

Emergent Cricothyrotomy Training for Non-Surgeons

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Purpose: Cricothyrotomies are performed in critical care (CC) settings when oral endotracheal (ET) intubation isn't possible. Training are usually performed on synthetic materials or pig tracheas, however cadaveric training is superior due to tissue fidelity.

Methods: We implemented a program to train CC fellows and attendings on cadaveric donors. All participants practiced scalpel and Seldinger kit methods. The program was enhanced by endoscopic visualization of the trachea that allowed them to review their technique and by a training video that we produced.

Participants responded to a pre-survey regarding their experience and anxiety with the procedure, and we assessed for changes in their confidence after the video and training. We also reviewed the endoscope recordings for any excursions of instruments beyond the tracheal midline and recorded procedure duration and puncture-to-tube time (PTTT) from entry to tube placement.

Results: Response rate for the first session of 10 participants was 100% and showed that the session was helpful to all participants. 20 endoscopic recordings were analyzed (10 from each method), which revealed that 1 trocar needle hit the posterior tracheal wall and 2 scalpels passed the tracheal midline. PTTT ranged from 15-83 seconds (s), with the mean PTTT without the outlier was 29.2 ± 12.7 s. During the training 1 bougie was placed parallel to the trachea which was made immediately clear via the endoscope and feedback allowed the participant to successfully intubate.

Conclusions: Endoscopic enhancement of the emergent cadaveric cricothyrotomy training was valued by trainees. It helped detect 3 complications in 20 attempts which was important in refining trainee technique to avoid real-life complications and improve confidence. Adoption of ET endoscopy may enhance cadaveric cricothyrotomy training programs.