

## OMD Podcast: Tracheostomy Management

### Summary Points:

- What is the Problem
- Rapid Escalation
- Assessing for Obstruction
- Replacing a Trach
- The Crashing Trach



\*\*\*Disclaimer: will not go into the nitty gritty step-by step of everything, but will discuss the thought process and some of the more high-acuity pathways

### • What is the Problem

- It is crucial to know what can go wrong with a trach so you can identify and fix what is wrong
- Displacement: Trach is not in the right spot
  - A common cause of trach malfunction
  - For mature trachs it may be as simple as replacing the trach in the ostomy
  - Can be much more complex if the trach has not matured (the track hasn't healed yet) or if the patient has contractures or history of false tracks
- Obstruction: acute blockage of the trach
  - The Most common cause of trach malfunction
  - This may be a result of a reversible process (secretions, poor positioning)
    - Most commonly from accumulation of secretions in the inner cannula
- Respiratory Illness in Trach Patient
  - Don't forget, trach patients can have respiratory illness as well!
  - Very common in trach dependent patients (usually why they have the trach!)
  - Think about bronchospasm, COPD exacerbation, pneumonia, and respiratory failure
- Think of your DOPE mnemonic in these patients to help organize your process
  - In patients who are vent dependent, Equipment (the E in DOPE) may become a factor

### • Initial Size-Up and Interventions

- Prepare NRB and remove all trach accessories (caps, humidifiers) including the gauze buttress so you can clearly visualize the trach site
  - Will quickly reveal if trach is displaced, if there are signs of cutaneous infection or trauma
- Apply oxygen from above and below (unless known laryngectomy)
- Get VS with priority of pulse ox and EtCO<sub>2</sub>
- Apply BVM to trach if acute respiratory failure or if patient baseline vent dependent
  - ONLY do this AFTER you ensure it is in the right place (check for air movement/apply EtCO<sub>2</sub>)
  - Keep in mind, nasal cannula based EtCO<sub>2</sub> monitoring may not be ideal in a trach patient, and will be absent in a laryngectomy

-If poor or no air-flow, need to consider 3 things:

- Trach obstruction
- Trach displacement
- Respiratory failure

- **Assessing For Displacement**

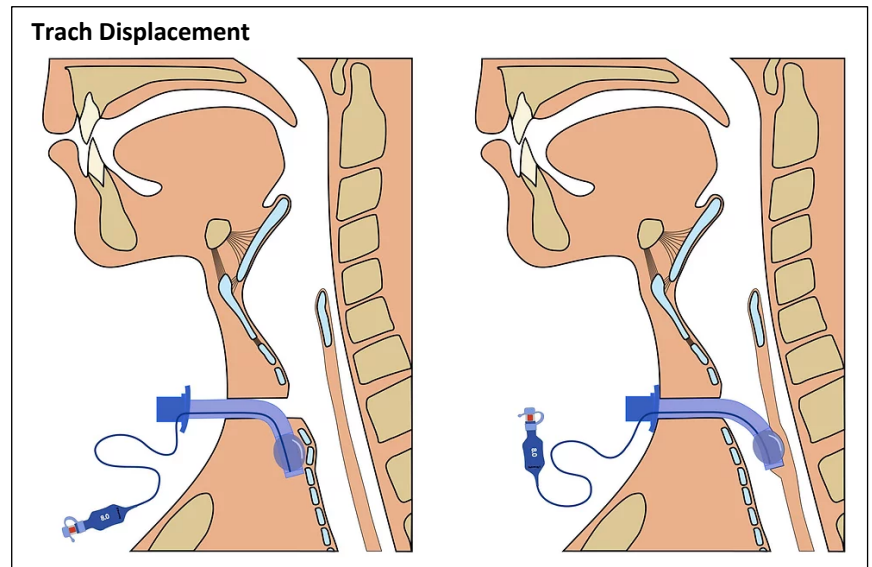
-Most common is trach displaced out of ostomy, will become obvious when bulky dressing is removed

- If this is the case, simply replacing the trach in its proper position will help and potentially resolve the issue

-It is possible the trach may

become seated improperly (in a blind track or occluded up against the tracheal wall)

- If the patient has a cuffed trach, drop the cuff and try to reseat the trach as this may take the trach off the side wall
- Blind tracks are much more difficult to assess and treat pre-hospital
  - Put this high on the differential if you get history that anyone (including healthcare provider) just manipulated the trach
- Ultimately, would require taking the airway from above or replacing the trach in the correct position
- This should be the concern after obstruction has been assessed



\*\*\*The First BVM breath through a Trach should ALWAYS have EtCO<sub>2</sub> attached and should be a gentle breath to allow you to ensure the trach is NOT dislodged prior to attempting to fully ventilate through it

- **Assessing For Obstruction**

-If trach cannula is partially obstructed, may get a high-pitch whistling noise (similar to stridor)

-Easiest way to check for reversible obstruction is to remove the inner cannula

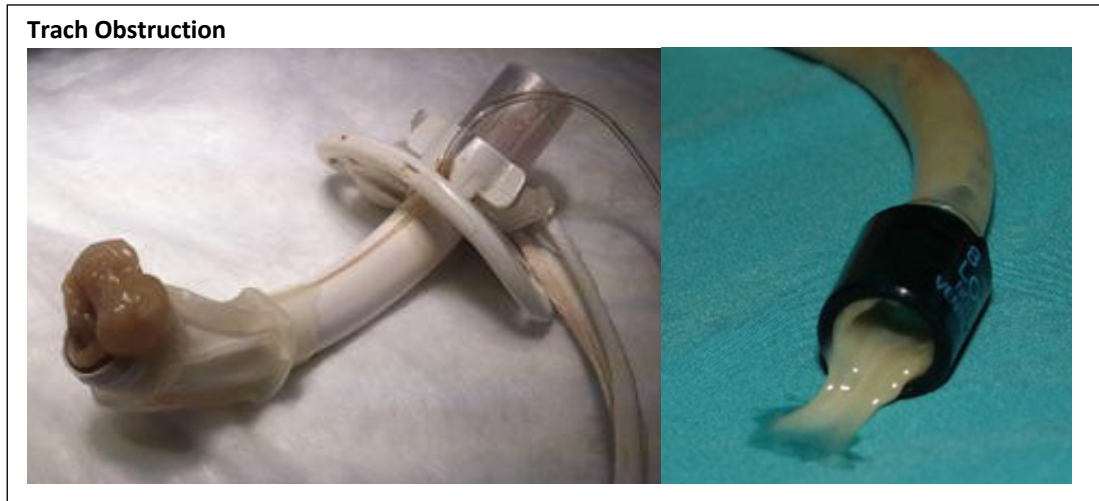
- In most common trach type, involves pinching tabs to release and then pulling the inner cannula out. Some other types may require a quarter turn to release
- If there is significant secretions or concretion on the inner cannula, can use sterile saline to wash it off and replace

-With many trachs the inner cannula is the ONLY way to attach a BVM to the trach, do NOT lose it! (is a 15mm adaptor)

-Once you pull and inspect inner cannula, attempt to pass a suction catheter, if it doesn't pass the trach is either dislodged or there is an obstruction you can't see

-If the trach doesn't have an inner cannula such as a pediatric trach, you will need to do an emergency trach change if you can't pass a suction catheter

- If patient continues to have poor air movement, may need to consider other causes of obstruction (lower in airway) or other causes of distress
  - Attempt preoxygenation and perform deep suctioning to try to clear any other secretions that may be contributing to obstruction
- If obstruction continues, you may need to consider taking airway from above (if possible) or replacing the trach

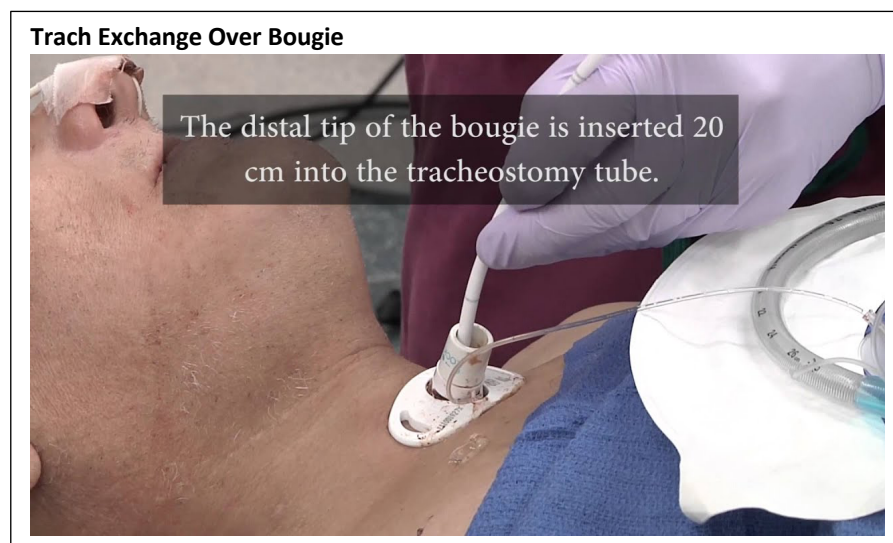


- **Replacing a Trach**

- This should **ONLY** be done if the trach is **GREATER** than 7 days old
  - If the trach is newer than this, the risk of creating a false track is very high as the wound has not had enough time to heal and create a stable ostomy
- Prior to attempting to replace a trach, you need to discuss the risks and benefits with the patient or MPOA
  - Verbalize that they are taking a risk by attempting to replace the airway
  - You are going from a partially functioning trach to potentially no airway/non-functioning trach
  - There is a significant risk once you pull the airway, but also possible benefit of having a fully functional trach
  - In awake/alert patients, have this discussion before you attempt manipulation
- Once you have permission to proceed, assemble all equipment for intubation – treat this like taking an airway (but without the ketamine unless necessary for agitation)
- Make sure you have the right replacement Trach (same type and size) as well as a size smaller
  - If no trachs, use an ETT (usually a 6.0 or 6.5, have 5.5 ready as backup)
- Make sure you have eye-protection and suction ready (this will likely induce coughing)
- Place neck in slight extension (too much will make passage difficult, not enough will restrict work area)
- When trach is in place, can replace over a bougie
  - Cut 1/3 of length off a normal adult bougie, keep the longer segment (ideally not the coude tip aka the hooked end)
  - If patient is awake, warn them that this will be uncomfortable

- Remove the inner cannula of both the old and new trach
- Gently feed about 50% of the bougie into trach and stop if any resistance encountered
- Remove trach over the bougie and railroad the replacement trach or ETT over the bougie
  - If the patient is obese, you may need to insert the trach rotated 45-90° to pass the skin, then rotate back to midline
- If using ETT, stop once balloon and solid black line are just deep to the skin (easy to go too deep)
- Remove bougie and apply oxygen (if BVM via trach, replace inner cannula first)
- Use EtCO<sub>2</sub> and air movement to confirm successful placement
- Link to a video showing trach exchange over bougie:

<https://www.youtube.com/watch?v=RPhCCGsXBHU>

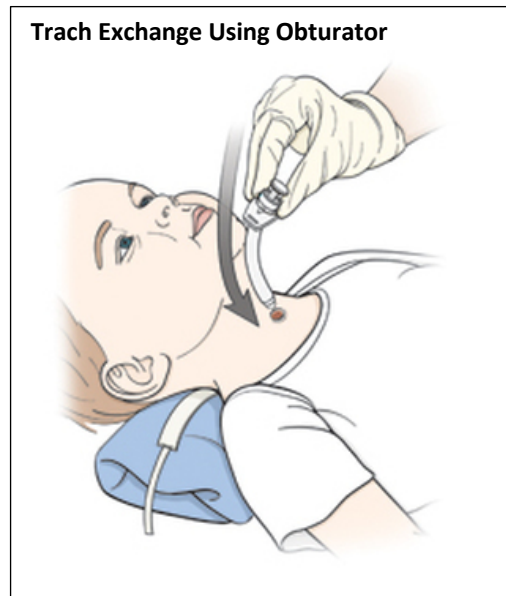


- If trach is already displaced, can attempt to feed the new trach or ETT through the ostomy without the bougie
  - If using a replacement trach, remove inner cannula and use the obturator (solid plastic piece with rounded end) to help with placement
  - Will need to remove inner cannula prior to inserting obturator into trach
  - Once in place, must IMMEDIATELY remove obturator as the patient CANNOT breathe when the obturator is in-place
- If using an ETT to replace an already displaced trach, can place without bougie unless meeting resistance
  - If ETT won't pass or meeting resistance, reoxygenate and attempt to pass ETT over bougie
- If you cannot pass a trach and patient does not have a history of laryngectomy, begin managing the airway from above.
  - Should treat as any other intubation at this point if airway can be managed from above
  - Preoxygenate, meet goals, then attempt to intubate from above
    - Remember, you will need to cover the ostomy while ventilating from above prior to ETT placement to prevent air leak

- Once ETT in place, end of tube should be distal to the ostomy and air leak should be minimal
- If they do have a laryngectomy, continue to attempt to pass trach/ETT via trach site as this is your only option
  - To trouble shoot, reposition head in slight extension
- Link to a video showing trach exchange using an obturator:
  - <https://www.youtube.com/watch?v=LrAMAwBfbcl>

- **The Crashing Trach**

- In these patients you will work through the same type of algorithm but much more rapidly
- Initially simultaneously apply oxygen to face and uncover trach site by removing accessories
- Ask for backup trach supplies early (from family or facility)
- Ensure trach appears to be in correct position (air movement/EtCO<sub>2</sub> on initial breath)
- If displaced, attempt to replace as discussed above and attempt ventilation with BVM
- If vent dependent, switch to BVM (with PEEP valve) and check tubing and connections for circuit disruption, consider pneumothorax early
- If not responding to oxygen therapy, quickly remove and check the inner cannula for obstruction
  - If you don't see anything in the cannula then attempt to pass suction catheter down the trach, if it doesn't pass then you need to prepare for trach removal and possible exchange
  - Escalate to BVM with in-line EtCO<sub>2</sub> if suction passes
  - If obstructed, try to quickly clear with flush/gauze and replace
- If they are vent dependent, will need to make this a rapid check and reinsertion to allow continued bagging
- If no obstruction and can bag, attempt deep suctioning to clear lower obstructions
  - Be careful if patient is severely hypoxic, this intervention will (by necessity) prevent you from bagging for a brief interval
- Preox as best you can, have everything ready and do a quick suction then get right back onto the BVM
- If trach is completely obstructed (won't allow any air movement) but inner cannula clean, need to start thinking of swapping the trach or intubating from above
  - If patient has history of laryngectomy, intubation from above is impossible, you can only manage via trach
  - If unable to intubate from above or it is contraindicated (huge mass etc.), you can remove trach and attempt to bag via stoma with Peds mask with adult BVM



-You may need to cover the mouth and nose in some cases if there is not a total upper airway occlusion.

-We suggest an initial attempt at BVM via stoma to attempt to oxygenate as well as to establish if you are able to ventilate via stoma.

-If you can ventilate treat this as any other tube insertion and do a good pre-oxygenation, then you can take the time to pass a 6.0 ETT as you would in a cric

- Would suggest using whatever airway (trach or ETT) you are most comfortable with managing an emergent trach malfunction

-If trach completely displaced, remove it, and attempt to bag via the stoma using Peds Mask and BVM

-Once able to ventilate and assess airway, can attempt to replace trach with ETT or trach

**BVM Ventilation via Mouth in Trach Patient**



### **Summary in Brief**

-When you have a trach patient with respiratory distress, think through the DOPE mnemonic

-Remember that the two most common causes of trach issues are obstruction and displacement

-Your initial intervention should be to apply O2 above and below while you get VS and SAMPLE history

-Remove all dressings to expose the trach to help rule out displacement

-Check the inner cannula and suction to help rule out obstruction

-If you are ever going to try to replace a trach, you MUST have a risk/benefit discussion with the patient or MPOA about the procedure BEFORE proceeding

-You can replace a trach by exchanging over a trimmed bougie (ideal) or by using the obturator (trach) or stylet (ETT)

-Never push through resistance

-If you cannot replace the trach through the stoma, work the airway from above (unless the patient has a laryngectomy)

-In a crashing trach patient, you will do all of the above but with a much faster reassess-intervene cycle and with maximal therapy applied as soon as possible

-Always use EtCO2 to verify trach placement and patency