Emergency Cricothyrotomy Training For Non-Surgeons

Caterina Zagona-Prizio, BS, MS3 | University of Colorado School of Medicine | Supported by the Rymer educational grant

**Project Overview**

Cricothyrotomies are life-saving procedures that are infrequently performed in emergency and critical care settings when other forms of intubation are not possible.

Limited access to cadaveric training for many residents, fellows, and attendings.

Most training is done in Sim labs on pig tracheas or synthetic materials.

Cadaveric training is superior for tissue and landmark fidelity.

**Methods**

We implemented a novel training program with cadaveric donors from anatomy programs on Anschutz medical campus:

- Expands impact of anatomy donors’ gift without interfering with medical training.
- Goal to be a sustainable on-campus educational program.

Participants: Critical Care (CC) fellows and attendings.

- Responded to pre-survey: Level of experience with performing cricothyrotomy, subjective anxiety/confidence.
- Responded to post-survey: Subjective anxiety/confidence after video and training.

Reviewed endoscopic recordings for:

- Instrument excursions beyond tracheal midplane (associated with increased risk of damaging posterior trachea).

Survey Results

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<th>100% Survey response rate</th>
<th>90% Rated session as “very helpful”</th>
<th>80% Changed from “slightly confident” to “moderately confident”</th>
<th>40% Indicated reduction in anxiety</th>
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Survey Results: 20 Endoscopic recordings analyzed:

- 1 Trocar needle hit posterior tracheal wall
- 2 Scalpels passed midpoint of tracheal lumen

PTTT (Range: 15-83 s)

- Mean PTTT: 29.2 ± 1.5. Outlier excluded due to assisted coaching real procedure.

Endoscopy Results:

- 1 Bougie placed parallel to the trachea but not within it

Enhanced Curriculum

We hypothesized that the enhanced curriculum improve subjective value and objective training quality of cadaveric session:

- Opportunity to perform two techniques
  - Scalpel-bougie-6.0 ET tube and Seldinger kit
- Educational training video
- Endoscopic visualization of trachea
  - Allowed participants to review their technique
- Multidisciplinary team and live coaching
  - ENT and ED physicians

Survey Results:

- 100% Survey response rate
- 90% Rated session as “very helpful”
- 80% Changed from “slightly confident” to “moderately confident”
- 40% Indicated reduction in anxiety

Endoscopy Results:

- 20 Endoscopic recordings analyzed
- 1 Trocar needle hit posterior tracheal wall
- 2 Scalpels passed midpoint of tracheal lumen

Conclusion

Cadaveric cricothyrotomy training enhanced with a training video, endotracheal endoscopy, and expert coaching results in improved confidence, rapid procedures, and refined technique that may help avoid real-life complications.

**References**

3. https://www.youtube.com/watch?v=hGI8MJNWJoc