

Rural Medicine: Bariatric Airway

Vanessa Cardy and Julie Vieth

Case: Emergency medical services (EMS) bring in an 800-lb (365-kg) patient to a rural hospital with respiratory failure and obtundation. Standard EMS/ED stretchers will not accommodate the patient's weight. EMS had to get a special bariatric stretcher, and the hospital was arranging for a bariatric bed to be delivered

The patient arrives on continuous positive airway pressure (CPAP) with an O₂ saturation in the 80s. Her mental status is altered. Glucose is normal and the patient has a possible history of asthma. She received dexamethasone and nebulizers in the field.

Knowing that the approach to airway will be a challenge, the physician changes her to bilevel positive airway pressure (BPAP) and got 2 ED technicians to stand on either side of her head and position her head and airway properly; they were able to raise the her O₂ saturation to 96%.

The labs show that she is acidotic with an unreadable partial pressure of CO₂ (pCO₂).

- An “airway huddle” happens between the emergency medicine physician, respiratory therapy, anesthesiology, and ear, nose, and throat; they walk through all of the options.
 - In this scenario, there is no good option, as the patient has no pulmonary reserve.
 - She is stabilizing and improving somewhat with the measure in place, so it is decided to stay the course and not perform further airway interventions.
- Arterial lines can be helpful in this scenario to give reliable BPs; they also provide a mechanism by which to draw arterial blood gases frequently to assess acid/base status, pCO₂, and partial pressure of O₂.
- Specialized equipment for a bariatric patient is an issue. The rural hospital did not have a bariatric bed and had to order one from off-site.
- Sometimes, “less is more” and instead of “don’t just stand there, do something” you should follow the saying “don’t just do something, stand there.”

Critical Care Mailbag: Pigtail Catheters

Anand Swaminathan and Scott Weingart

Case: Charge RN says there is an ambulance coming in with a critically ill burn patient, being bagged, burns to face, no IV access.

- Pigtail catheter basics
 - A pigtail catheter is a narrow-bore catheter (8-14 Fr).
 - 14Fr size is more typically used for chest drainage (fluid or air).

- 8 Fr size is more typically used for pericardiocentesis.
- “Pigtail” describes the distal end of the catheter, which has a natural curl.
 - The end of the catheter has multiple fenestrations.
 - The curl allows multiple fenestrations to sit in the fluid to be drained to ensure drainage.
- Traditionally, traumatic pneumothorax and hemothorax were drained with large (36-40 Fr) chest tubes. Over time, the chest tube size has decreased (20-24 Fr), and now there is emerging literature on the use of pigtail catheters instead of traditional chest tubes.
- Chest drainage based on scenario:
 - Trauma with hemodynamic instability:
 - Perform a finger thoracostomy.
 - Follow with a chest tube (20-24 Fr).
 - This approach allows for rapid relief of tension pneumothorax or diagnosis of large hemothorax and allows for continued drainage.
 - Pneumothorax (spontaneous or traumatic) or pleural effusion with stable vital signs:
 - A pigtail catheter is preferred.
 - A chest tube leads to more pain, scarring, and complications.
 - Hemothorax or empyema with stable vital signs:
 - A larger (14 Fr) pigtail catheter can be used but is not necessarily standard practice.
 - A small-bore (20-24 Fr) chest tube would be reasonable.
 - Emerging data indicate that a pigtail catheter can adequately drain without increased failure rate.
- Complications
 - The most common complications with pigtail catheter placement are the same as with chest tube placement (infection, bleeding, pain) but are less common due to the differences in size and technique.
 - Misplacement can be a significant issue with pigtail catheters because it is a closed, essentially blind technique, unless you are using real-time ultrasound guidance.
- Pigtail catheter procedure:
 - Every patient should get an ultrasound even if you have a chest CT, because the pocket may move based on the position of the patient.

- Look for a “landing zone”:
 - Ideally, you have a large pocket of air or fluid in which to “land” your needle.
 - For example: if you have a large pneumothorax and you can see it with ultrasound in the location you are going to perform your procedure, the procedure itself is very safe.
 - On the other hand, if you have an anterior pneumothorax but you are planning to perform your procedure posteriorly, there is lung tissue touching the area you are placing your needle.
 - Measure depth to your landing zone.
 - This tells you, when you are placing your needle, how far you should go in before aspirating air/fluid.
 - When you do the procedure, if you are not getting air/fluid back at the depth you measured, you should withdraw your needle, check for patency (eg, a skin plug), and start the procedure again. You should not continue to advance the needle.
 - Absence of a large pocket makes placement more complicated because it’s easy to place your catheter into lung parenchyma.
 - Modified open technique:
 - This is an alternative approach to the Seldinger technique for placing a pigtail catheter.
 - It is useful when you don’t have a landing zone.
 - Steps:
 - Make a small incision into the chest wall to the thoracic cavity.
 - Place a finger through the incision into the thoracic cavity to confirm location.
 - Guide the pigtail catheter into the chest along the finger.
 - This approach ensures that even if you don’t have a landing zone, you won’t be placing your catheter into the lung parenchyma.
- **Listener Case:** A man in his 70s who has fallen presents with a left-sided pneumothorax. A pigtail is placed before advanced imaging, and the needle returns a large amount of pulsatile blood. There was concern that the team hit an intercostal vessel, lung parenchyma, myocardium, or the inferior vena cava (IVC). The patient ends up in the operating room for a thoracotomy, which identified myocardial puncture and IVC puncture and has a bad outcome.

- Weingart learning points:
 - If you are not skilled with pigtail placement, it's okay to place a small-bore chest tube (20-24 Fr). However, it is good to take this as a challenge to learn to place pigtails and improve your skill set.
 - Always perform an ultrasound and note the depth to your target. This helps ensure that the needle isn't placed too deep into the thoracic cavity.
 - Many kits come with a needle about the size of a central line kit needle, as well as a significantly longer needle. The longer needle is intended for patients with a larger body mass index. In average-sized patients, the longer needle is too long and increases the risk of placing the needle too deeply into the thoracic cavity and unintentionally hitting a vital structure.
 - Approach to needle placement should be "I'm going to insert my needle and advance until I reach the depth I measured on US or I reach air/fluid. If I reach the depth I measured but don't get air/fluid out, I'm going to remove my needle and start over."

References:

[CorePendium: Thoracostomy](#)

[EMRAP HD: Pigtail Chest Tube Insertion](#)

What You Say Matters

Al Sacchetti

- What you do matters and what you say matters.
- You are a highly respected person in your community — people listen.
- Example: how you deal with a young parent with a small infant when a grandparent is present.
 - After the medical portion is done, compliment the parent on how well cared for the child is (eg, "you're doing a great job"). If you can do it in front of other family members of the household, you are validating the parents.
- Use humor in a way to put people at ease and interact with people as people, not as patients.
 - This has to be used carefully but can help strengthen your doctor-patient relationship.