OMD Podcast: Tracheostomy Hemorrhage

Summary Points:

-Where is the Blood Coming From
-The Sentinel Bleed
-The Real Deal Hemorrhage

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

- **Where is the Blood Coming From?**

-As with all trachs you need to remove all gauze buttressing to expose the trach site
-Not all bleeding is the same
-Cutaneous Bleeding
-A small amount of oozing from the SKIN around the trach can be normal, especially after a trach change
-Address as you would normal cutaneous wounds
-Be cautious with holding pressure as you can induce airway occlusion or vagal response if too aggressive
-Small flecks of blood mixed with sputum may be due to lower lung infections, but should still be treated with caution
-Blood from the Trach itself
-All blood from the trach should be taken VERY seriously.
-Small amount of oozing or a single bleeding episode can stop or appear insignificant and then quickly turn into life-threatening massive bleed
-All patients with blood from inside the trach should be transported

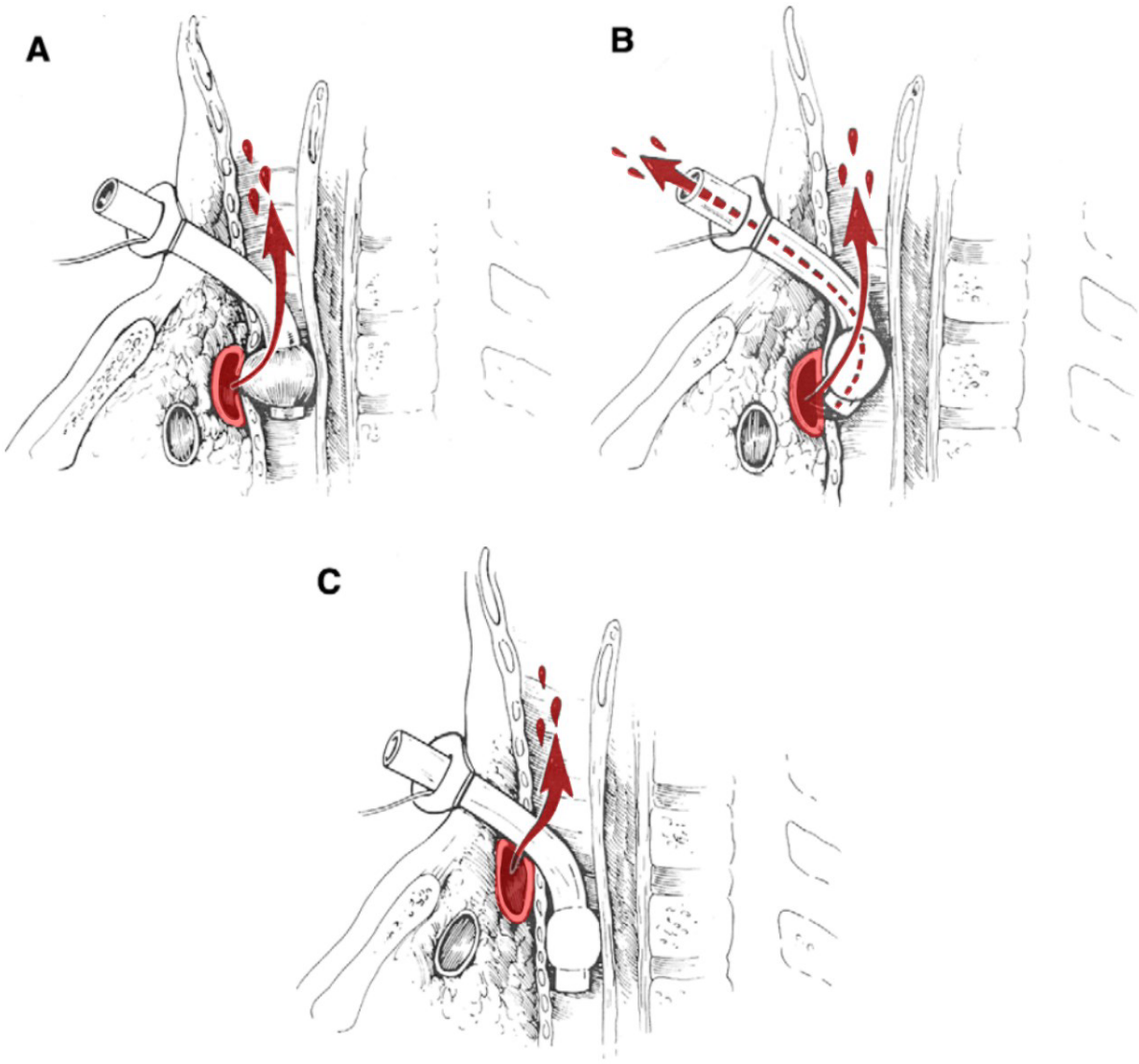
-The most feared tracheostomy bleed is known as the Tracheo-innominate Fistula (TIAF)

-Usually occurs within the first month of trach placement (75%), but can occur at any time

-Pressure from the distal end of the tracheostomy can slowly erode through the anterior wall of the airway and into the into the Innominate artery (the first artery branch off the aorta)

-Eventually, causes a connection with the artery and creates a non-compressible arterial bleed directly into the airway

-These bleeds are usually preceded by a smaller "sentinel bleed"



- **The Sentinel Bleed**

-A catchy name for a small bleed that predicts a much larger bleed to come

-Up to 50% of TIAFs have a sentinel bleed

-Can be a very small bleed, but usually more than just flecks of blood in sputum, even as little as 10mL of blood is considered significant

-No indication for acute EMS interventions other than transport to appropriate facility for evaluation

-If patient does not wish to be transported, it is very important to inform them of the possibility that this is a warning bleed that may predict a much more serious, life-threatening bleed

- **The Real Deal Hemorrhage**

-Your job is two things: Secure the airway and attempt to stop the bleeding

-They are going to suffocate from blood and bleed out at the same time

-Will be significant hemorrhage with blood coming out of the trach, around the trach and potentially from the mouth

-The FIRST intervention: Try to Hyper-inflate the Trach cuff (if it is a cuffed trach)

-Most patients within a month of trach placement (when most of these happen) will still have a cuffed trach

-Inflate cuff with up to 50cc of air (very gently)

-The increased volume and pressure will hopefully occlude the bleeding site and apply pressure

-In some studies, cited to work on approximately 85% of bleeds

-If hyperinflation fails to completely stop the bleeding, can attempt External digital compression

-This involves attempting to compress the bleed externally

-Place a finger in the jugular notch and press in and down (trying to get your finger UNDER the sternum then compress the artery between your finger and the sternum

-Jugular notch is the divot on the front of the neck between the heads fo the clavicles and above the sternum

-Very difficult maneuver to do properly or on larger patients

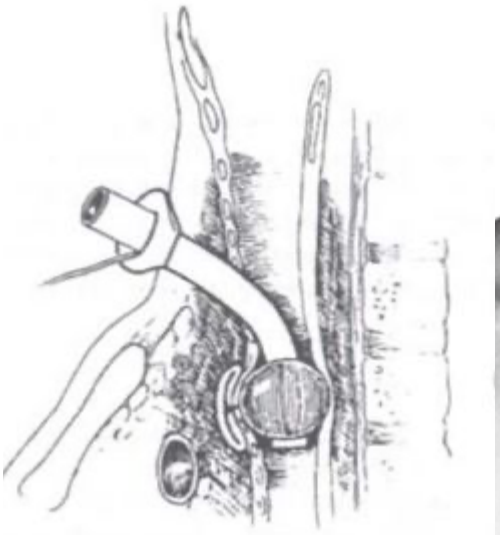
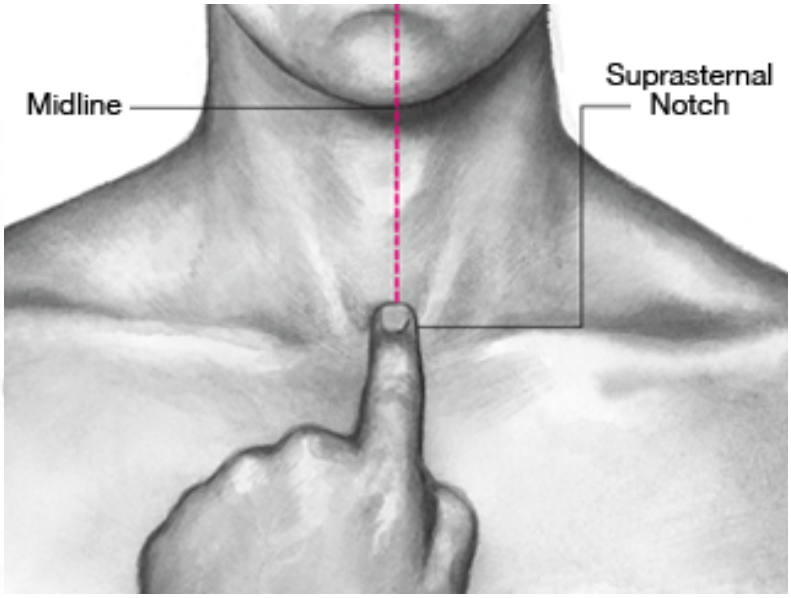
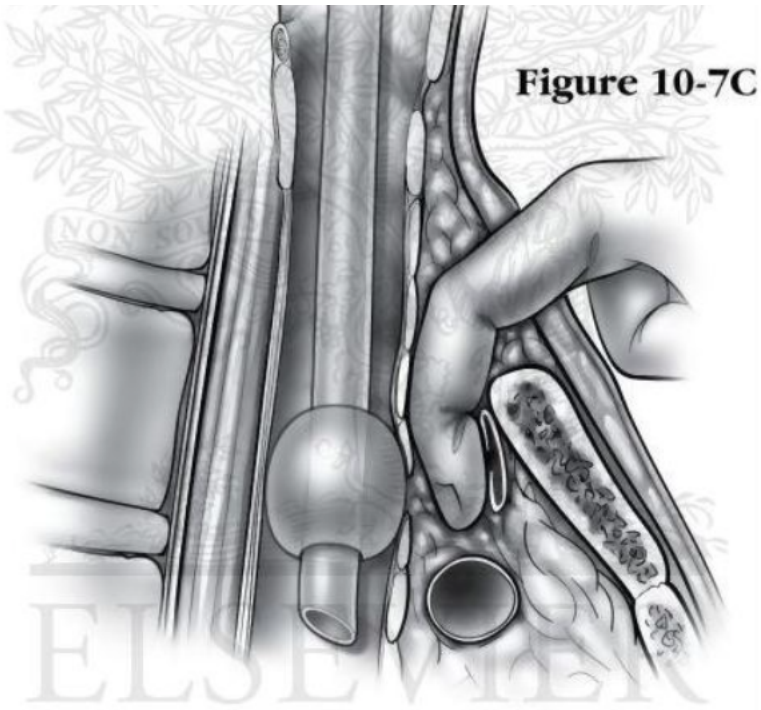


Figure 1: Overinflation of balloon



-If hyperinflation FAILS, you are now onto HEROIC MEASURES
    -These should NEVER be the first intervention (ALWAYS do hyperinflation first) and should NEVER be performed unless life-threatening hemorrhage is occurring
    -Think of this like a massive GI bleed
-HEROIC MEASURE 1-Trach Reposition
    -If digital pressure and initial trial of hyperinflation fails, can attempt to gently withdraw the hyperinflated trach
    -Helps reposition the hyperinflated cuff to attempt to compress more proximal source of bleeding
    -If bleeding controlled, you will need to manually hold the trach in this position during transport
    -This will ONLY work if the bleed site is PROXIMAL to the end of the trach
-HEROIC MEASURE 2- Trach Swap and Internal Digital Compression
    -The ultimate Hail Mary move
    -Deflate the trach cuff and remove the current trach
    -Re-intubate with a small ETT (6.0/6.5) either through the stoma or orally and get the balloon DISTAL to the site of the bleed (so you can bag the patient)
    -Once tube in position, attempt to pass your finger THROUGH the stoma and compress the bleed site against the sternum from the inside
    -If you are unable to fit your finger into the stoma with the ETT, ventilate the patient to preoxygenate and consider swapping to an ETT from above if possible
        -If you are going to attempt this to give yourself more room for digital compression, leave the ETT in position until you have the replacement tube placed past the chords, then withdraw the trach tube as you pass the tube from above
        -Tube should be placed with cuff inflated past the bleed
        -You can then re-attempt digital compression via the stoma



-At the end of the day, this is a catastrophic bleed and the patient has a very high likelihood of a poor outcome
-If you have the skills to do so we would recommend exhausting these heroic efforts, however they are complex and difficult given the circumstances/conditions you will be in so if you can't or don't feel confident performing them its ok
-These measures may or may not save the patient's life but are the last line interventions
-They are termed heroic as they should only be done if you have exhausted ALL other simpler/safer interventions
-TXA may be considered once you have the bleeding controlled AND the patient meets TXA criteria
    -This should be the LAST thing on your mind during the initial bleeding control stage as it will NOT stop the bleed on its own, only direct pressure will help

SUMMARY IN BRIEF
-Try to find where the bleeding is coming from; blood from the skin around the trach is very different from blood coming out of the trach
-Any bleeding from inside a trach needs to be taken seriously
    -Patient needs to be evaluated as soon as possible by a specialist
-Remember, any small bleed may be a Sentinel Bleed that foretells the formation of a trachea-innominate fistula (TIAF)
-Once open, a TIAF can cause rapid exsanguination as well as asphyxia from drowning on blood
-The first steps are recognition of a TIAF, attempt trach cuff hyperinflation (50ccs) and attempt external digital compression
-If these interventions fail, you may attempt Heroic measures but these are not required of you and are complex and involved tasks to undertake