FEEDBACK TO THE FIELD (FT2F) #5:

*Emergency Tracheostomy Placement*

AFMES: COL (Ret) H.T. Harcke, MC, USA**

Lt Col E. L. Mazuchowski, USAF, MC

* RE-ISSUE: Original Released AFIP/OAFME Apr 2010

** American Registry of Pathology in support of AFMES
DISCLAIMER

The opinions or assertions presented hereafter are the private views of the authors and should not be construed as official or as reflecting the views of the Department of Defense, its branches, or the Armed Forces Medical Examiner System.
Original Release

FEEDBACK TO THE FIELD:

Emergency Tracheostomy Placement

H T Harcke, COL, MC, USA
Chief, Forensic Radiology
Armed Forces Institute of Pathology

Edward Mazuchowski, Lt Col (Sel), USAF, MC
Deputy Medical Examiner
Office of the Armed Forces Medical Examiner
OVERVIEW:

• Emergency trachesotomy is a procedure employed in the Combat Zone.

• Preferred site to incise the trachea is through the 2\textsuperscript{nd} - 4\textsuperscript{th} tracheal rings with cricothyroidotomoty an emergency alternative. (Emergency War Surgery, 2\textsuperscript{nd} Edition)

• We observe tracheostomy tube placement when performing Multidetector Computed Tomography (MDCT) imaging preceding autopsy at the Dover AFB Mortuary.
OVERVIEW:

Key Anatomic Landmarks: Thyroid Cartilage (T), Cricoid Cartilage (C), Hyoid Bone (H), Cricothyroid Membrane (CM), Thyroid Gland (TG), Epiglottis (E), Trachea Rings (TR)

Drawings by Netter
OVERVIEW:
Example of placement at a recommended site. Postmortem MDCT shows the tracheostomy tube enters the neck through the cricothyroid membrane.

Incision post tube removal

Note the position of the tube with respect to the thyroid cartilage (T) and hyoid bone (H).
OVERVIEW:

• In this communication we present images from two cases where emergency tracheostomies were placed with the tube passing through the epiglottis.

• Both individuals sustained multiple traumatic injuries including lethal head injury.
CASE 1
Postmortem MDCT showed the tracheostomy tube entered the neck between the hyoid bone and the upper margin of the thyroid cartilage.

Incision post tube removal
Postmortem axial and sagittal MDCT images of the neck show the tracheostomy tube enters the neck (arrow) below the hyoid bone (H) and above the thyroid cartilage (T).

Note tube tip (with balloon cuff) is in the trachea.
3-D MDCT images of the neck demonstrate the tube track (arrow) and the post mortem specimen shows epiglottis injury (arrowhead).
CASE 2
Postmortem MDCT showed the tracheostomy tube entered the neck between the hyoid bone and the upper margin of the thyroid cartilage.

Incision post tube removal
Postmortem coronal and sagittal MDCT images of the neck show the tracheostomy tube enters the neck (arrow) below the hyoid bone (H) and above the thyroid cartilage (T).

Note tube tip is in the larynx. (dotted arrow)
3-D MDCT image of the neck demonstrates the tube track (arrow) and the post mortem specimen shows epiglottis injury (arrowhead).
CONCLUSION:

Placement of an emergency tracheostomy tube between the hyoid bone and thyroid cartilage may result in injury of the epiglottis (Cases 1 and 2) and in difficulty entering the trachea (Case 2).

CAUTION:
The clinical circumstances and specific details surrounding the delivery of emergency treatment in these cases are unknown.
This material is intended for educational and training purposes. If portions are extracted, the following statement must be included:

“Source: Armed Forces Medical Examiner System”

NOTES of CAUTION:

• The clinical circumstances and details surrounding emergency treatment in these cases is unknown

• This presentation makes no association between device placement and outcome of treatment

• This case series is drawn from cases with fatal injuries, which may skew data
For FT2F Comments / Questions / Requests:
Contact the Armed Forces Medical Examiner System (AFMES)

Contact Information:
Lt Col Edward L Mazuchowski, USAF, MC
Office of the Armed Forces Medical Examiner

edward.l.mazuchowski.mil@mail.mil
(302) 346-8648