

# Can You Transport My PSF Patient? A Case Report of Postoperative Cardiac Arrest Due to Large Pneumomediastinum Caused by Severe Bronchospasm

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## Background

Tension pneumomediastinum leading to acute respiratory failure and subsequent cardiac arrest is an extremely rare and severe condition, and has not been previously described following posterior spinal fusion (PSF).

## Case Presentation

-13-year old, 27 kg, female with neuromuscular scoliosis for PSF.

### INTRAOP

-Following uneventful operation, nl CXR and extubation, pt maintained her airway and sats

- A persistent irregular respiratory pattern & wheezing led to reintubation

### POSTOP

-During transport to ICU with sedation and ambu bag, airway resistance increased making ventilation difficult

-On arrival to ICU, her arterial line tracing was flat, and CPR was initiated.

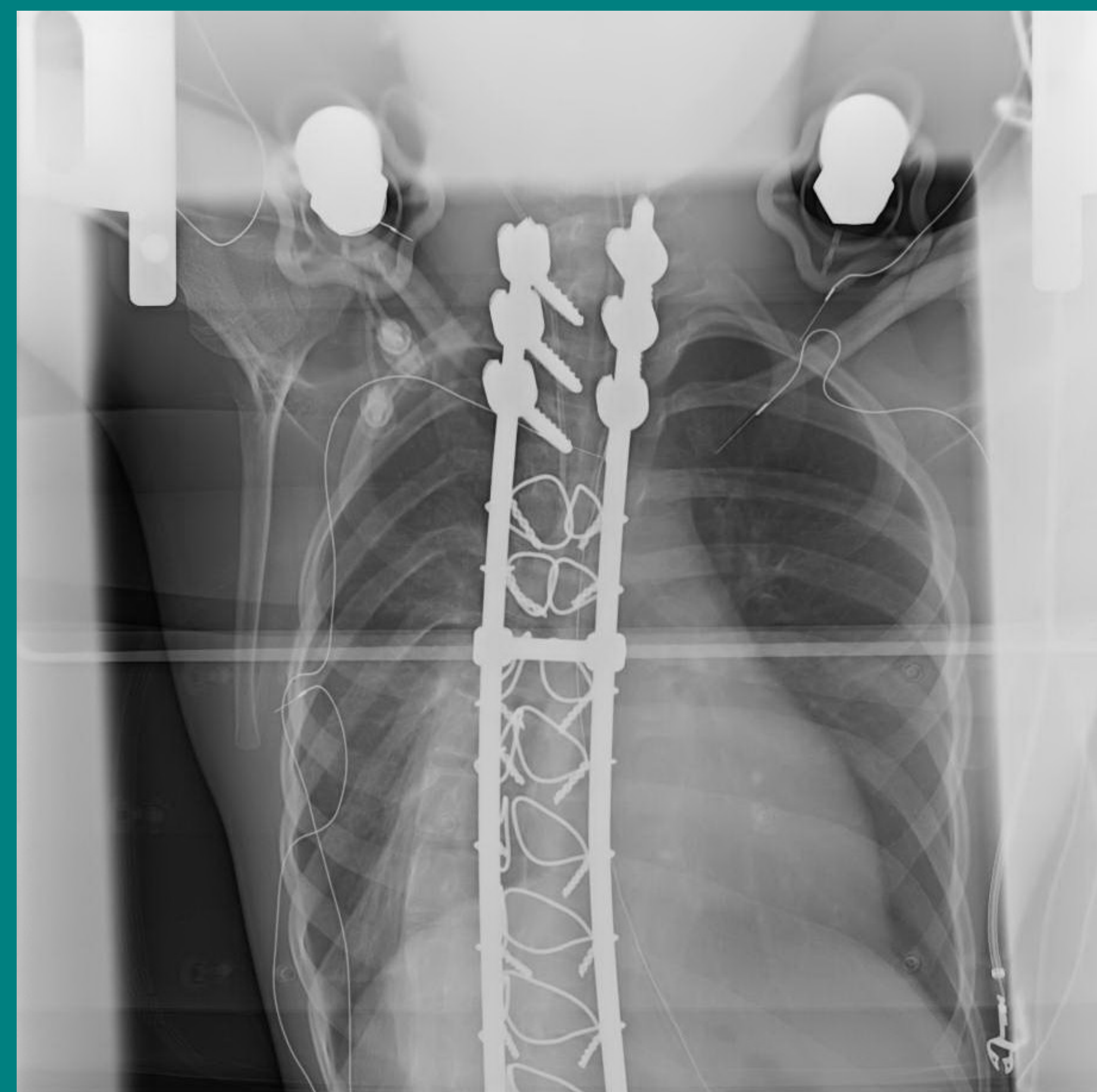
-Substantial subcutaneous emphysema and swelling at the neck and face was present

-Tension pneumothorax (PTX) was suspected and bilateral needle thoracostomy was performed with air removed bilaterally

-Return of spontaneous circulation and adequate BP was achieved within 2 minutes of decompression.

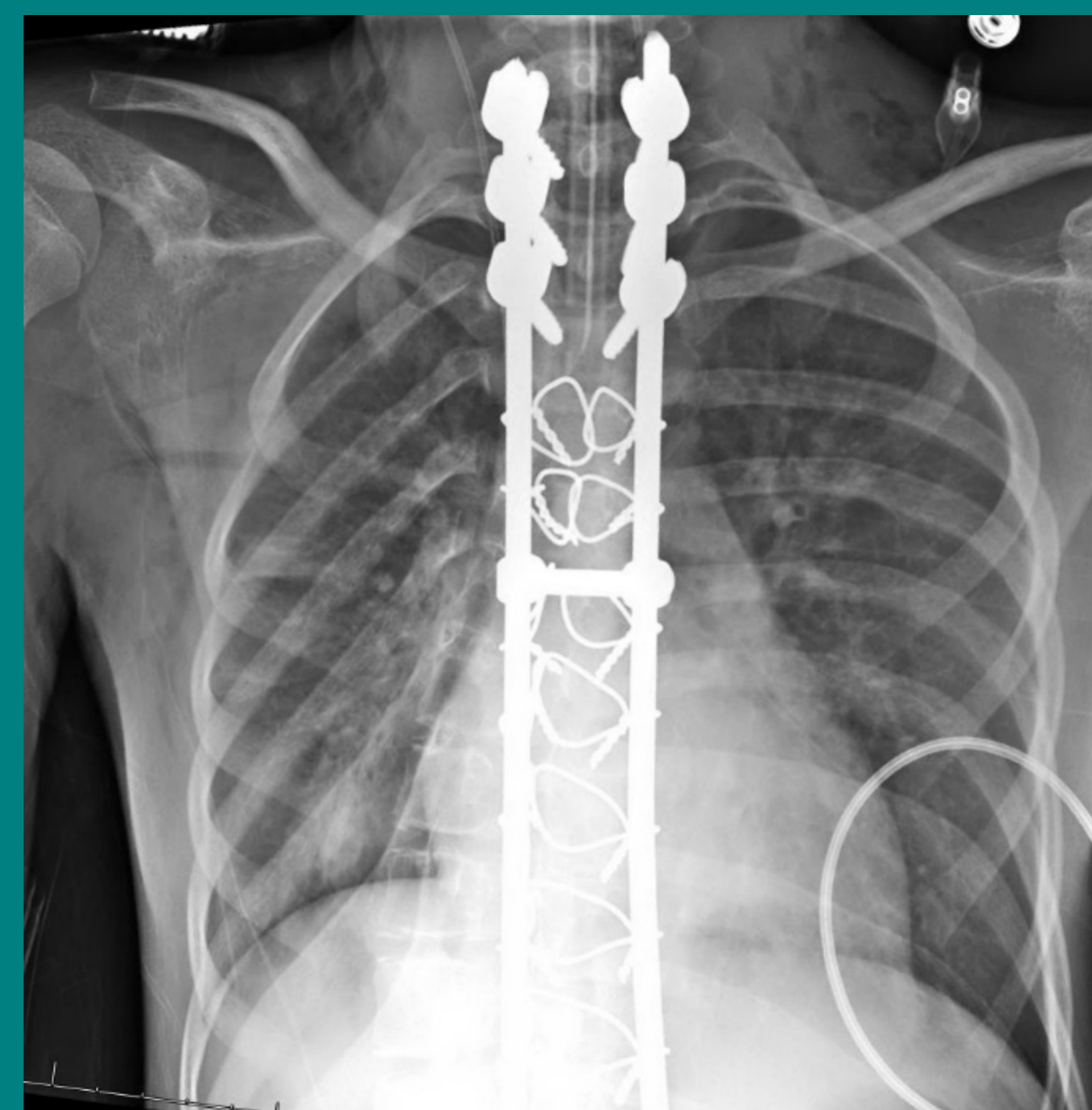
-CXR showed pneumomediastinum and bilateral PTX.

-She was extubated on POD 2 and discharged home on POD 5 with no other complications



Above: immediate postoperative CXR showing normal lung field and cardiac silhouette

Below: CXR after cardiac arrest demonstrating pneumomediastinum and bilateral pneumothoraces



POD 2 CXR with residual pneumomediastinum, trace left apical pneumothorax

## Discussion

### Etiology

- PTX with tension pneumomediastinum was likely the cause of cardiac arrest.
- Suspect bronchospasm due to light anesthesia vs postop pulmonary changes
- Contributing factors include: subsequent air trapping, elevated airway pressure, low pulmonary compliance with restrictive lung disease from scoliosis, and high pulmonary inflation pressure

### Management

- PALS
- Disconnect ETT from Ambu bag to allow relief of excessive airway pressure
- Gentle ventilation with a slower rate
- Needle decompression

### Pneumomediastinum

- Associated with asthma, severe cough and vomiting, and forceful straining during exercise[1]
  - No significant coughing observed in this case
- Reports of perioperative acute pneumomediastinum are associated with difficult airway management with multiple intubation attempts[2]
  - Intubation was smooth and no rigid stylet was used
- Careful attention and vigilance should be maintained during transporting intubated patients with adequate sedation and close monitoring of airway pressure

## References

1. Banki, F., et al., Pneumomediastinum: etiology and a guide to diagnosis and treatment. Am J Surg, 2013. 206(6): p. 1001-6; discussion 1006.
2. Pandey, M., et al., Endotracheal intubation related massive subcutaneous emphysema and tension pneumomediastinum resulting in cardiac arrest. J Postgrad Med, 2003. 49(2): p. 188-9.