



EMS System for Metropolitan Oklahoma City and Tulsa 2017 Medical Control Board Treatment Protocols



Approved 11/9/16, Effective 2/1/17, replaces all prior versions

2I – CRICOTHYROTOMY ADULT

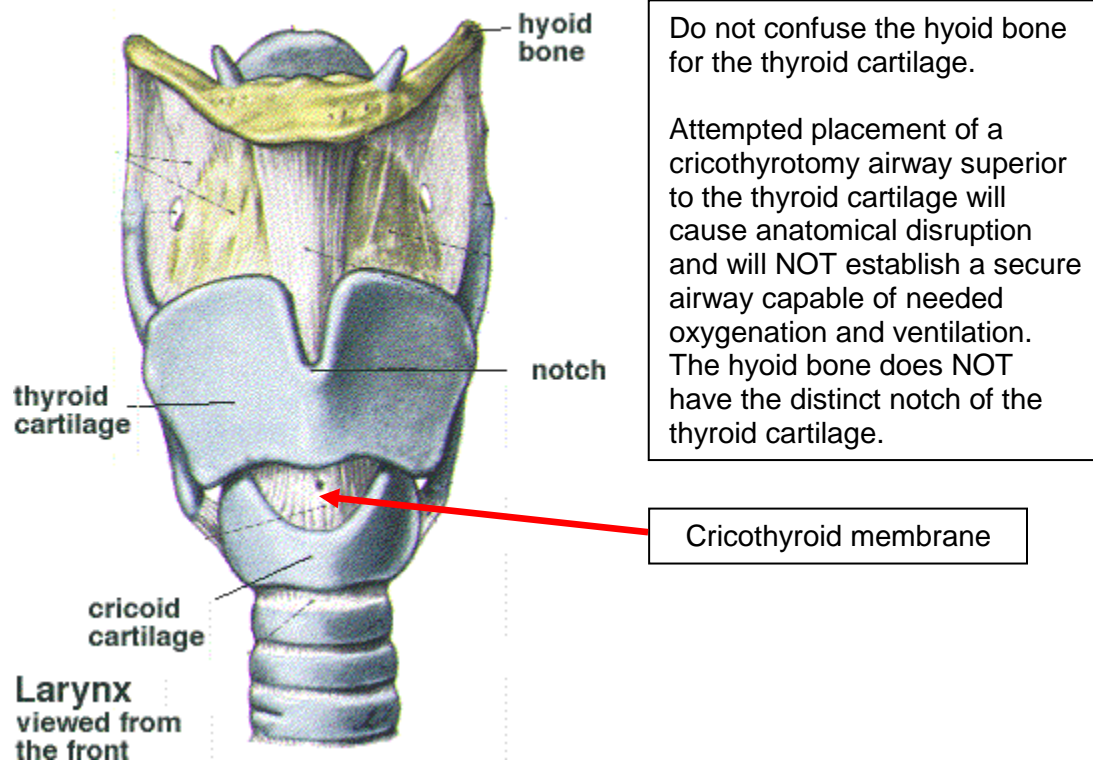
PARAMEDIC

Indications:

1. Upper airway obstruction (eg. facial or neck trauma occluding airway patency, foreign body unable to be removed, angioedema) and inability to adequately oxygenate and ventilate using less invasive methods.

Contraindications:

1. Ability to oxygenate and ventilate using less invasive methods.
2. Infant and younger pediatrics – airway anatomical size not conducive to successful cricothyrotomy in EMS care. Contact OLMC for direction in these ages.
3. Older pediatrics – airway anatomical size MAY not be conducive to successful cricothyrotomy in EMS care. Contact OLMC for direction in these ages.
4. Suspected fractured larynx and/or cricoid cartilage.
5. Suspected tracheal transection with retraction of the trachea into the chest.
6. Inability to find anatomical landmarks





EMS System for Metropolitan Oklahoma City and Tulsa 2017 Medical Control Board Treatment Protocols



Approved 11/9/16, Effective 2/1/17, replaces all prior versions

PROTOCOL 2I: Emergency Cricothyrotomy – Adult, cont.

Surgical Technique (6.0 endotracheal tube and tracheal hook):

- A. Establish adequate space and lighting. Do not attempt cricothyrotomy in poorly visualized conditions.
- B. If rapidly available, clean anterior neck with ChlorPrep®, Betadine®, or alcohol wipe.
- C. Definitively locate the following landmarks: thyroid cartilage (“Adam’s apple”) and cricoid cartilage. The cricothyroid membrane lies between these cartilages.
- D. Using the non-dominant hand, spread the overlying skin taut with the thumb and fingers, and slightly depress the skin over the cricothyroid membrane with the index finger to mark the site of cricothyrotomy. Do not release the non-dominant hand from the neck until the procedure is complete! Once the anatomy is found and defined, avoid movement of the anatomy to promote proper cricothyrotomy airway placement.
- E. Stabilization of the anatomy requires assistance from a second EMS professional, preferably licensed as a paramedic as well.
- F. Ask second EMS professional to aspirate all air from the endotracheal tube cuff.
- G. Using a sterile scalpel, make a vertical incision in the mid-line of the neck extending from just above the lower edge of the thyroid cartilage to the middle of the cricoid cartilage. Make the depth of this incision sufficient to extend through the skin and fatty tissue underneath.
- H. Using sterile hemostats, spread the incision open horizontally to expose the cricothyroid membrane. Instruct the second EMS professional to hold the hemostats in this position.
- I. Using the same scalpel as in Step G, now make a short horizontal incision in the middle of the cricothyroid membrane. There is a small artery running vertically on each side of the cricothyroid membrane. Keeping the horizontal incision less than ½ inch (approx. 1 cm) will decrease bleeding that may occur.
- J. Pass the 6.0 mm endotracheal tube through the horizontal incision in the cricothyroid membrane, angling the tube inferior and posterior along the tracheal anatomy. A “washboard” sensation may be felt as the tube slides along the tracheal wall. Avoid excessive pressure in placing the endotracheal tube, but a moderate degree may be required to first pass the endotracheal tube through the cricothyroid membrane. If significant resistance is encountered (without suspicion of lower respiratory tract foreign body), the hemostats used in Step H may be used to spread the cricothyroid membrane incision vertically while the endotracheal tube is passed through it and/or use of the tracheal hook may better stabilize the anatomy to overcome resistance to airway passage.



EMS System for Metropolitan Oklahoma City and Tulsa 2017 Medical Control Board Treatment Protocols



Approved 11/9/16, Effective 2/1/17, replaces all prior versions

PROTOCOL 2I: Emergency Cricothyrotomy – Adult, cont.

Surgical Technique, cont.:

- K. Inflate the endotracheal cuff and verify airway placement per Protocol 2J – Confirmation of Artificial Airway Placement.
- L. Secure the airway using a cloth tie or commercial endotracheal tube restraint while continuing oxygenation and ventilation. Artificial ventilation will generally be easier if the endotracheal tube is cut to a shorter length. Be careful to cut the upper aspect of the endotracheal tube above the insertion site of the cuff inflation portal to avoid irreversible cuff deflation.

Non-Surgical Technique (PerTrach[®] Kit and tracheal hook):

- A. Establish adequate space and lighting. Do not attempt cricothyrotomy in poorly visualized conditions.
- B. If rapidly available, clean anterior neck with Chloraprep[®], Betadine[®], or alcohol wipe.
- C. Definitively locate the following landmarks: thyroid cartilage (“Adam’s apple”) and cricoid cartilage. The cricothyroid membrane lies between these cartilages in the neck midline.
- D. Using the non-dominant hand, spread the overlying skin taut with the thumb and fingers, and slightly depress the skin over the cricothyroid membrane with the index finger to mark the site of cricothyrotomy. Do not release the non-dominant hand from the neck until the procedure is complete! Once the anatomy is found and defined, avoid movement of the anatomy to promote proper cricothyrotomy airway placement.
- E. Stabilization of the anatomy requires assistance from a second EMS professional, preferably licensed as a paramedic as well.
- F. Ask second EMS professional to aspirate all air from the tracheostomy tube cuff.
- G. Using the dominant hand on the break-away needle and syringe, puncture in the lower half of the cricothyroid membrane, mid-line, at a 45 degree angle towards the chest (following the path of the airway from superior to inferior). Once air is aspirated in the syringe, advance another few millimeters in depth and remove the syringe.
- H. Using the included small scalpel, make a single vertical “stab” incision immediately to one side of the needle.



EMS System for Metropolitan Oklahoma City and Tulsa 2017 Medical Control Board Treatment Protocols



Approved 11/9/16, Effective 2/1/17, replaces all prior versions

PROTOCOL 2I: Emergency Cricothyrotomy – Adult, cont.

Non-Surgical Technique, cont.

- I. Place a tracheal hook in the incision and position the hook to pull anterior and superior on the inferior border of the thyroid cartilage. Exercise caution when manipulating the tracheal hook into the incision – the tip of most tracheal hooks is particularly sharp-edged.
- J. The second EMS professional should now control the tracheal hook.
- K. Palming the airway and dilator stylet, advance through the needle until resistance is met. The second EMS professional should split the needle by compressing and widening the “butterfly” tips on the needle and then remove each side of the needle. Constant inward/downward pressure on the airway and stylet must be maintained to avoid inadvertent displacement of the airway and ensure the tip of the airway will remain in the trachea.
- L. Continue to advance the airway/stylet until the airway is fully in the trachea (airway passed to hub contact with overlying skin) and remove the tracheal hook.
- M. Inflate the airway cuff and verify airway placement per Protocol 2J – Confirmation of Artificial Airway Placement.
- N. Secure the airway using the cloth tie while continuing oxygenation and ventilation.

Modified Non-Surgical Technique (PerTrach[®] Kit):

In patients with neck edema, subcutaneous air, or fat/obesity preventing necessary tactile identification of anatomical landmarks to perform standard non-surgical cricothyrotomy, utilize the following modification:

- A. Using the included small scalpel, make a single, vertical, mid-line incision in the skin overlying the area that is estimated to contain the thyroid cartilage, cricothyroid membrane, and cricoid cartilage. When making the incision, make an incision approximately 2 inches (5 cm) in length and deep enough that the subcutaneous fat can be visualized. Using a gloved index finger palpate the structures through the incision and when identified, proceed as per standard non-surgical cricothyrotomy.