tidal volumes (mean±SD) and peak airway pressures for the airway devices were 730±7 ml and 15.8 cmH₂O for tracheal tube, 733±6 (+0.4%) and 16.7* cmH₂O for Combitube in oesophagal position, 708*±3 (-3.0%) and 17.6* cmH₂O for Combitube in tracheal position, 733±3 (+0.4%) and 17.0* cmH₂O for Easytube in oesophagal position, 742*±2 (+1.6%) and 16.8* cmH₂O for Easytube in tracheal position, and 716*±6 (-1.9%) and 15.0* cmH₂O for LTS (* = p<0.01 compared to ventilation with tracheal tube).

Conclusion(s): In the bench model chosen, only small differences of tidal volumes are found for ventilation with Combitube, Easytube and LTS compared to ventilation with a tracheal tube. While some differences are significant, they may be of little clinical relevance considering the maximal deviation of 3%. Differences for ventilation in oesophageal and tracheal position may be caused by the variation of tube diameters.

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