# Emergency Cricothyrotomy Training For Non-Surgeons

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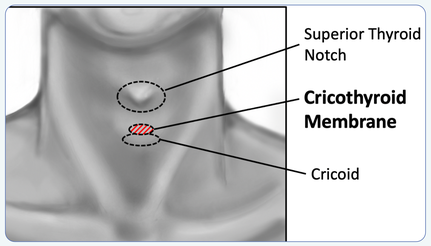
## Project Overview

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, attendings
- Most training is done in Sim labs on pig tracheas or synthetic materials
- Cadaveric training is superior for tissue and landmark fidelity[1]




## Enhanced Curriculum

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

4 elements:
- Educational training video[2,3]
- Endoscopic visualization of trachea
  - Allows participants to review their technique
- Opportunity to perform two techniques
  - Scalpel-bougie-6.0 ET tube and Seldinger kit
- Multidisciplinary team and live coaching ENT and ED physicians

## Methods

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

- Expands impact of anatomy donors' gift
- Doesn't interfere with medical training
- 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

We reviewed endoscopic recordings for:
- Instrument excursions beyond tracheal midplane
  - Associated with incr risk of damaging posterior trachea
- Procedure duration, or Puncture-to-Tube Time (PTTT)
  - Considered successful if performed <40s[4]
- Any aberrancies in procedure

## Survey Results (initial 10 of goal n=27)

**100%** Survey response rate

**30%** Previous cadaveric experience

**Helpfulness**
**90%** Rated session as "very helpful"

**Confidence**
**80%** Changed from "slightly confident" to "moderately confident"

**Anxiety**
**40%** Indicated reduction in anxiety

## Endoscopy Results (initial 10 of goal n=27)

**20** Endoscopic recordings analyzed

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

**PTTT**
Range: **15-83s**
Mean PTTT: **29.2±12.7s*** outlier
excluded due to extended coaching mid-procedure

**Aberrancies**
**1** Bougie placed parallel to the trachea but not within it

## 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

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3.https://www.youtube.com/watch?v=hGI8MJNWJoc
4.David T. Wong, Atul J. Prabhu, Margarita Coloma, Ngozi Imasogie, Frances F. Chung; What Is the Minimum Training Required for Successful Cricothyroidotomy?: A Study in Mannequins. *Anesthesiology* 2003; 98:349–353 doi: https://doi.org/10.1097/00000542-200302000-00013