



BAC-Pack™

Surgical Airway
Management

NORTH AMERICAN RESCUE®

B A C-Pack™

Bougie Aided Cricothyroidotomy Pack

*The following materials were developed for the purpose of
BAC-Pack™ orientation and training.*

Warranty: The BAC-Pack™ (Bougie Aided Cricothyroidotomy-Pack) surgical airway system constitutes a medical device, the use of which requires specific education and training. North American Rescue, LLC. warrants the BAC-Pack™ as merchantable expressly for the indication detailed. North American Rescue disclaims all other implied warranties relating to this product, to include use beyond this product's identified purpose, and utilization by untrained personnel or legally unauthorized parties.

Caution: Federal Law restricts the BAC-Pack™ to sale by, or on the order of, a licensed physician.



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Key Term: cricothyroidotomy (also referred to as cricothyrotomy, crike, or cric) an incision made through the skin and cricothyroid membrane to establish a patent airway

Indication: inability to ventilate or intubate by non-surgical methods

Contraindication: patient who can be ventilated by any means other than placement of a surgical airway

Caution: surgical airway training, Bac-Pack™ familiarization, and the adherence to established protocol are required to use this product



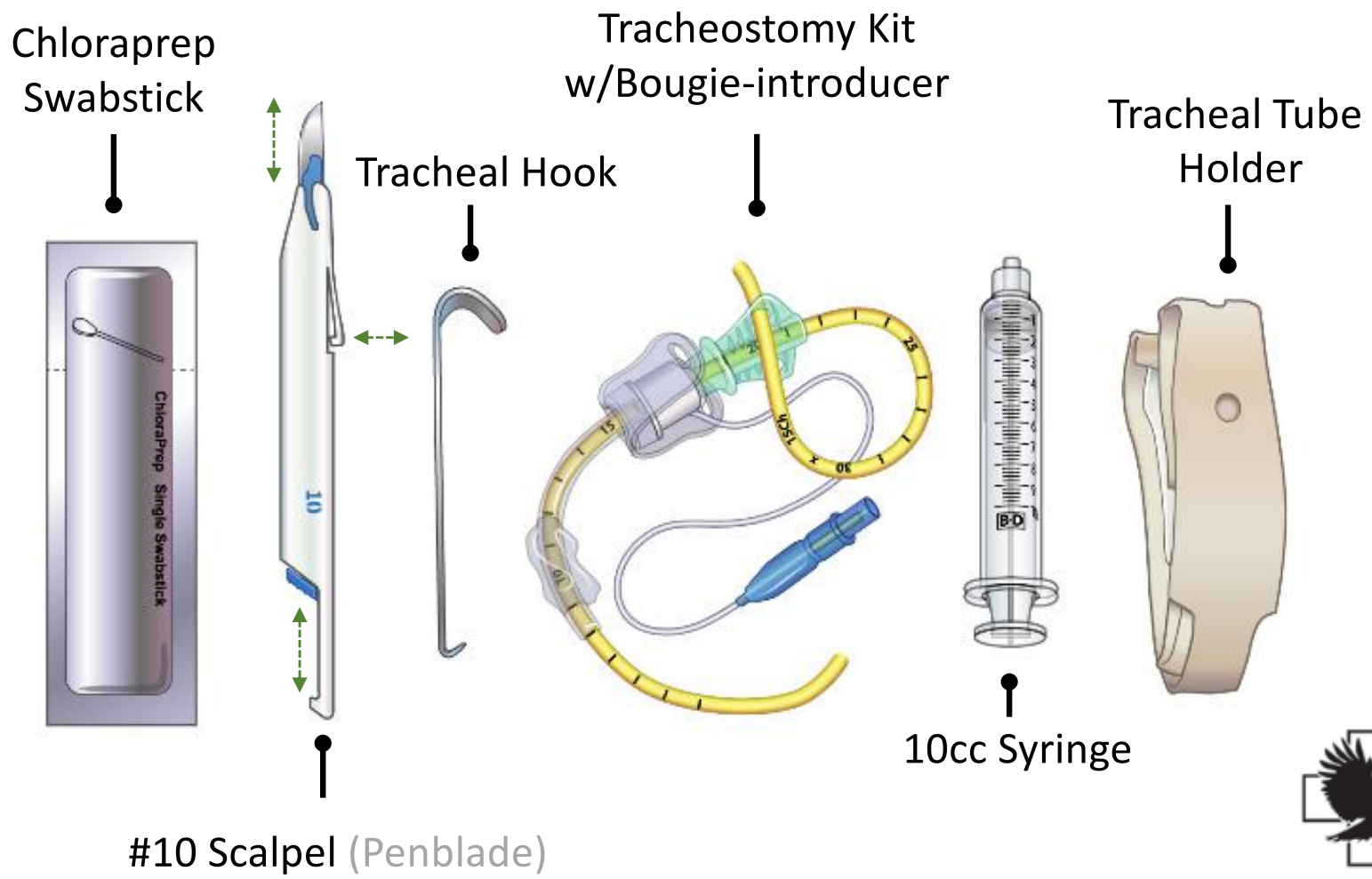
Objectives

At the conclusion of both didactic and hands-on training, the provider should be able to:

1. Identify key **BAC-Pack™ components**, and their **function**.
2. List the **indications**, **contraindication**, and expected **therapeutic benefits** of surgical airway management.
3. Define surgical airway **challenges**.
4. Discuss a **simplified airway management algorithm** in relation to the surgical airway.
5. Identify adult male and female **gross anatomy and related landmarks** for surgical airway placement.
6. List key **steps to surgical airway placement**.
7. Discuss potential **findings of successful surgical airway placement**.
8. List **complications** that warrant attention following surgical airway placement.
9. Discuss **scientific evidence** as it relates to surgical airway management.



Objective 1: components and function



Objective 1: components and function



BAC-Pack™ supplied in a vacuum sealed package



Directions
for Use

Bac-Pack™



Objective 1: components and function



Elastic band removed
from pack



Pack opened - revealing organized contents



Objective 1: components and function



Bougie Aided Cricothyrotomy assembly
removed from elastic retainer



Objective 2: indications & contraindication

Indications:

- all ventilation attempts are unsuccessful
- airway obstruction cannot be relieved
- maxillofacial trauma (or like presentation) prevents non-surgical approach
- loss of airway is imminent without secure ventilation option

Contraindication:

- patient can be ventilated by any method other than a surgical airway



BAC-Pack™ is intended for the placement of a surgical airway when all positioning, basic, and advanced ventilation attempts have failed

this situation can be summarized in four words:

can't ventilate can't intubate

from which only two options remain:

a successful surgical airway

or

death



Objective 2: therapeutic benefits

A **surgical airway should improve** one or more of the following:

- **relief from upper airway obstruction** (secondary to trauma or other causes)
- **secure airway** (from loss, or aspiration of fluids and debris)
- **ventilation control** (from inability to ventilate, severe respiratory distress, or necessity)
- **improvement in oxygen saturation** (from inability to ventilate, or airway related circulatory compromise)



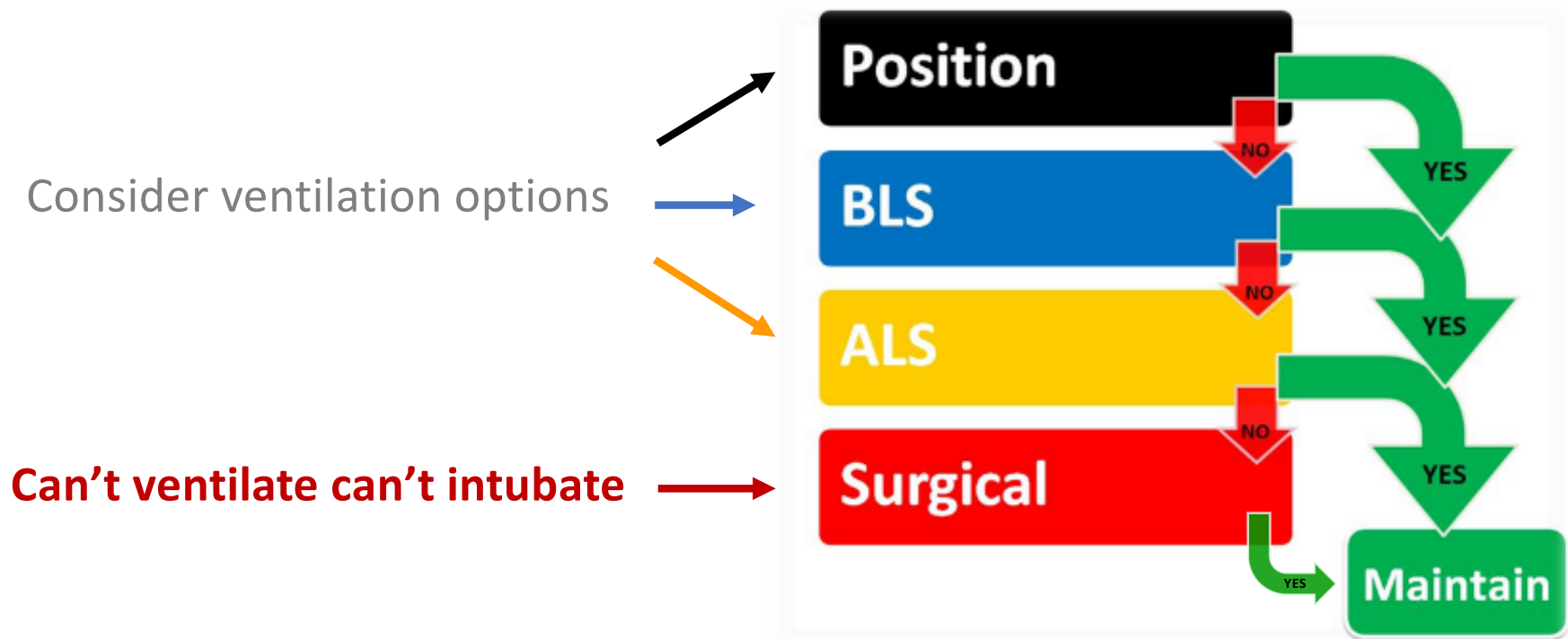
Objective 3: challenges - *reality check*

Challenges (rarely discussed)

- You may be in an undesirable position or location
- The patient may be an acquaintance
- Anatomy may be distorted or at greater anatomical depth than anticipated (trauma, excessive adipose tissue, edema, mass or tumor, scarring)
- Patient may be attempting to breathe or swallow (structural movement during procedure)
- Profuse bleeding may occur during procedure (deoxygenated “darker” blood, which will likely obscure field)
- Loss of visual references may occur during procedure (forcing conversion to tactile anatomy identification, placement, and confirmation)



Objective 4: simplified airway algorithm



anterior structures may be difficult to palpate

note depth of this specimen's anatomical structures (24% BMI)

epidermis, dermis and subcutaneous tissue reflected

sternocleidomastoids elevated

hyoid muscle elevated

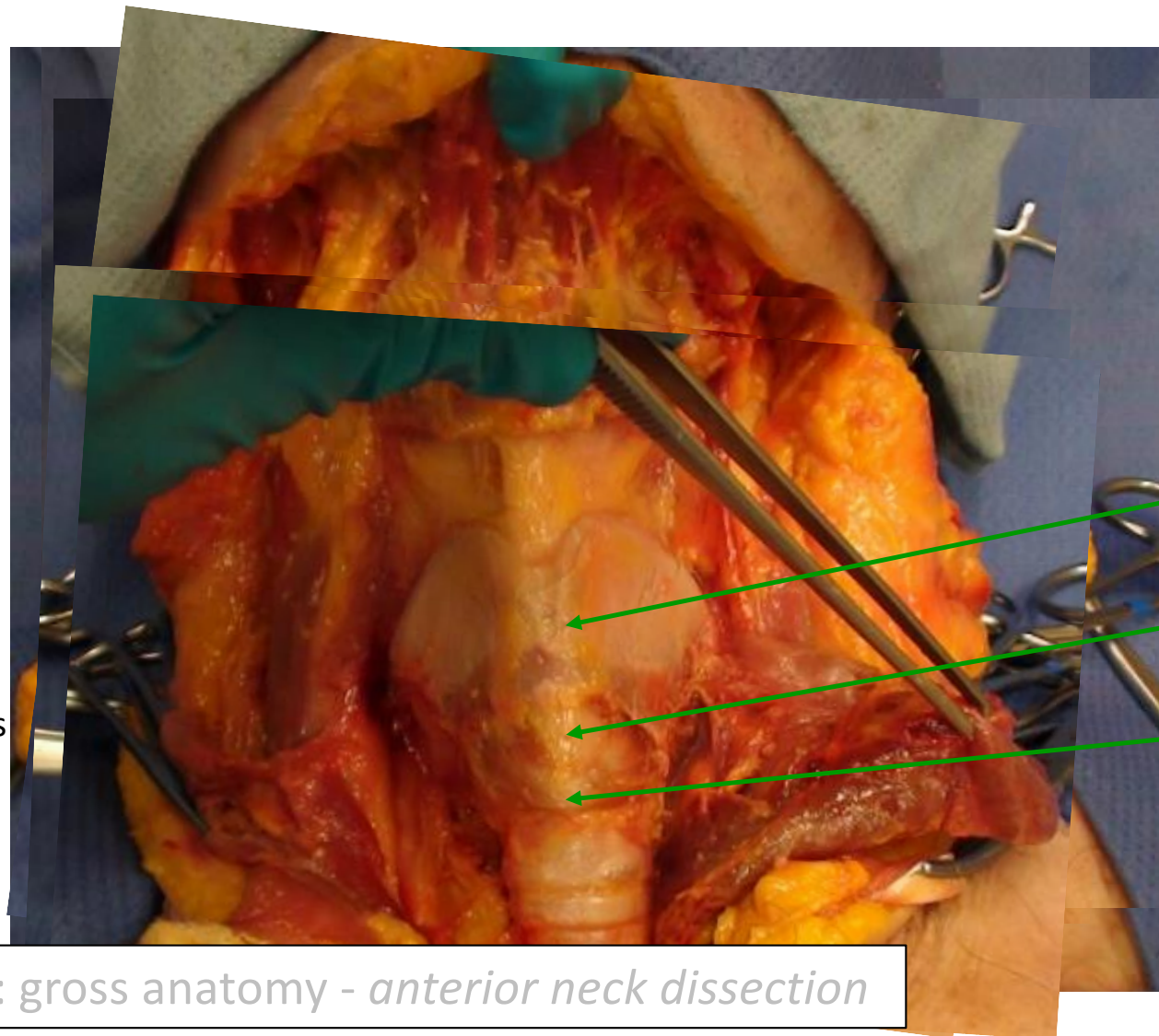
thyroid gland elevated

thyroid gland reflected

thyroid cartilage

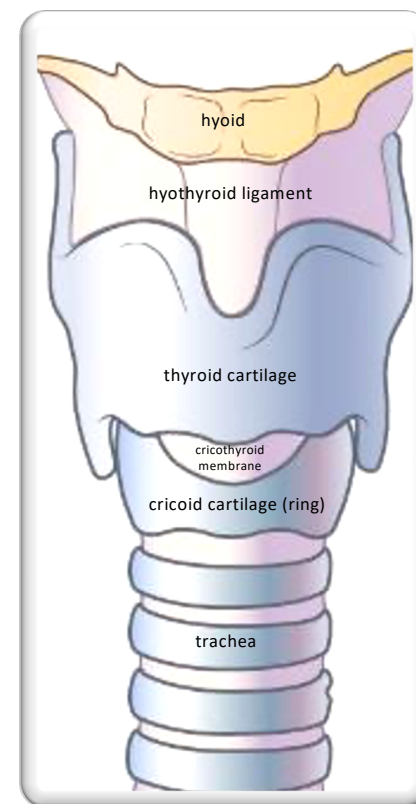
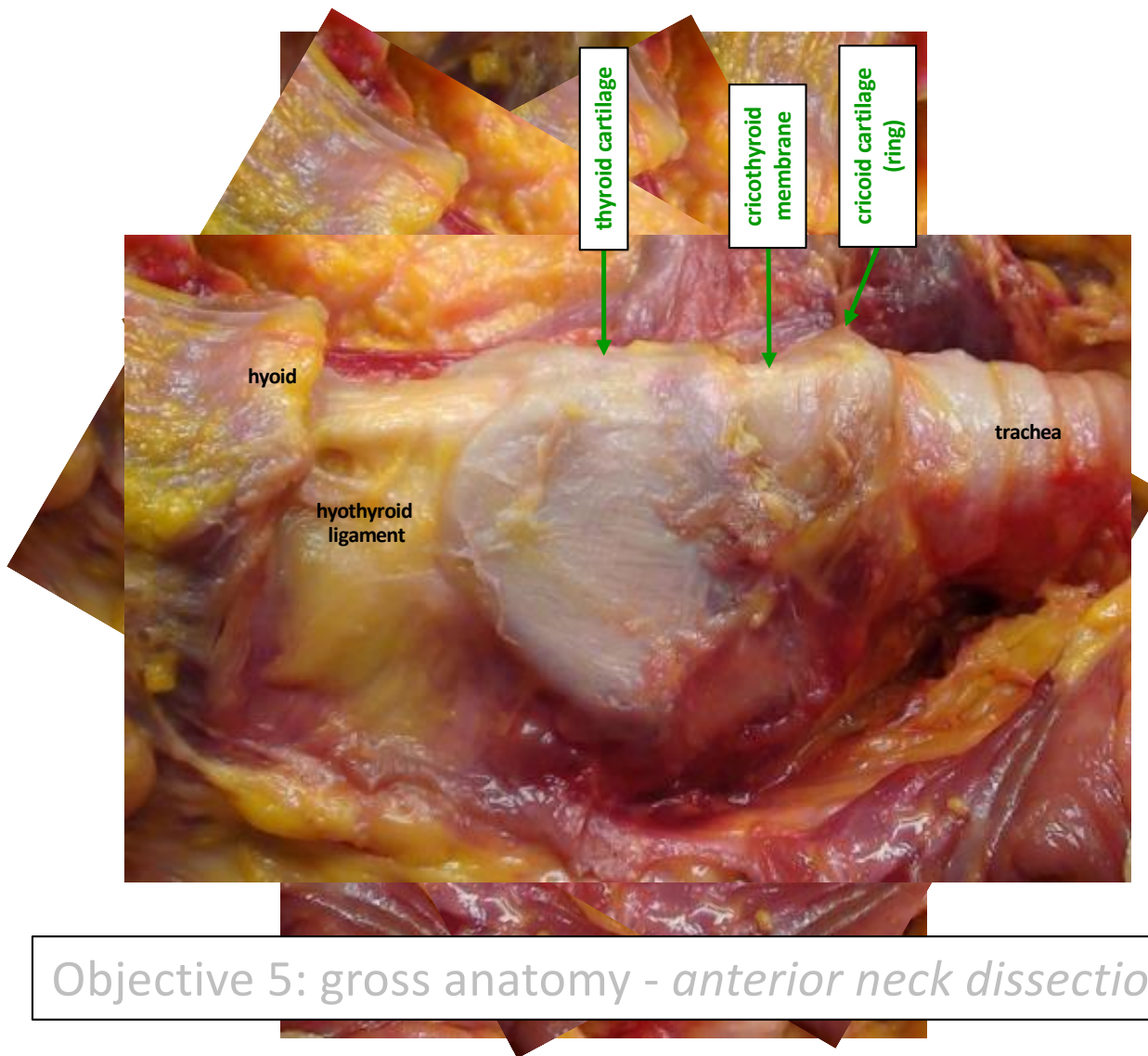
cricothyroid membrane

cricoid cartilage (ring)



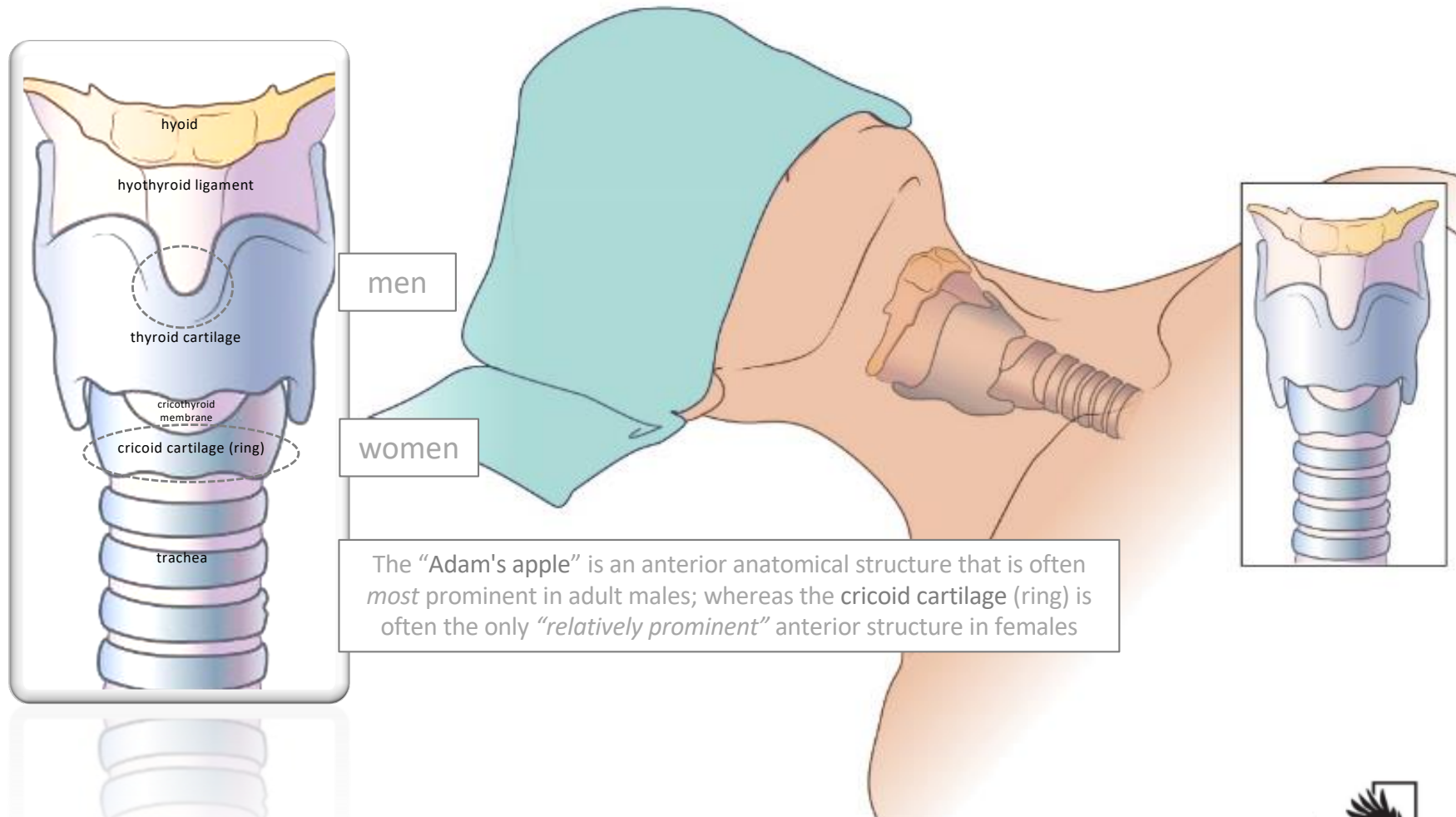
Objective 5: gross anatomy - *anterior neck dissection*





Objective 5: gross anatomy - *anterior neck dissection*





men

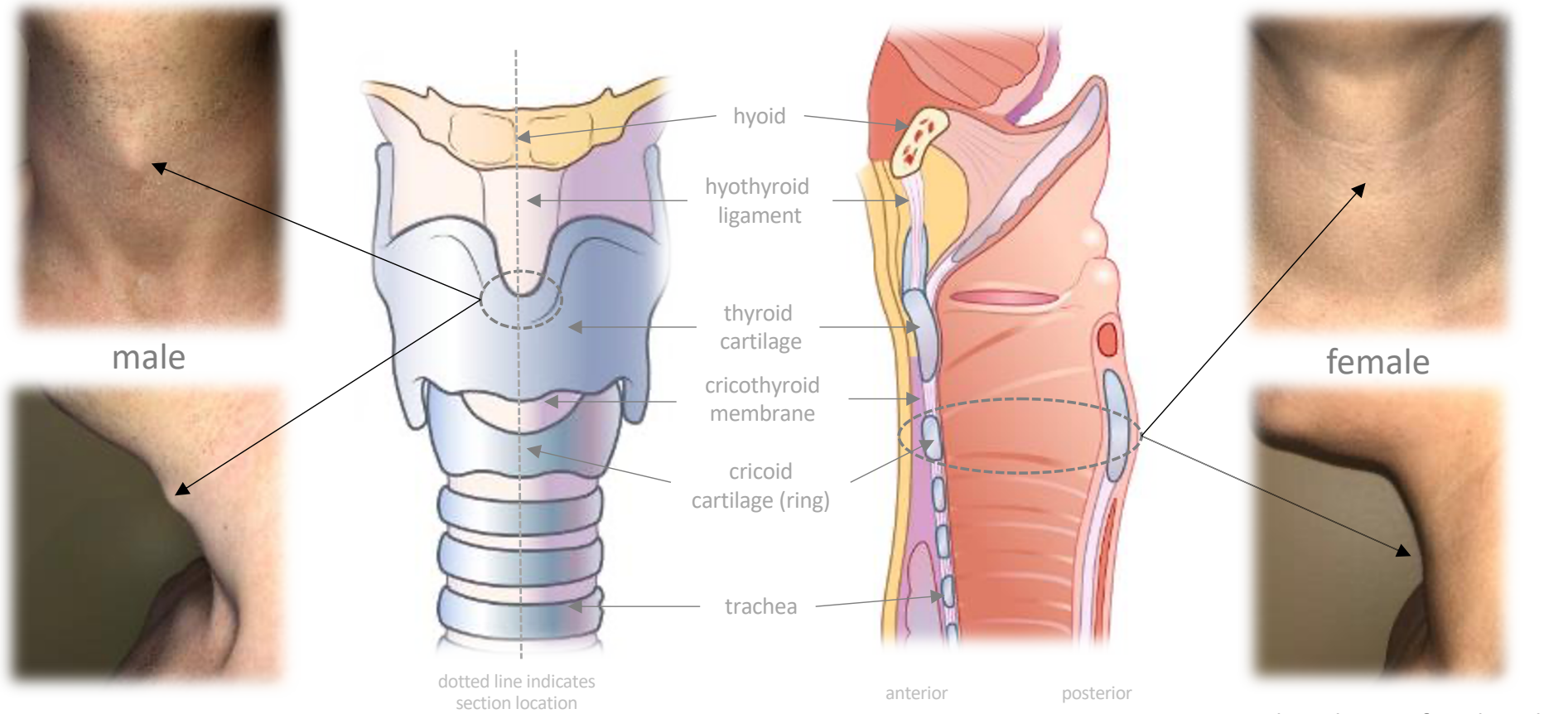
women

The "Adam's apple" is an anterior anatomical structure that is often *most prominent* in adult males; whereas the cricoid cartilage (ring) is often the only "*relatively prominent*" anterior structure in females

Objective 5: landmarks - *anterior anatomic variations*



Objective 5: landmarks – *anterior anatomic variations*

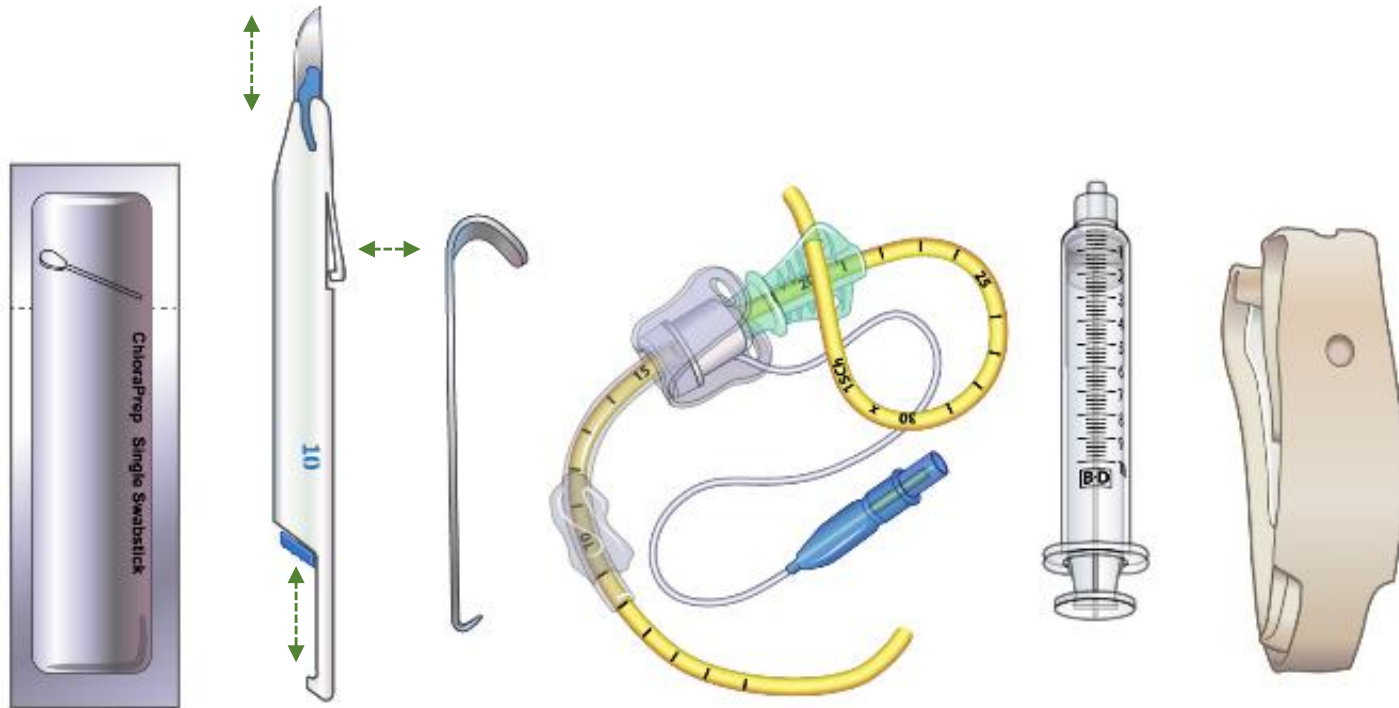


“Adam’s Apple” is often the most palpable structure on men

Cricoid cartilage is often the only palpable structure on women



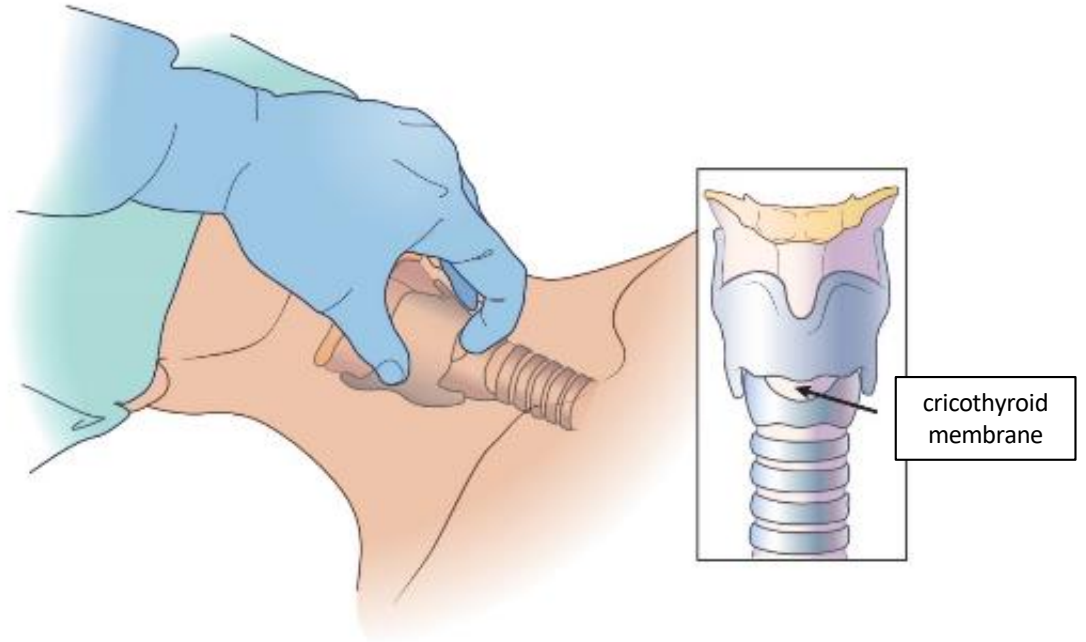
Objective 6: insertion steps – **QUICK REFERENCE GUIDE**



STEP 1. Prepare equipment



Objective 6: insertion steps

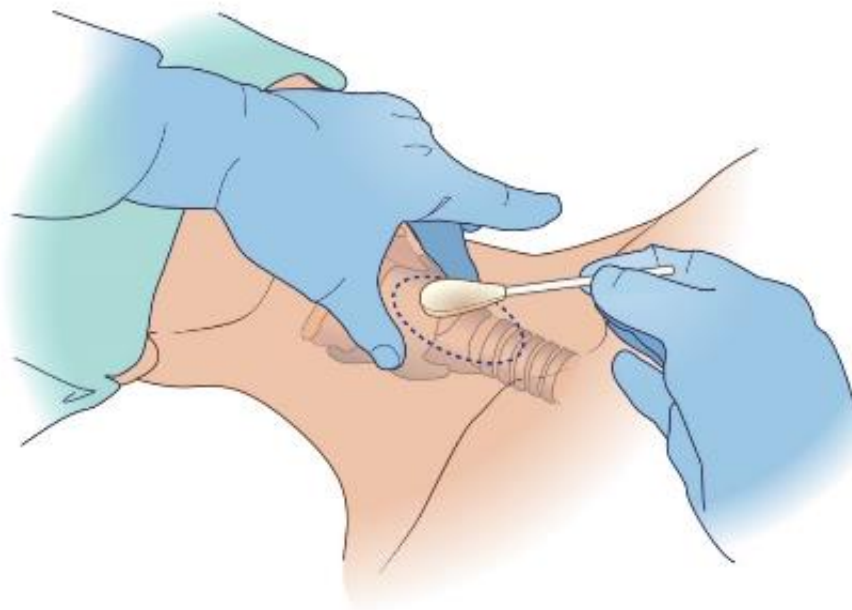


STEP 2. Stabilize and locate anatomy

*this slide depicts a RIGHT-HANDED operator on patient's RIGHT SIDE



Objective 6: insertion steps

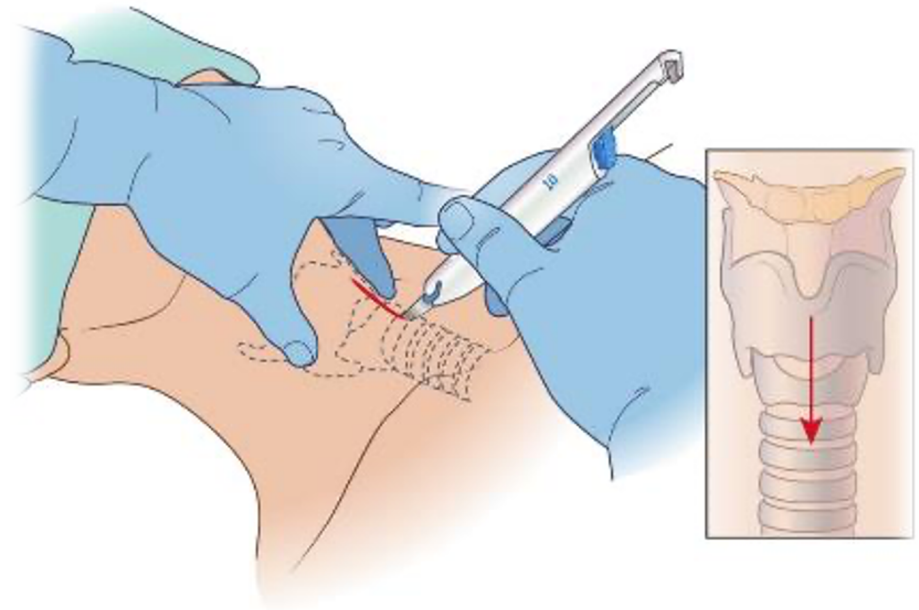


STEP 3. Cleanse site

*this series depicts a RIGHT-HANDED operator on patient's RIGHT SIDE



Objective 6: insertion steps

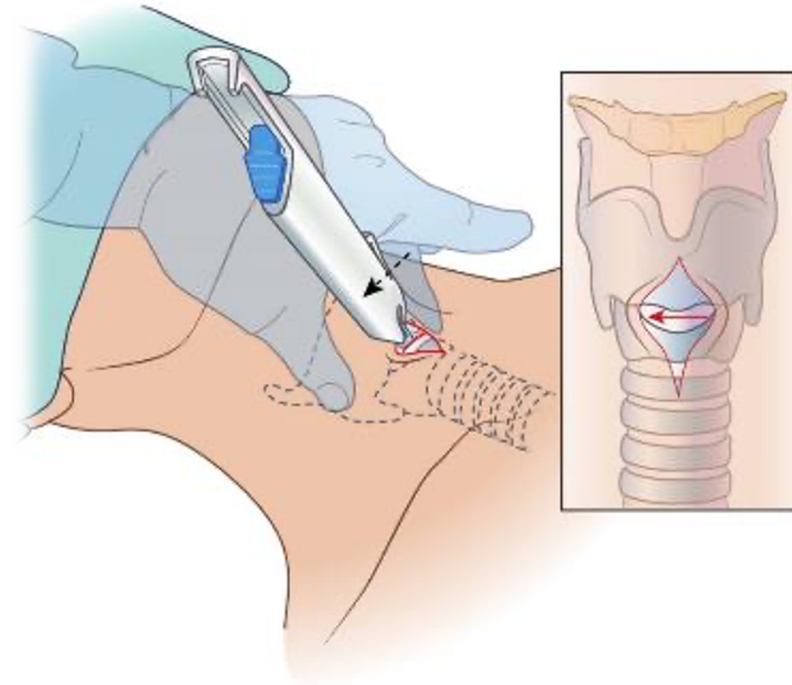


STEP 4. Vertically incise external tissues

*this slide depicts a RIGHT-HANDED operator on patient's RIGHT SIDE



Objective 6: insertion steps

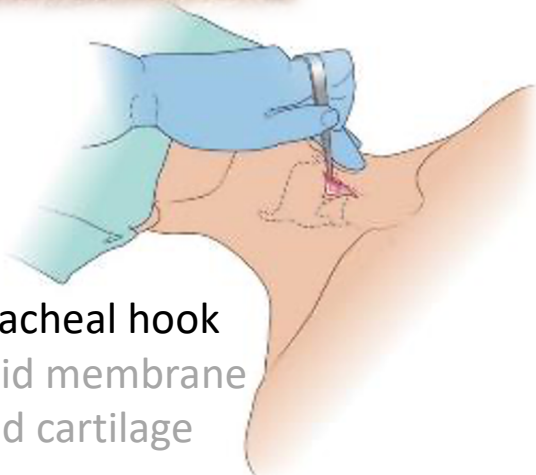


STEP 5. Horizontally incise cricothyroid membrane

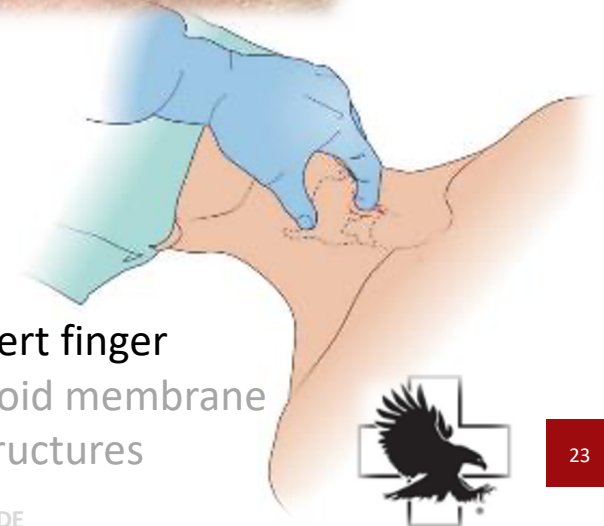
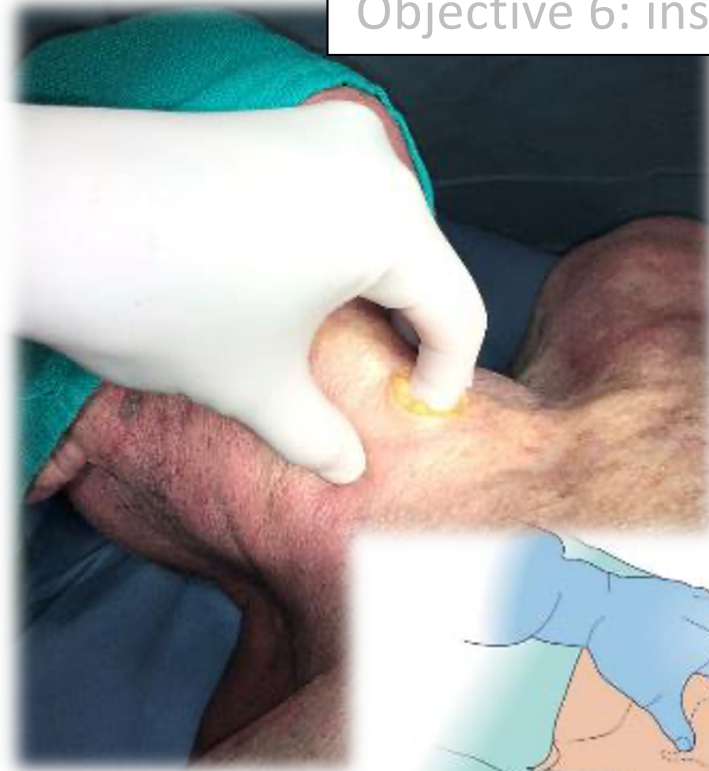
*this slide depicts a RIGHT-HANDED operator on patient's RIGHT SIDE



Objective 6: insertion steps



STEP 5a: Insert tracheal hook through cricothyroid membrane gently lift thyroid cartilage

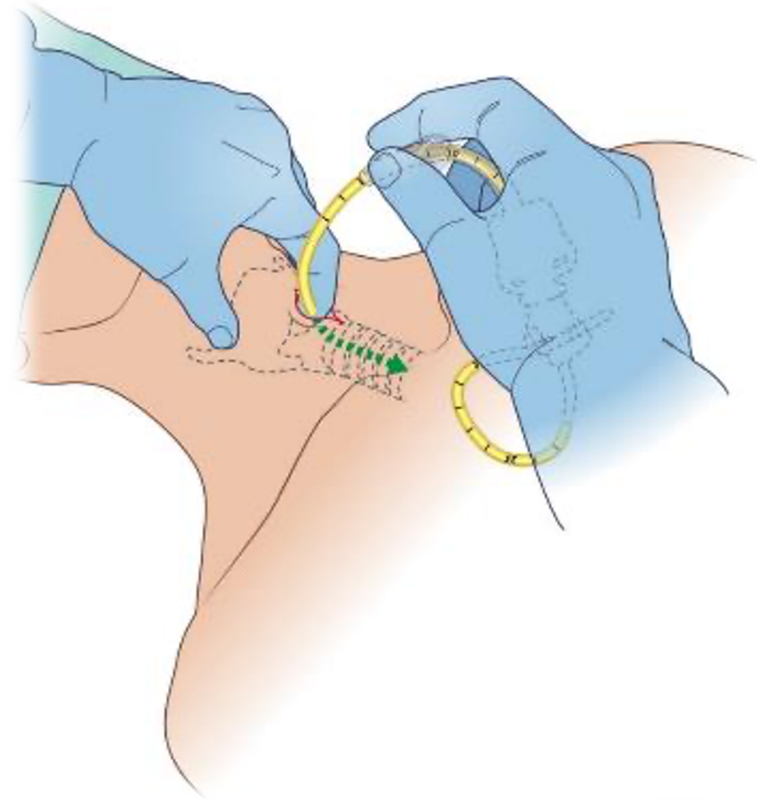


STEP 5b: Insert finger through cricothyroid membrane stabilize structures

*this slide depicts a RIGHT-HANDED operator on patient's RIGHT SIDE



Objective 6: insertion steps

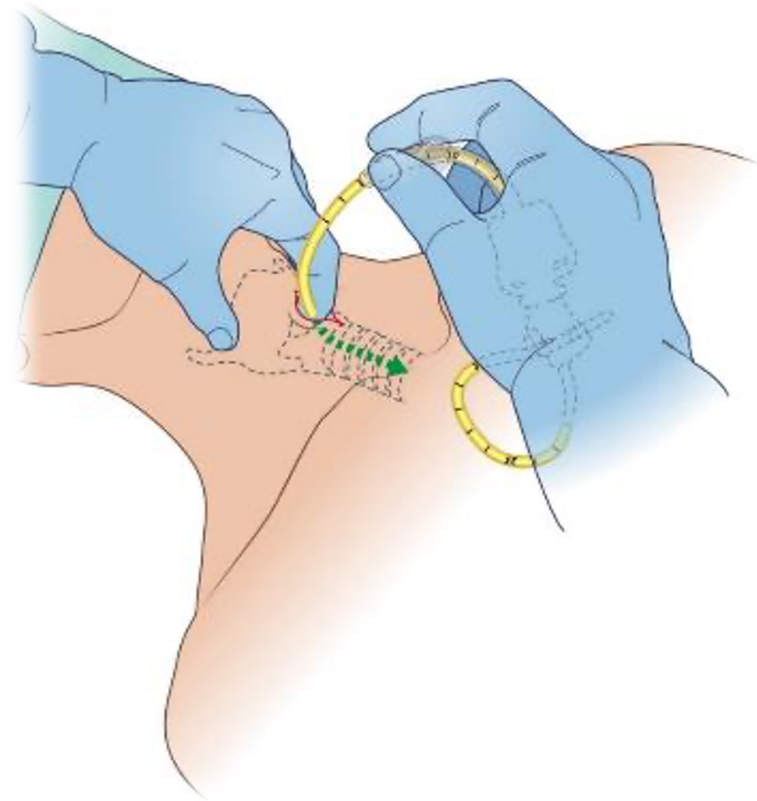


STEP 6. Insert bougie through cricothyroid membrane

**this slide depicts a RIGHT-HANDED operator on patient's RIGHT SIDE*



Objective 6: insertion steps

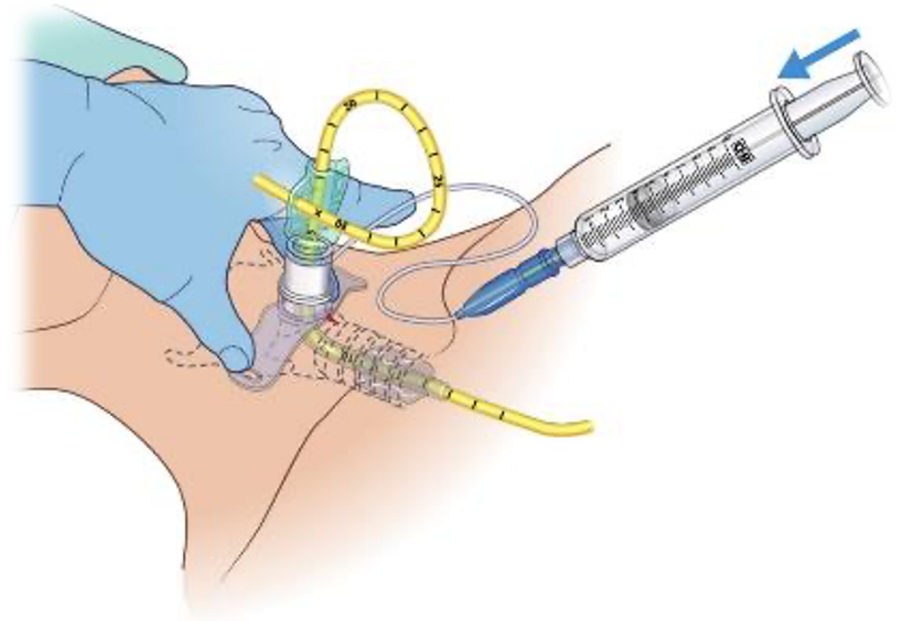


STEP 6. Insert bougie with tactile confirmation

*this slide depicts a RIGHT-HANDED operator on patient's RIGHT SIDE



Objective 6: insertion steps

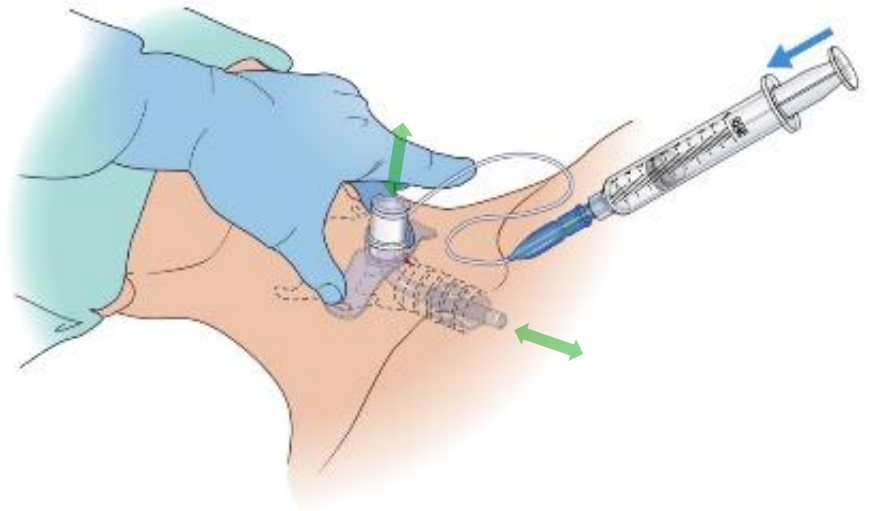
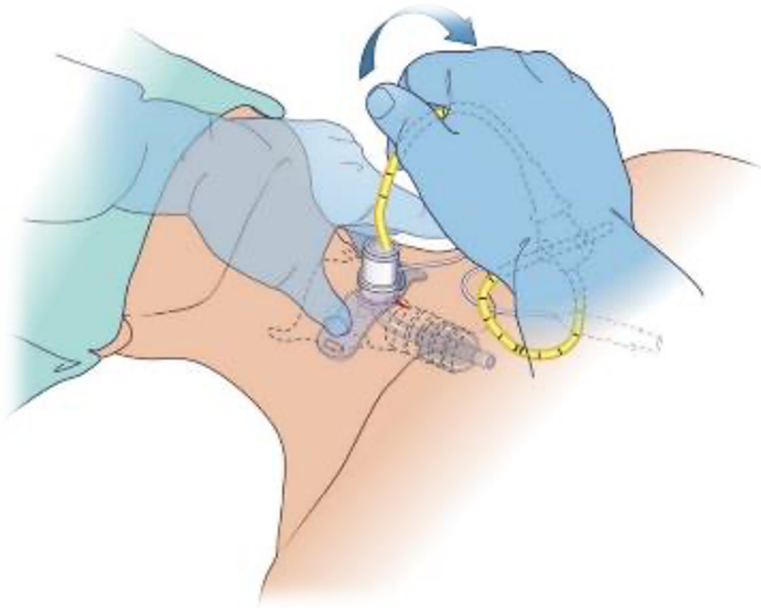


STEP 7. Advance tube & inflate cuff

*this slide depicts a RIGHT-HANDED operator on patient's RIGHT SIDE



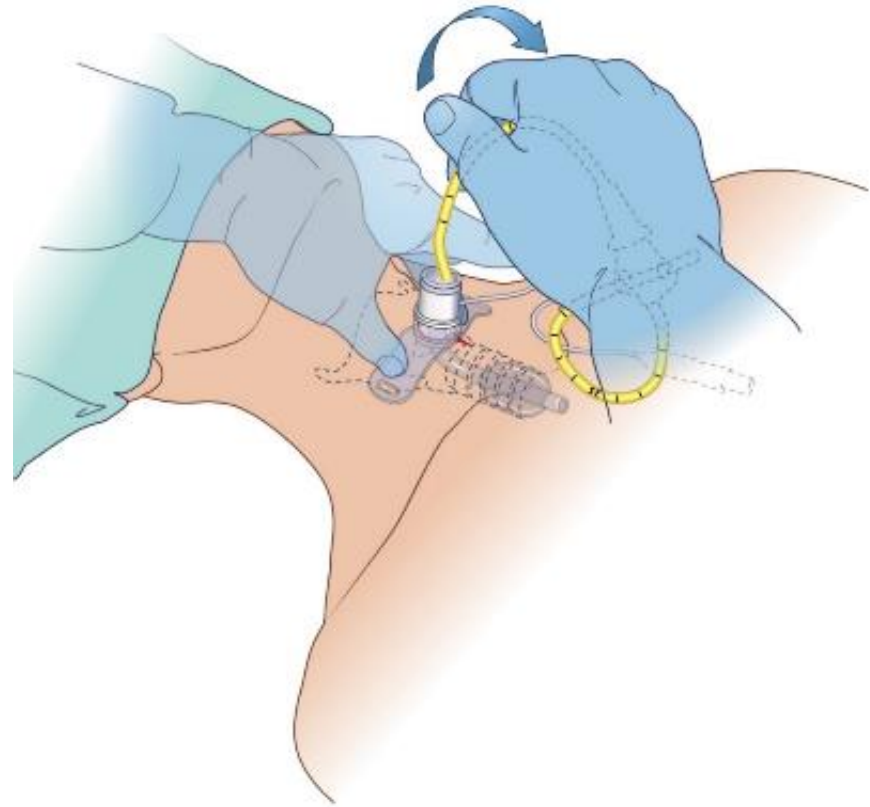
Objective 6: insertion steps



Optional maneuver – after advancing tube, immediately remove bougie, ventilate and inflate cuff



Objective 6: insertion steps

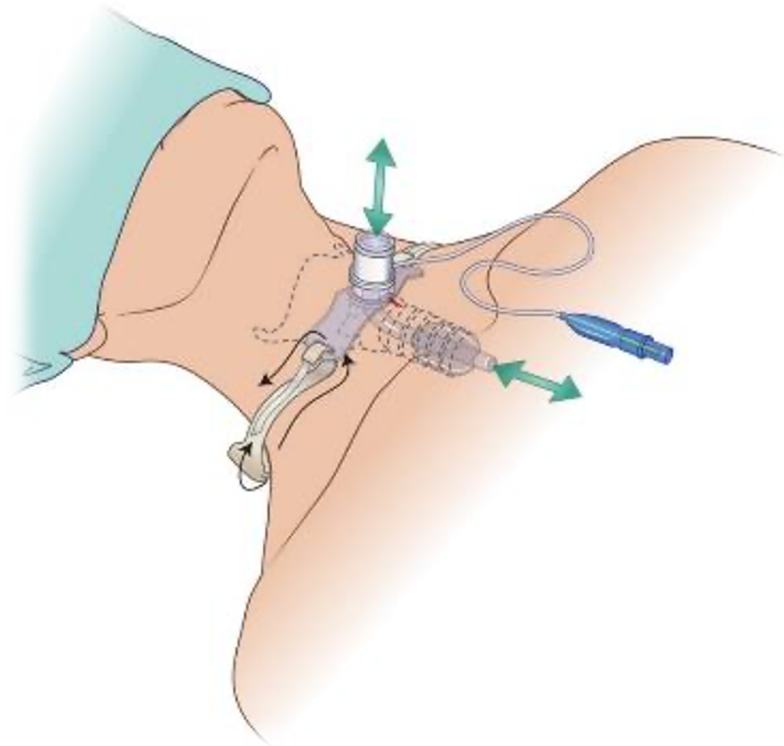


STEP 8. Remove bougie

*this slide depicts a RIGHT-HANDED operator on patient's RIGHT SIDE



Objective 6: insertion steps



STEP 9. Secure tube and ventilate



Objective 7: successful surgical airway placement

Confirmation and **reconfirmation** of correctly placed surgical airway may include, but should not be limited to:

- Tracheal “clicking or tactile feedback” from inserted bougie
- Chest rise and fall with ventilation
- Presence of bilateral breath sounds with auscultation
- Absence of epigastric sounds with auscultation
- Negative finding with esophageal (false passage) detection device
- Evidence of sustained ETCO₂ with ventilation
- Improving oxygen saturation



Objective 8: complications

Complications of surgical airway include:

- hypoxemia
- false passage
- aspiration
- bleeding
- damage to associated tissues
- subcutaneous and mediastinal emphysema
- perforation of posterior trachea
- cardiac arrest
- infection



Objective 9: scientific evidence

The BAC-Pack™ (Bougie Aided Cricothyroidotomy-Pack) and this presentation were developed utilizing the latest published evidence, independent research, and support of dedicated Military and Civilian medical professionals in Emergency Medicine, Trauma Surgery, Pulmonology, and Pathology.

Clinical providers, regardless of their position, must dedicate themselves to the unrelenting reality that ***critical care is an evolution on behalf of those in need.***

Scientific Highlights

- 300 years of related airway discussion: 1667 Hooke
- 200 years of cricothyroidotomy debate with procedural updates and refinement
- 20th Century: Jackson et al - developed four basic principles reducing procedural complications
- 1976: Brantigan et al - 655 cases of cricothyroidotomy demonstrating 6% complication rate
- Numerous studies discuss efficacy and relative safety of surgical airway procedure
- Current evidence (Mabry et al) illuminates increase in complications as training, equipment, and conditions become less than optimal



Objective 9: scientific evidence - references

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For additional information
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