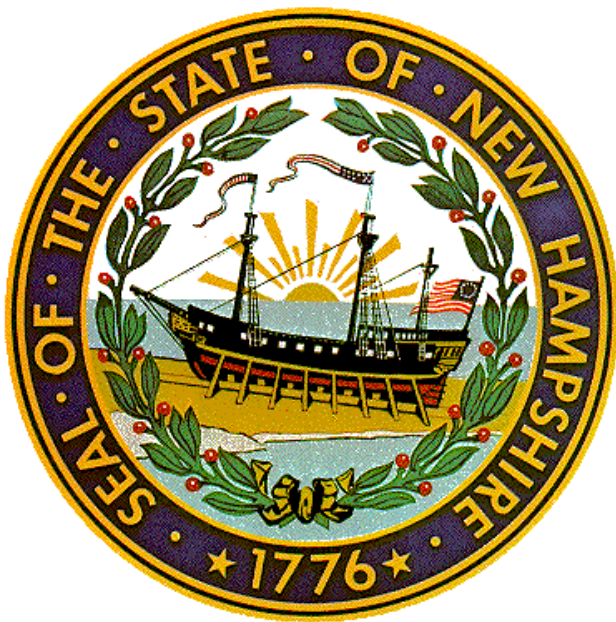
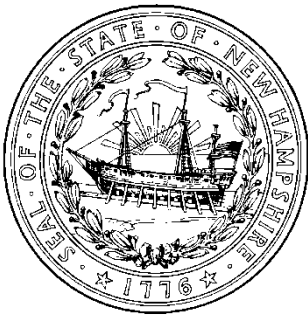


Surgical Cricothyrotomy Bougie Assisted Prerequisite Protocol



**NH Department of Safety
NH Fire Academy & Emergency
Medical Services
NH Bureau of EMS
2015**

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**NEW HAMPSHIRE
DEPARTMENT OF SAFETY
DIVISION OF FIRE STANDARDS AND TRAINING &
EMERGENCY MEDICAL SERVICES
NH EMS PREREQUISITE APPLICATION**
PLEASE PRINT (BLACK INK) OR TYPE



PROTOCOL NAME _____ PROTOCOL NUMBER _____

LEGAL NAME OF UNIT _____ UNIT LICENSE NUMBER _____

BUSINESS STREET ADDRESS _____
STREET CITY STATE ZIP CODE

MAILING ADDRESS _____
STREET/PO BOX CITY STATE ZIP CODE

HEAD OF UNIT _____ TITLE _____

CONTACT TELEPHONE _____ FAX (IF AVAILABLE) _____

EMAIL ADDRESS (IF AVAILABLE) _____

MEDICAL RESOURCE HOSPITAL _____

MEDICAL DIRECTOR OR DESIGNEE _____

MEDICAL DIRECTOR PHONE _____

TYPE OF APPLICATION (CIRCLE) INITIAL RENEWAL

 HEAD OF UNIT DATE MEDICAL DIRECTOR OR DESIGNEE DATE

ATTACHED IS SUPPORTING DOCUMENTATION FOR ALL ELEMENTS LISTED IN Saf-C 5922.01 (e) WITH A LIST OF LICENSING PROVIDERS TRAINED UNDER Saf-C 5922.

PART Saf-C PATIENT CARE PROTOCOLS

Saf-C 5922.01 Procedures...

(d) Prerequisites required by protocol shall be established by the EMS Medical Control Board in accordance with RSA 153:A-2 XVI (a).

(e) Protocol prerequisites, when required, shall address each of the following elements:

- (1) The protocol title and number to which the prerequisites relate;
- (2) The provider licensure level necessary to carry out the protocol;
- (3) The name of the medical director, or designee, who will oversee the training module;
- (4) The MRH and EMS head of unit recommendations to the division;
- (5) The provider experience criteria;
- (6) All quality management program elements;
- (7) Reporting requirements for monitoring and skill retention;
- (8) Equipment and staff support resources necessary;
- (9) Provider renewal criteria, and
- (10) Training requirements.

Surgical Cricothyrotomy - Bougie Assisted Prerequisite Protocol

LICENSURE:

Paramedic

EXPERIENCE:

Prior to class participants are to have watched the following:

<http://emcrit.org/procedures/bougie-aided-cric/>

<https://vimeo.com/125228375>

EDUCATION:

Surgical Cricothyrotomy – Bougie Assisted Program approved by the Medical Control Board.
Medical Director or designee to oversee program

MEDICAL DIRECTION

Direct oversight of the program

Recommendation for program

QM review of all cricothyrotomy cases

RECOMMENDATION

The Medical Director and the Head of EMS Agency must mutually agree to participate in the program.

QM/PI PROGRAM

Medical Director to review all cricothyrotomy performed or attempted.

Remediation: 2 people to look at problem calls (Medical Director and NH EMS) and come up with a consensus as to remediation.

REPORTING

Reports to NH EMS via TEMSIS

NH EMS will report to MCB

COMPETANCE/EXPIRATION

Annually

RESOURCES

MRH agreement with participating Medical Director or designee.

EQUIPMENT: Chlorhexidine, #10 blade scalpel, Bougie, 6.0 mm endotracheal tube, 10ml Syringe, BVM, Quantitative ETCO₂.

Cricothyrotomy manikin or lab tracheas

Surgical Cricothyrotomy – Bougie Assisted Checklist

- _____ 1. Protocol
Prerequisite Application signed by both EMS Unit leader and Medical Director.

- _____ 2. Provider Level & Experience
List of eligible providers and NH Paramedic license number.

- _____ 3. Medical Direction
Name of Medical Director or designee overseeing training.

- _____ 4. Recommendation
A letter from the Medical Director attesting to the training and competency of the providers listed in (Items 2 & 4 may be combined).

- _____ 5. Quality Management Program
Provide a copy of your Surgical Cricothyrotomy Quality Management Plan.

Surgical Cricothyrotomy - Bougie Assisted Course Outline

OBJECTIVES

- To assess, objectively measure, and demonstrate competence in the skill of surgical cricothyrotomy, bougie assisted.
- To increase participant comfort and knowledge of indications, contraindications, medications, and procedures used during bougie assisted surgical cricothyrotomy.
- To enforce and practice the medical decision making and procedural skills utilized during bougie assisted surgical cricothyrotomy through experiential learning.

INTENDED AUDIENCE:

- NH Paramedics

COURSE STRUCTURE:

- Course and instructor introduction.
- Introduction to the materials, supplies and SIM equipment.
- NHBEMS Surgical Cricothyrotomy – Bougie Assisted Power Point
- Review: <http://emcrit.org/procedures/bougie-aided-cric/>
- Review: <https://vimeo.com/125228375>
- Review the NH Surgical Cricothyrotomy – Bougie Assisted Prerequisite Protocol.
- SIM-DEMO: Observe a bougie assisted cricothyrotomy in action (SIM-instructor demonstration/discussion/video debriefing)
- Participant participation:
 - Participants to work with Medical Director, or designee, to develop psychomotor skills to perform procedure proficiently.
- Final Skills Assessment: Participant to demonstrate proficiency in surgical cricothyrotomy, bougie assisted to the Medical Director's, or designee's, satisfaction.
- Final Written Exam: Participants are to pass NHEMS approved written examination with a score of 80% or greater.

SURGICAL CRICOTHYROTOMY BOUGIE ASSISTED

Candidate: _____

Date: _____

_____ INITIAL _____ RETEST

Evaluator: _____

Time allowed: 10 minutes

Start: _____

Stop: _____

Total Time: _____

	Points Possible	Points Awarded
SCENE SIZE UP (scene information will be provided by the evaluator)		
Scene safety and proper BSI	1	
Verbalizing indications and contraindications	2	
Position patient supine and extend neck.	1	
Prepare neck with Chlorhexidine.	1	
With non-dominate hand stabilize larynx and locate cricothyroid membrane.	1	
Make an approximately 3cm vertical incision by 0.5cm deep through the skin and fascia, over the cricothyroid membrane.	1	
Insert finger and dissect the tissue and locate the cricothyroid membrane.	1	
With finger, bluntly dilate the opening through the cricothyroid membrane.	1	
Make approximately 1.5cm horizontal incision through the cricothyroid membrane.	1	
Insert bougie curved-tip first through the incision and angled towards the patient's feet.	1	
Advance the bougie into the trachea felling for "clicks" of tracheal rings and until it cannot be advanced any further.	1	
Advance 6.0mm endotracheal tube over bougie and into trachea.	1	
Remove bougie while stabilizing endotracheal tube, ensuring it does not become dislodged.	1	
. Inflate the cuff with 5-10mL air.	1	
Confirm placement: <ul style="list-style-type: none"> • Symmetrical chest-wall rise • Equal breath sounds over chest and lack in epigastric • Condensation in the endotracheal tube • Quantitative waveform capnography 	1 1 1 1	
Secure endotracheal tube.	1	
Reassess tube placement and ongoing waveform capnography.	1	
Total	21	

Critical Criteria

_____ Inability to locate cricothyroid membrane

_____ Does anything to harm self, patient or partners

Surgical Cricothyrotomy

Bougie Assisted — ADULT

Written notification will be provided to the Medical Resource Hospital's EMS Medical Director, Hospital EMS Coordinator, and Bureau of EMS within 48 hours of an event. Use of this procedure documented under "Procedures Used" in the Patient Care Report constitutes notification of the Bureau of EMS.

PARAMEDIC - PREREQUISITE REQUIRED— ADULT

INDICATIONS:

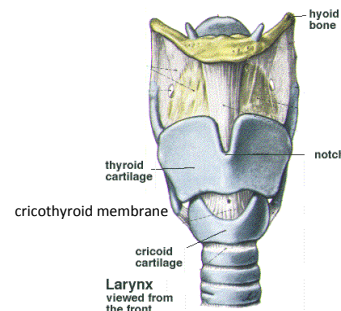
Inability to adequately oxygenate and ventilate using less invasive methods

CONTRAINDICATIONS:

- Ability to oxygenate and ventilate using less invasive measures
- Age less than 12 years old

EQUIPMENT:

- Chlorhexidine
- #10 blade scalpel
- Bougie
- 6.0 mm endotracheal tube
- 10ml Syringe
- BVM
- Quantitative ETCO₂



P

PROCEDURE:

1. Position the patient supine and extend the neck as needed to improve anatomic view.
2. Prep neck with Chlorhexidine
3. Using your non-dominant hand, stabilize the larynx and locate the following landmarks: thyroid cartilage (Adam's apple) and cricoid cartilage. The cricothyroid membrane lies between these cartilages.
4. Make an approximately a 3cm vertical incision 0.5cm deep through the skin and fascia, over the cricothyroid membrane. With finger, dissect the tissue and locate the cricothyroid membrane.
5. Make approximately a 1.5cm horizontal incision through the cricothyroid membrane.
6. With your finger, bluntly dilate the opening through the cricothyroid membrane.
7. Insert the bougie curved-tip first through the incision and angled towards the patient's feet.
8. Advance the bougie into the trachea feeling for "clicks" of tracheal rings and until "hangup" when it cannot be advanced any further. This confirms tracheal position.
9. Advance a 6.0 mm endotracheal tube (ensure all air aspirated out of cuff) over the bougie and into the trachea.
10. Remove bougie while stabilizing ETT ensuring it does not become dislodged
11. Inflate the cuff with 5 – 10ml of air.
12. Confirm appropriate proper placement by symmetrical chest-wall rise, auscultation of equal breath sounds over the chest and a lack of epigastric sounds with ventilations using bag-valve-mask, condensation in the ETT, and quantitative waveform capnography.
13. Secure the ETT.
14. Reassess tube placement frequently, especially after movement of the patient.
15. Ongoing monitoring of ETT placement and ventilation status using waveform capnography is required for all patients.

Cricothyrotomy

Indications and Use for the NH Paramedic

New Hampshire

Division of Fire Standards & Training and
Emergency Medical Services



Objectives

- To assess, objectively measure, and demonstrate competence in the skill of surgical cricothyrotomy, bougie assisted.
- To increase participant comfort and knowledge of indications, contraindications, medications, and procedures used during bougie assisted surgical cricothyrotomy.
- To enforce and practice the medical decision making and procedural skills utilized during bougie assisted surgical cricothyrotomy through experiential learning.



Clinical Indications

- Inability to adequately oxygenate and ventilate using less invasive methods.

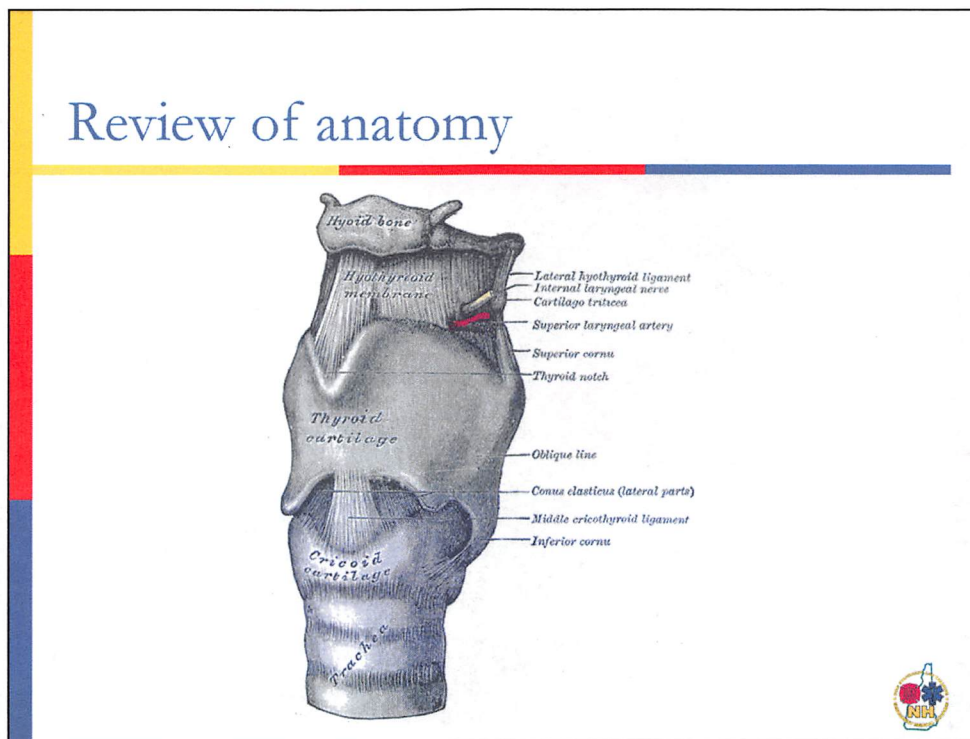


Contraindications

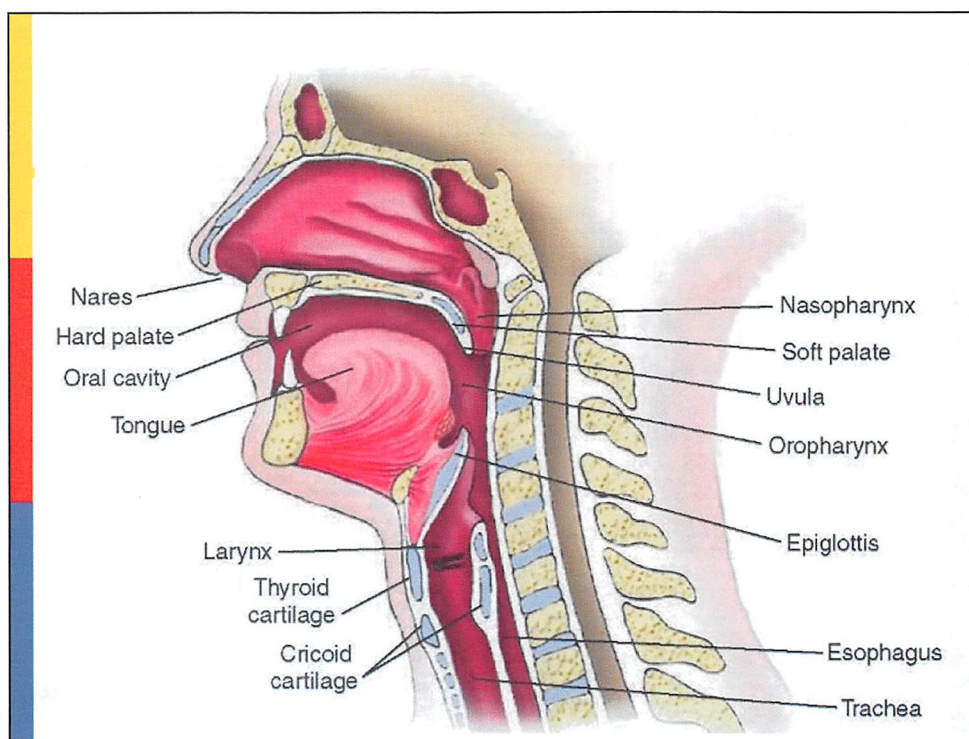
- Ability to oxygenate and ventilate using less invasive measures.
- Age less than 12 years old



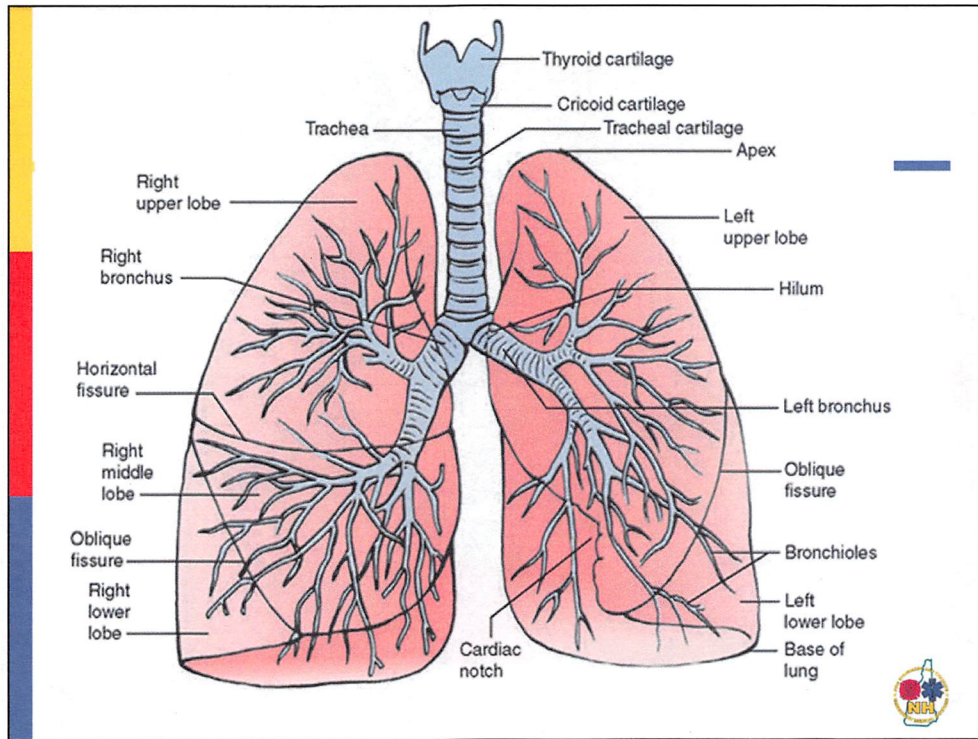
Review of anatomy



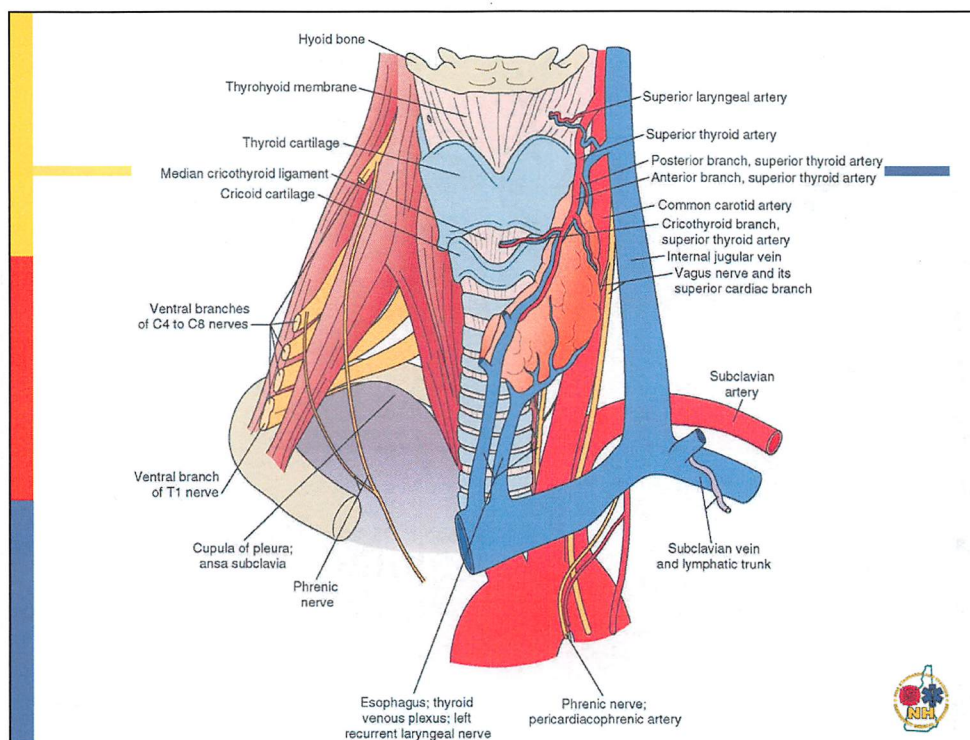
The Medical Director, or designee, is to review the airway anatomy.



Review the upper airway with the students.

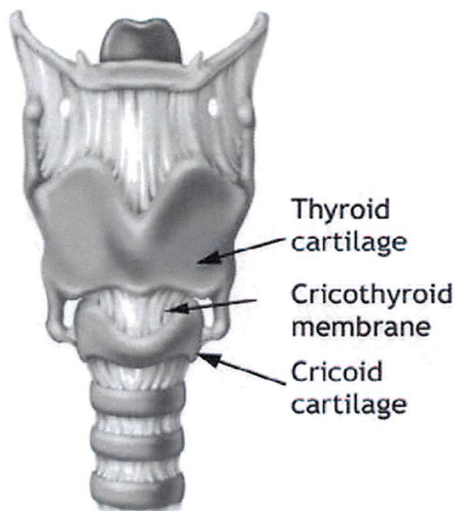


Review the lower airway



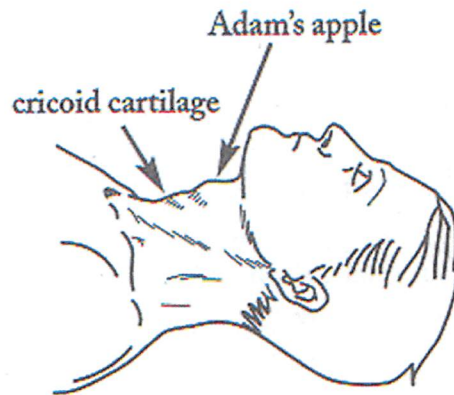
Structures and vessels in the neck. Go over vessels and nerves in proximity to cricoid membrane.

Identifying Landmarks



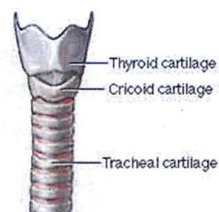
Cricothyroid membrane.

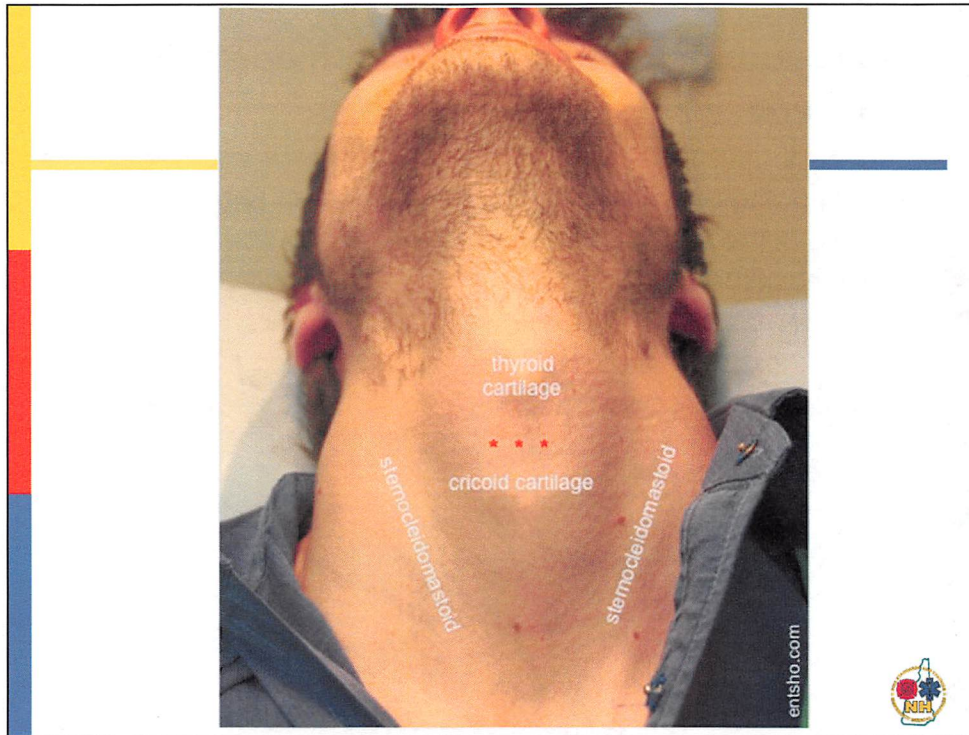
Find the persons Adam's apple (thyroid cartilage)



Move your fingers about one inch down the neck until you find another bulge.

This is the cricoid cartilage. The **indentation** between the two is the cricothyroid membrane, where the incision will be made.





Another view of the thyroid cartilage and cricoid cartilage.

Equipment

- Non latex gloves
- Approved sharps containers
- Suction apparatus
- Oxygen Supply
- BVM
- Chlorhexidine
- #10 blade scalpel
- Bougie
- 6.0 mm endotracheal tube
- 10mL syringe
- End tidal carbon dioxide monitor
- Securing device
- Bandaging materials



This is the equipment via the protocol.

Procedure

- Have all supplies (including suction) available and ready
- Proper body substance isolation
- Places patient supine and hyperextend neck if no cervical trauma suspected
- Positions at patient's side and directs assistant to attempt ventilations with 100% oxygen
- Prepare equipment



The following Procedures slide go line by line by what is in the protocol.

Procedure

1. Position the patient supine and extend the neck as needed to improve anatomic view.
2. Prep neck with Chlorhexidine
3. Using your non-dominant hand, stabilize the larynx and locate the following landmarks: thyroid cartilage (Adam's apple) and cricoid cartilage. The cricothyroid membrane lies between these cartilages.
4. Make an approximately a 3cm vertical incision 0.5cm deep through the skin and fascia, over the cricothyroid membrane. With finger, dissect the tissue and locate the cricothyroid membrane.



Procedure

5. Make approximately a 1.5cm horizontal incision through the cricothyroid membrane.
6. With your finger, bluntly dilate the opening through the cricothyroid membrane.
7. Insert the bougie curved-tip first through the incision and angled towards the patient's feet.
8. Advance the bougie into the trachea feeling for "clicks" of tracheal rings and until "hangup" when it cannot be advanced any further. This confirms tracheal position.



Procedure

9. Advance a 6.0 mm endotracheal tube (ensure all air aspirated out of cuff) over the bougie and into the trachea.
10. Remove bougie while stabilizing ETT ensuring it does not become dislodged
11. Inflate the cuff with 5 – 10ml of air.



Procedure

12. Confirm appropriate proper placement by symmetrical chest-wall rise, auscultation of equal breath sounds over the chest and a lack of epigastric sounds with ventilations using bag-valve-mask, condensation in the ETT, and quantitative waveform capnography.
13. Secure the ETT.
14. Reassess tube placement frequently, especially after movement of the patient.
15. Ongoing monitoring of ETT placement and ventilation status using waveform



7.4

Surgical Cricothyrotomy Bougie Assisted — ADULT

PARAMEDIC - PREREQUISITE REQUIRED- ADULT

INDICATIONS:
Inability to adequately oxygenate and ventilate using less invasive methods

CONTRAINDICATIONS:

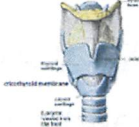
- Ability to oxygenate and ventilate using less invasive measures
- Age less than 12 years old

EQUIPMENT:


- Chlorhexidine
- #10 blade scalpel
- Bougie
- 6.0 mm endotracheal tube
- 10ml Syringe
- BVM
- Quantitative ET/CO₂

PROCEDURE:

1. Position the patient supine and extend the neck as needed to improve anatomic view.
2. Prep neck with Chlorhexidine
3. Using your non-dominant hand, stabilize the larynx and locate the following landmarks: thyroid cartilage (Adam's apple) and cricoid cartilage. The cricothyroid membrane lies between these cartilages.
4. Make an approximately a 3cm vertical incision 0.5cm deep through the skin and fascia, over the cricothyroid membrane. With finger, dissect the tissue and locate the cricothyroid membrane.
5. Make approximately a 1.5cm horizontal incision through the cricothyroid membrane.
6. With your finger, bluntly dilate the opening through the cricothyroid membrane.
7. Insert the bougie curved-tip first through the incision and angled towards the patient's feet.
8. Advance the bougie into the trachea feeling for "clicks" of tracheal rings and until "hangup" when it cannot be advanced any further. This confirms tracheal position.
9. Advance a 6.0 mm endotracheal tube (ensure all air aspirated out of cuff) over the bougie and into the trachea.
10. Remove bougie while stabilizing ETT ensuring it does not become dislodged
11. Inflate the cuff with 5 – 10ml of air.
12. Confirm appropriate proper placement by symmetrical chest-wall rise, auscultation of equal breath sounds over the chest and a lack of epigastric sounds with ventilations using bag-valve-mask, condensation in the ETT, and quantitative waveform capnography.
13. Secure the ETT.
14. Reassess tube placement frequently, especially after movement of the patient.
15. Ongoing monitoring of ETT placement and ventilation status using waveform capnography is required for all patients.



P
Prerequisite Procedure 67.4



The actual protocol

Complications

- ❑ Incorrect tube placement/ false passage
- ❑ Thyroid gland damage
- ❑ Severe bleeding
- ❑ Subcutaneous emphysema
- ❑ Laryngeal nerve damage



Ensure the participants are aware of the possible complications from a surgical cricothyrotomy.



Questions?



1. **To perform a surgical cricothyrotomy, the patient must be paralyzed:**
 - a. TRUE
 - b. FALSE

2. **The correct order of these anatomical structures starting at the head and working inferiorly is:**
 - a. Cricoid cartilage, cricoid membrane, thyroid cartilage, thyroid membrane
 - b. Thyroid membrane, thyroid cartilage, cricoid membrane, cricoid cartilage
 - c. Thyroid cartilage, thyroid membrane, cricoid cartilage, cricoid membrane
 - d. Cricoid membrane, cricoid cartilage, thyroid membrane, thyroid cartilage

3. **The “Adam’s Apple” is another name for what?**
 - a. Cricoid cartilage
 - b. Hyoid bone
 - c. Thyroid cartilage
 - d. The trachea

4. **Which item is not required equipment for a surgical cricothyrotomy?**
 - a. Waveform capnography
 - b. Bougie
 - c. BVM
 - d. #11 Blade

5. **Which patient is an appropriate surgical cricothyrotomy candidate?**
 - a. 10 y/o male airway burns with difficult BVM ventilations
 - b. 88 y/o female with SOB that is responding well to CPAP
 - c. 35 y/o male anaphylaxis patient with a failed intubation 2° laryngeal edema
 - d. 23 y/o female asthmatic patient responding to oxygen and inhaled β agonists

6. **A ____ ETT should be passed over the Bougie, cuff inflated with 5-10mL of air, and secured.**
 - a. 5.5
 - b. 6.0
 - c. 6.5
 - d. 7.0

7. **How should the cricothyrotomy patient be positioned, assuming there is no neck trauma?**
 - a. Supine, neck extended
 - b. Supine, neck flexed
 - c. Semi fowlers, neck extended
 - d. Semi fowlers, neck flexed

8. **All the following support tracheal placement, except:**
 - a. Appreciating tactile “clicks” while advancing the Bougie
 - b. The Bougie failing to fully advance because of a perceived obstruction
 - c. Smooth BVM ventilations
 - d. Capnography with an appropriate waveform and EtCO₂ values

9. **Which of the following is an example of a cricothyrotomy complication?**
 - a. False passage

- b. Nerve damage
- c. Thyroid gland damage
- d. All of the above

10. The ideal surgical incisions for cricothyrotomy should be:

- a. 2.5cm vertical then 1.0 cm horizontal
- b. 2.0cm vertical then 1.5 cm horizontal
- c. 3.0cm vertical then 1.0 cm horizontal
- d. 3.0cm vertical then 1.5 cm horizontal