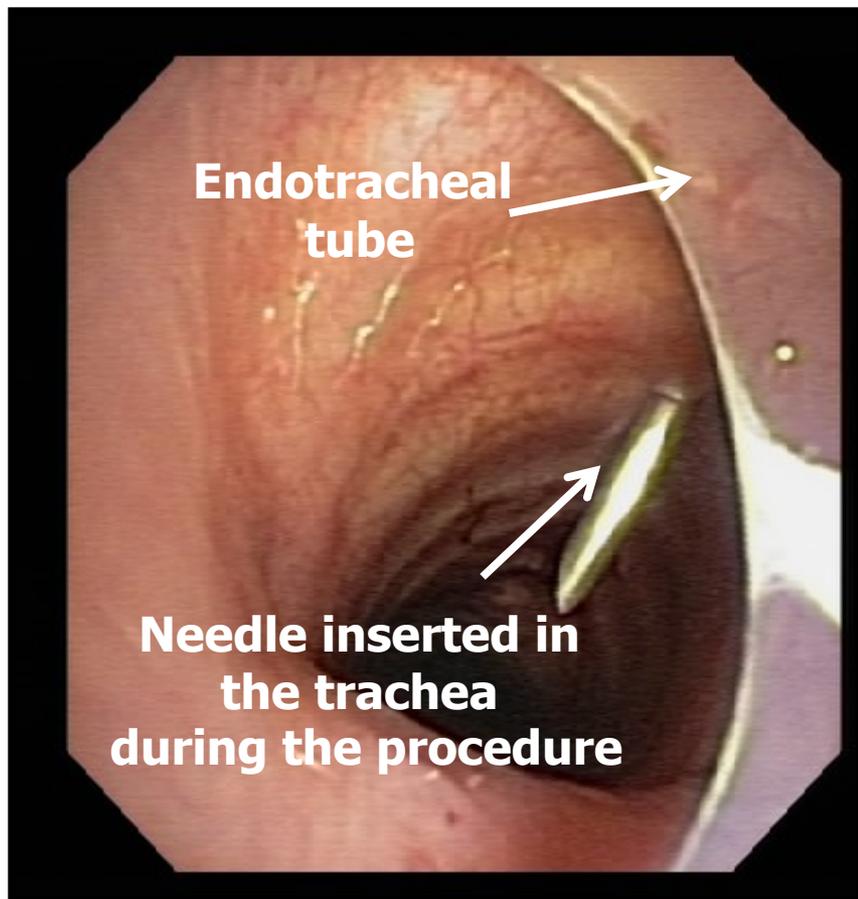


# Percutaneous Dilatational Tracheostomy

Demonstrate the PDT technique under bronchoscopic guidance in a low fidelity model



# Positioning

Patient positioning: supine with neck hyper-extended; use 1-2 rolled towels or pillows to bolster under the shoulder blade for this purpose, head of bed can be elevated to 20 degrees to reduce venous engorgement



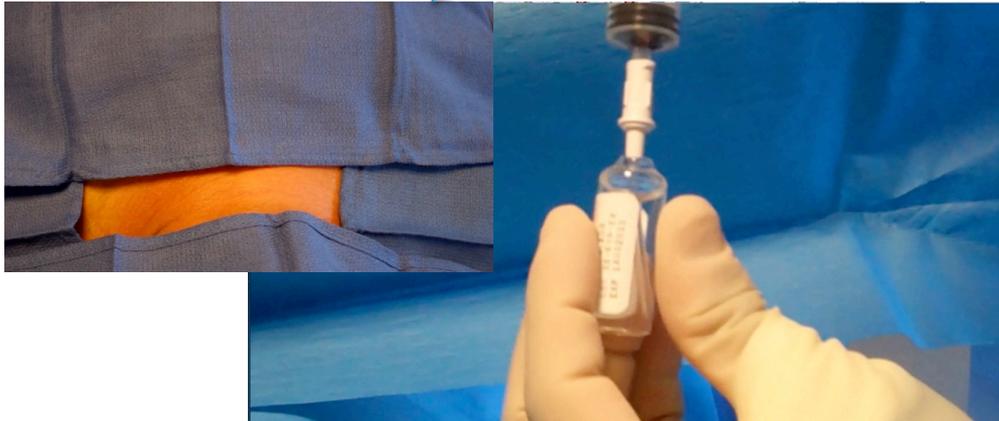
Prepare a sterile field

# Step 1. Equipment preparation and patient positioning

**Prepare your table:** on the Mayo stand or ICU room table

- The trache kit is prepared
- The trache cuff is checked for integrity with 10-20 ml of air, then deflated.
- The #26 (for Shiley 6) or #28 (for Shiley 8) dilators are lubricated and inserted inside the corresponding tracheostomy tube.

**Patient positioning:** supine with neck hyper-extended; use one-two rolled towels, pillows or bolster under the shoulder blade for this purpose; head of bed can be elevated to 20 degrees to reduce venous engorgement.



Lidocaine mixed with epinephrine

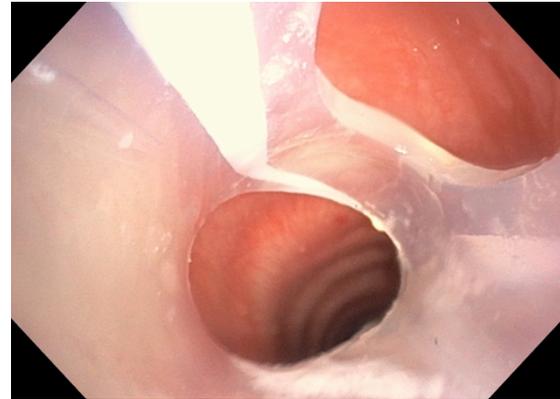


The cone dilator is lubricated

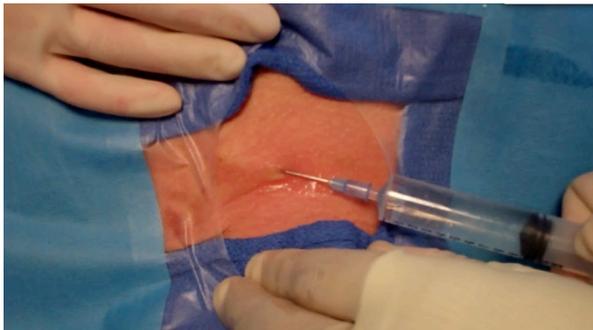
# Step 2. Select, Mark, Prep & Anesthetize Entry Site

**Puncture site/ tracheal entry site:** anterior, midline, between the 2<sup>nd</sup>-3<sup>rd</sup> tracheal rings or 3<sup>rd</sup>-4<sup>th</sup> tracheal rings; identify the site by palpation after identifying the thyroid cartilage, the cricoid cartilage and the first ring.

**Mark the spot and sterile prep with chlorhexidine**



**Local analgesia at the entry site subcutaneously in four quadrants**



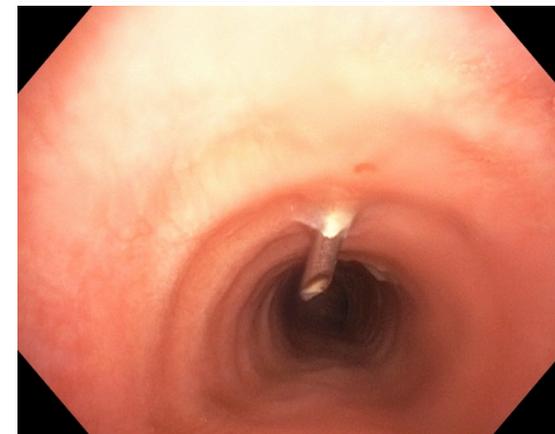
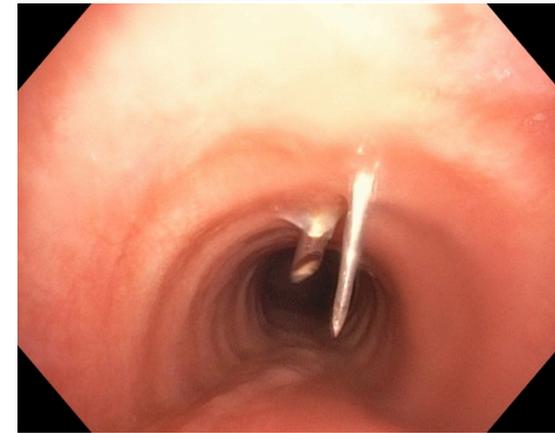
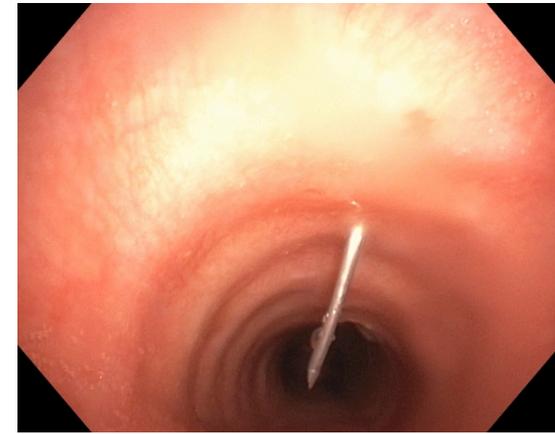
# Step 3. Exploratory tracheocentesis and guidewire placement

**Exploratory tracheocentesis:** use the small bore needle used for lidocaine (finder needle) at the entry site, then the angiocath/large bore needle available in the kit.

Once the small needle is confirmed bronchoscopically in the desired location, the large bore needle is introduced adjacent to it and then the small needle is removed.



**Guidewire placement:** once the large bore needle is clearly visualized via the bronchoscope, then advance the guidewire with the tip oriented inferiorly, then once inside, remove the large bore needle.



# Step 4. Incision



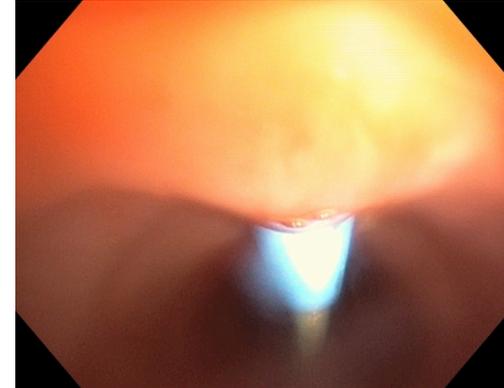
**Make the incision:** one centimeter above and one below the entry port to the subcutaneous fat; use the #11 scalpel available in the kit

Consider a Bovie (portable in the ICU) or using the operating room electrocautery system **especially** for cases where bleeding is expected: coagulopathy, anticoagulants, uremia, hepatic insufficiency.

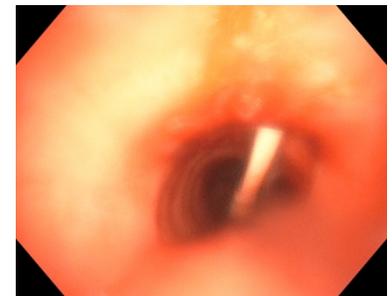
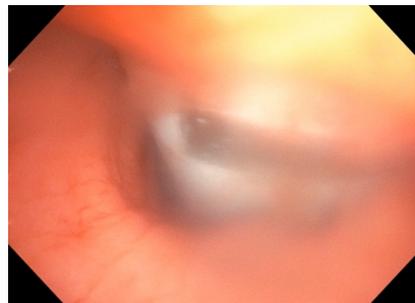
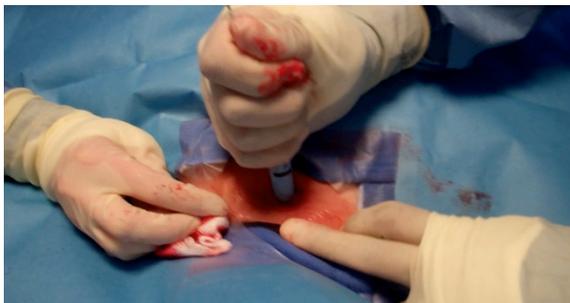


# Step 5. Initial Dilation and Single Step Dilation

**Subcutaneous and initial inter-cartilaginous space dilation:** use the small blue dilator after lubrication



**Dilate the inter-cartilaginous space:** use the cone dilator over the stiffening catheter and the guidewire; once inside, and once the thick black line is visualized, remove the dilator but leave the guidewire and stiffening catheter.



# Step 6. Insert the tracheostomy tube

**Place the tracheostomy tube into the trachea:** the trache tube and its indwelling dilator are advanced over the guidewire and the stiffening catheter.

Once the cuff is completely inside the airway and confirmed by bronchoscopy, the guidewire, stiffening catheter and dilator are removed en-block.

The inner cannula is placed inside the tracheostomy tube, the cuff is inflated and the ventilation is switched to the tracheostomy tube.

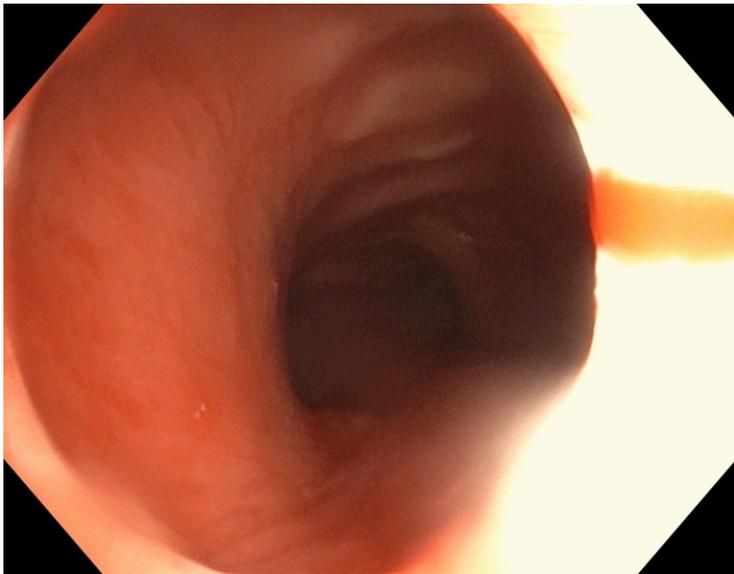


# Step 7. Remove ETT and Confirm Placement

**Remove the ETT and confirm tracheostomy tube:** both done via bronchoscopy.

The larynx is examined during extubation to document airway findings and measure distance from the cords.

The swivel adaptor is connected to the tracheostomy tube, and bronchoscopy is performed to clean the airway of hemorrhagic secretions and measure the distance from the carina to the tip of the tracheostomy tube.



# Step 8. Secure the tracheostomy tube

## Secure the tracheostomy tube:

- Four stitches are placed over the tracheostomy flange to secure it to the skin.
- A trache tie is used as well around the neck.
- Allow room for two fingers between the tie and the neck.

## Educate nursing staff:

- Tracheostomy tube position
- Dressing change; Trache tube change



1. Main operator: does the tracheostomy
2. Assistant: assists with the tracheostomy, prepares the tray, holds the wire, gives the instruments, etc.
3. Bronchoscopist: does the bronchoscopy and identifies airway landmarks
4. Bronchoscopist assistant: assists with ETT positioning and securing.
5. Checklist manager: reads the checklist and manages time

# Thank You

Prepared with the assistance of colleagues participating in  
Bronchoscopy International