

Introduction

- **Intra-operative Pneumothorax:**
  - Risk factors: PEEP, subclavian or IJV lines, excess airway manipulation Complications: tension PNX, respiratory failure, shock, cardiopulmonary arrest <sup>4-5,-6-8,11</sup>
- We present a case of an intraoperative pneumothorax in interventional radiology during an emergent procedure for a life-threatening gastrointestinal bleed.
- Limited equipment made it challenging to identify the intraoperative complication.

Case Description

- 75 year old male
- PMH and PSH: hypertension, spinal stenosis s/p spinal surgery in 2009, chronic back pain, and anxiety
- Presented to the ED for worsening L buttock pain for which he was prescribed 500 mg naproxen BID for 2 weeks, with one episode of black stool.
- POD 2: AMS, Hb 5, 2 units pRBCs
- Admitted to ICU where he was intubated, R radial arterial line, R IJ TLC and R femoral cordis were placed, pressors and MTP were initiated
- A Presenting for IR embolization of GI bleed. B

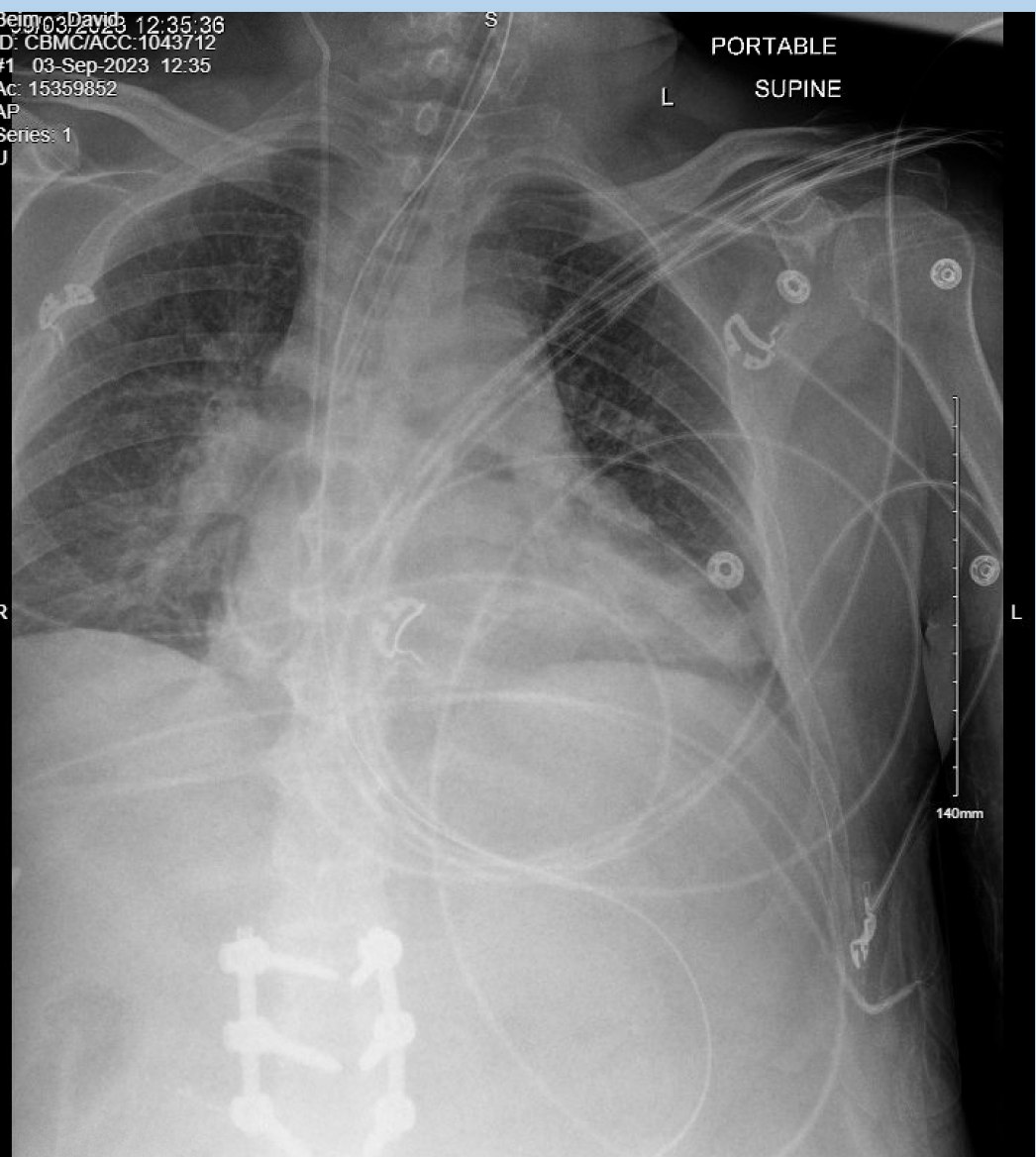


Figure 1: CXR after RIJ TLC placement

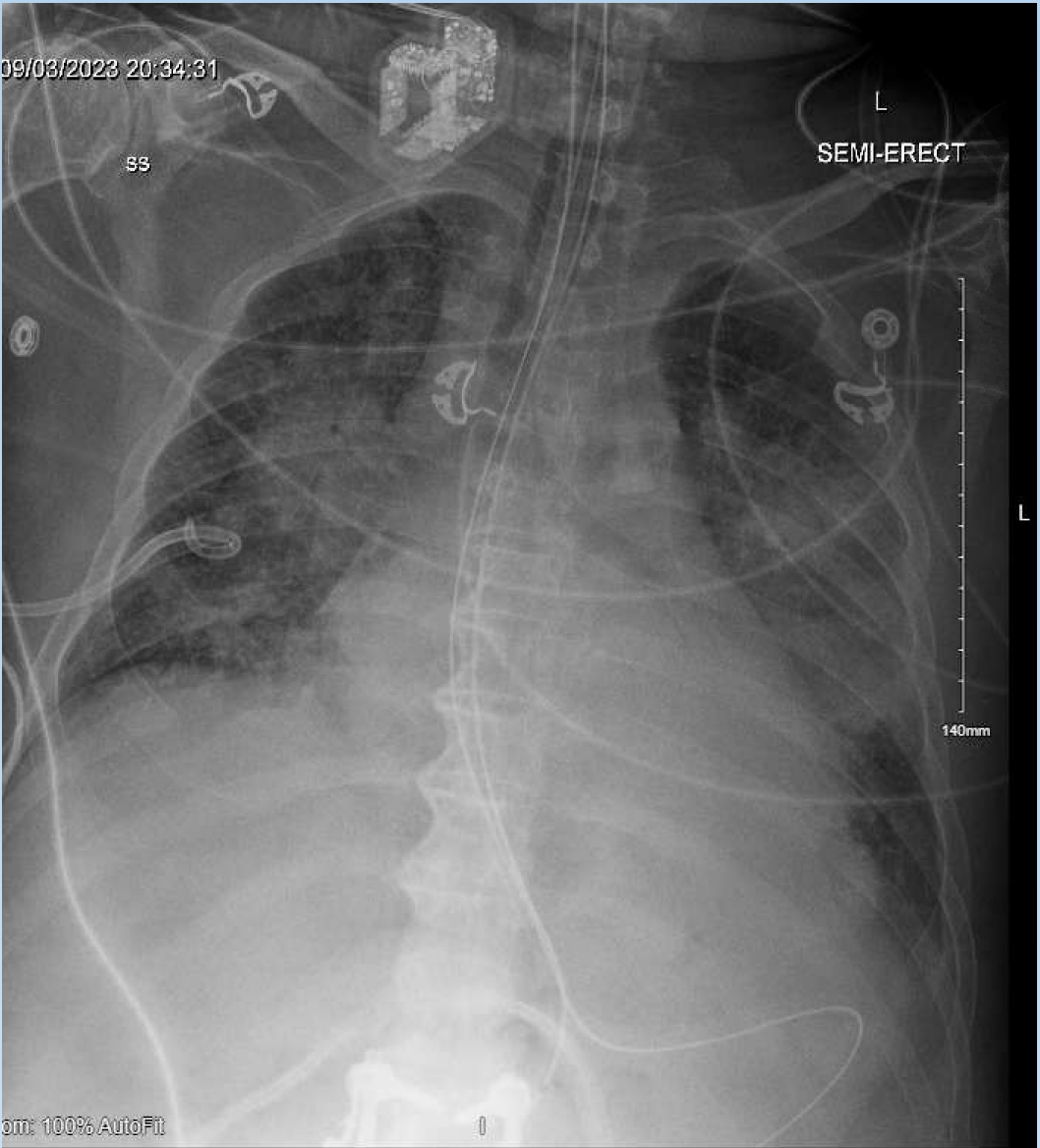


Figure 2: Post-operative CXR

Anesthetic Management

Pre-operative Assessment:

- ETT 8.0 intubation, patient intubated and sedated
- Pre-op vitals: BP 130s/90s, HR 110, RR 24, SpO2 88%
- Right IJ TLC , R femoral cordis, R radial arterial line, OGT, Foley

Intraoperative Events:

- Intubated and ventilated by portable ventilator → VCV: RR 24, TV 400, PEEP 12, FiO2 100%
- Prior to procedure a total of 11 u pRBC administered
- Norepinephrine and vasopressin infusions continued; paralyzed with rocuronium; sedation with propofol and fentanyl infusions
- Respiratory was unable to connect ICU ventilator in IR.
  - *Decision was made to keep patient on portable ventilator until ICU ventilator could be connected due to urgency of procedure.*
- MTP was continued with a Level 1 rapid infuser → total of 4 u pRBC, 1 u platelet, and 1 u FFP administered
- During procedure saturations decreased from SpO2 of 90 → 70; Peak and plateau pressures were noted to increase
- Attempted to bag ventilate with FiO2 100% with no improvement in saturation
- ETT moved back ~2 cm due to concern for right mainstem
- Asked IR to take image and a large right pneumothorax was identified
- Needle decompression performed with 14 g angiocath inserted into right 2nd midclavicular intercostal space
- Patient was manually bag ventilated
- Improvement of saturation to SpO2 in the 90s
- 12F Pigtail was inserted by IR with drainage of serous fluid

Post-operative Course:

- After IR embolization, brought to main OR for exploratory laparotomy for abdominal decompression
- Patient stable and saturated well throughout this procedure - no complications
- Patient remained intubated and transported to the ICU

Discussion

- **ICU Ventilator vs Portable Ventilator:**
  - Portable ventilator likely to have decreased TV b/c lack of compensation volume of compressible air that is lost and decreased humidification<sup>1</sup>
  - ICU ventilator has better humidification and SpO2 monitoring <sup>9</sup>
  - Portable was meant for and used within hospital-wide transport purpose<sup>2</sup>
- **Remote Location Anesthetic Considerations:**
  - One previous study concluded that proper maintenance of, checklists, alarms, and proficient up-to-date training with non-OR location anesthetic equipment was necessary to prevent errors in care <sup>3,6</sup>
  - Another study found that remote location anesthetic care had fewer malpractice claims but more claims of death <sup>10</sup>
  - Claims most commonly were with MAC, due to improper oxygenation, and most often in cardiology and radiology remote locations <sup>10</sup>
- **Future Implications:**
  - Although our team identified and treated the pneumothorax appropriately, our case demonstrates the importance of proper equipment and staffing in remote hospital locations to reduce further complications and delays in patient care during emergencies.
  - No studies have been done yet to show cases of remote anesthetic management, especially in an adult intraoperative pneumothorax, and we seek to expand the literature to improve the safety and management of future cases.

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