

SPONTANEOUS PNEUMOMEDIASTINUM FOLLOWING ORTHOGNATHIC SURGERY

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INTRODUCTION

Pneumomediastinum is an infrequently reported and potentially life-threatening complication that can occur following orthognathic surgery. There are two major mechanisms for introduction of mediastinal air. The first is rupture of a perivascular bleb allowing extravasation of air, and the second is violation of the cervical fascia. Refer to table 1 for predisposing factors and etiologies associated with pneumomediastinum. The purpose of this case report is to bring awareness of the clinical presentation and pathophysiology, along with providing a diagnostic, and treatment algorithm for the practicing surgeon.

POST OPERATIVE COURSE

Day 1: he was tolerating a clear liquid diet, pain controlled with liquid medications, his vitals were unremarkable, no oxygen desaturations on room air, and no episodes of emesis. There were no overnight patient or nursing concerns reported

Day 2: his overnight vitals remained stable, his p.o. intake made goal, and he was ambulating and voiding per normal. However, he mentioned experiencing some "chest tightness" during deep inspiration. Palpation of the chest wall showed crepitus at the level of the sternal notch extending to the bilateral clavicles. A stat chest radiograph (figure 1.) was obtained to follow up on this symptom, and the findings mandated continued workup

PREDISPOSING FACTORS AND ETIOLOGY OF SPM

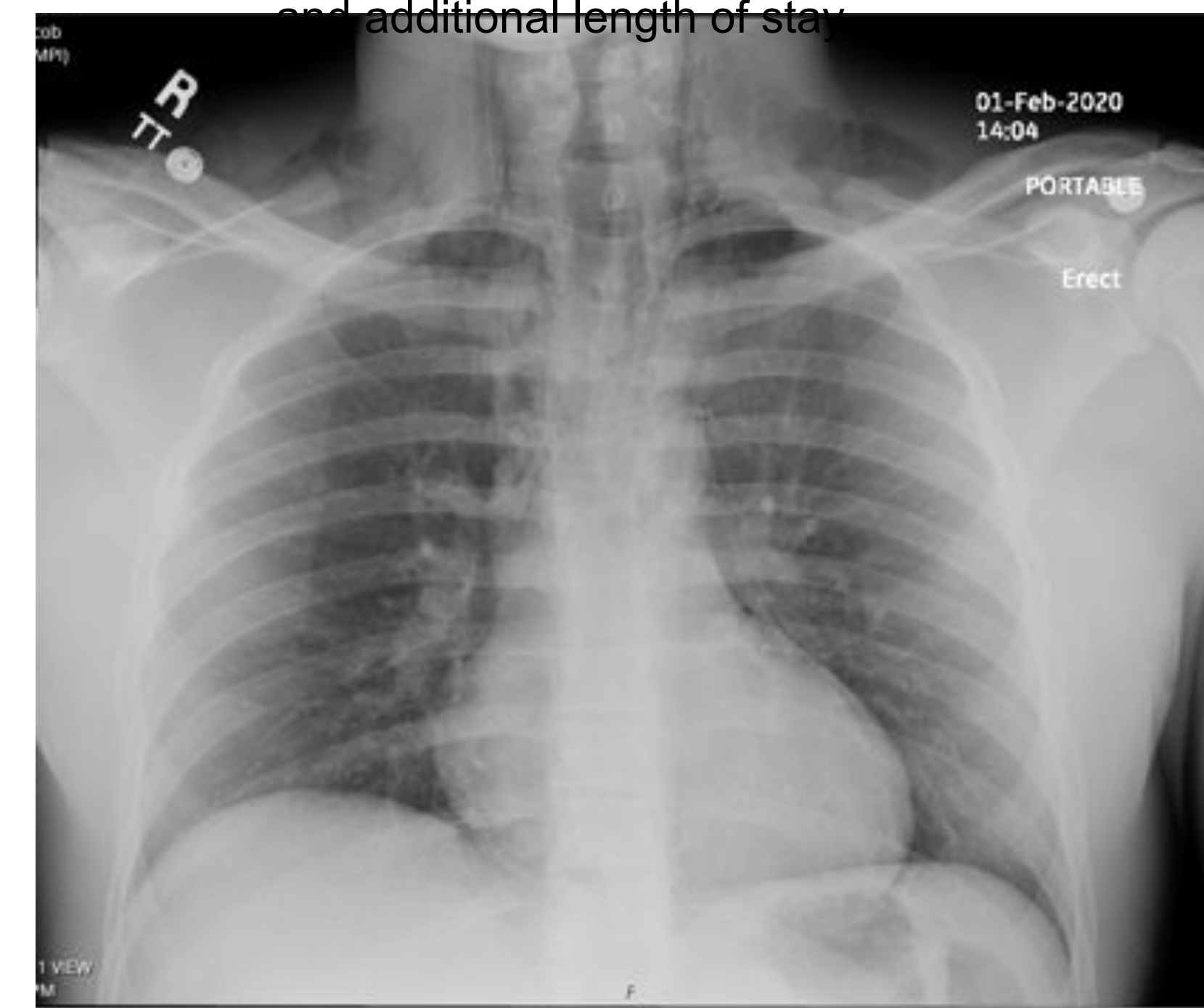
- Asthma/COPD
- ARDS
- Mechanical ventilation/Bag Masking
- Positive-pressure ventilation (PPV)
- High peak inspiratory pressures (PIP)
- High peak end-expiratory pressures (PEEP)
- Alveolar/Bleb rupture
- Penetrating wounds to chest, neck, facial bones/paranasal sinuses
- Blunt trauma with rib/vertebral fractures
- ...Spontaneous

WORK UP

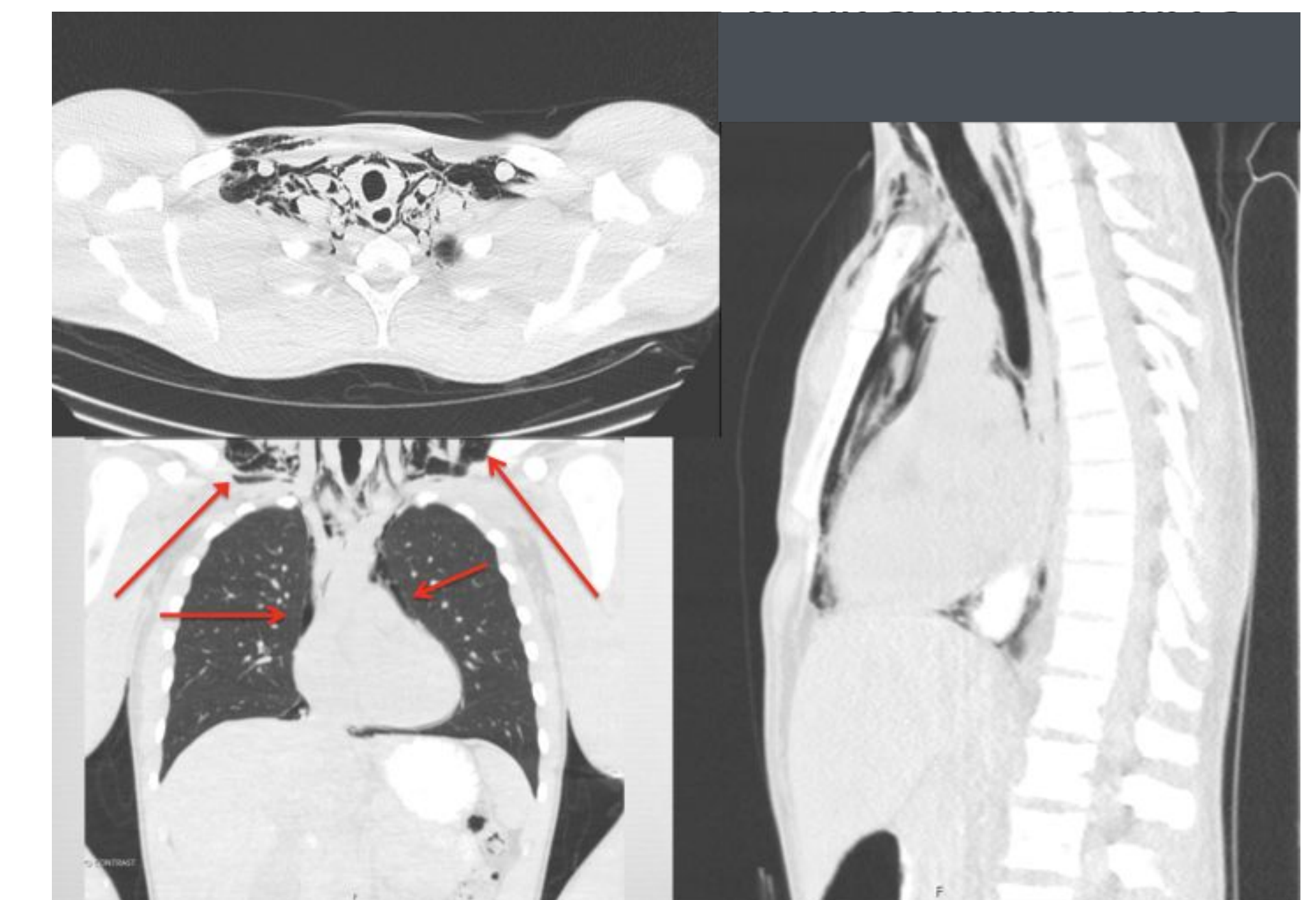
- EKG: NSR without abnormalities
- Chest Radiograph: Pneumomediastinum with evidence of cervical emphysema.
- Radiology recommended repeat CXR in 4 hours given patients clinical stability
- Repeat CXR with worsening evidence of worsening pathology
- CT Surgery Consulted
- CT Neck/Chest completed
- Flexible Nasal Laryngoscopy showed: submucosal edema of pharyngeal walls without evidence of mucosal laceration
- Critical component of workup is to determine if this was a violation of layers from above, below, or adjacent



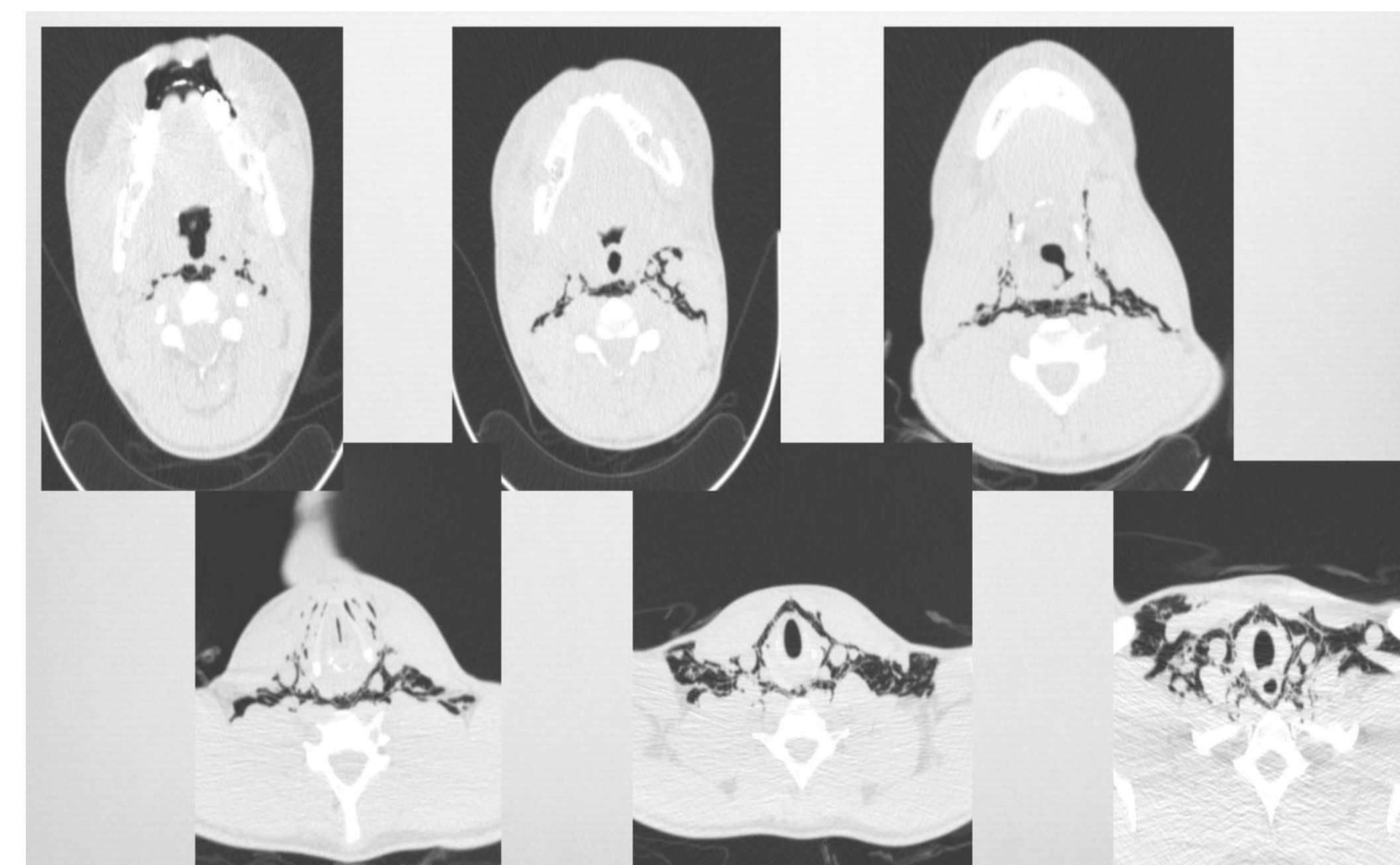
Chest Radiograph: Pneumomediastinum with evidence of cervical emphysema.



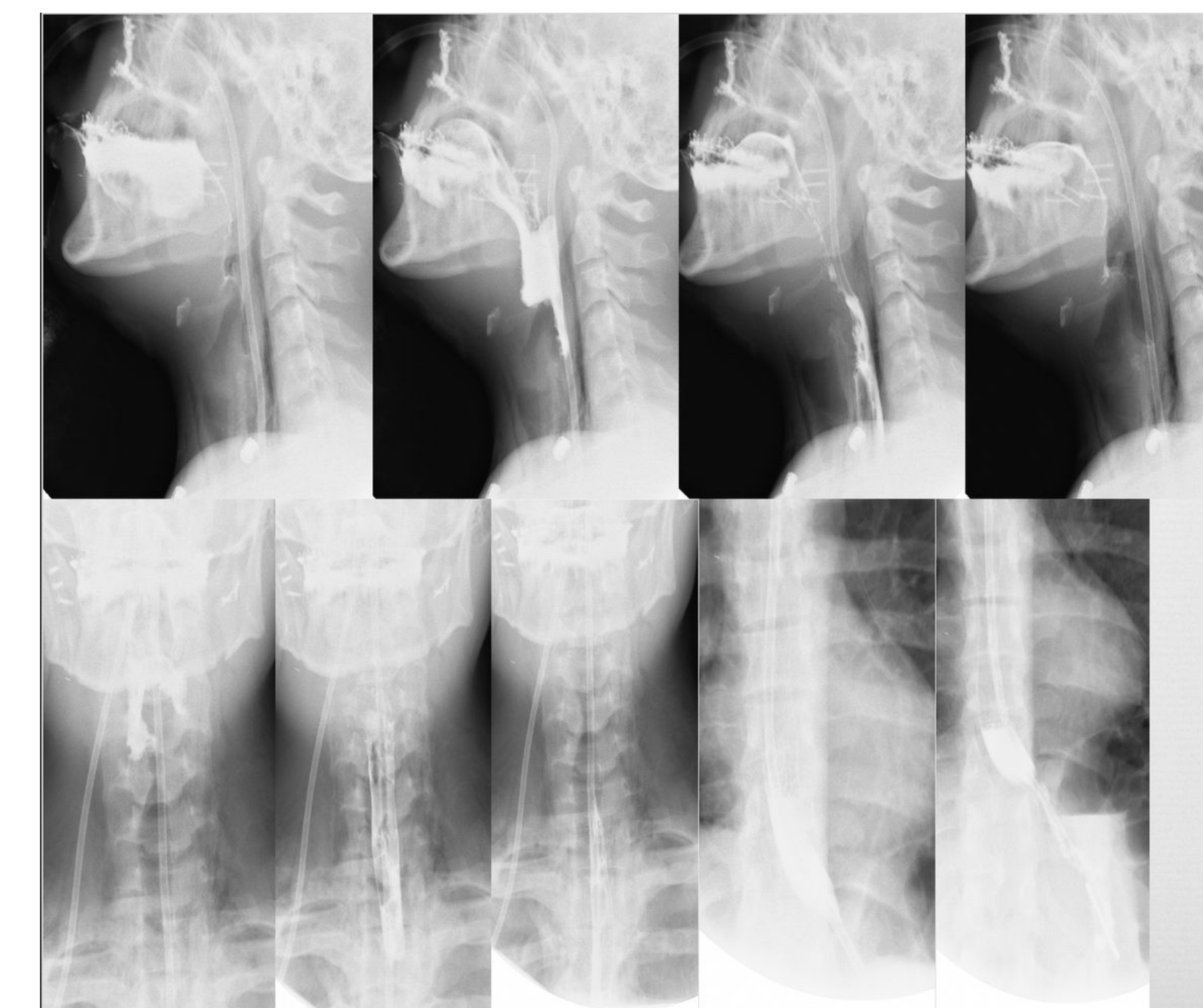
Repeat CXR with worsening evidence of worsening pathology



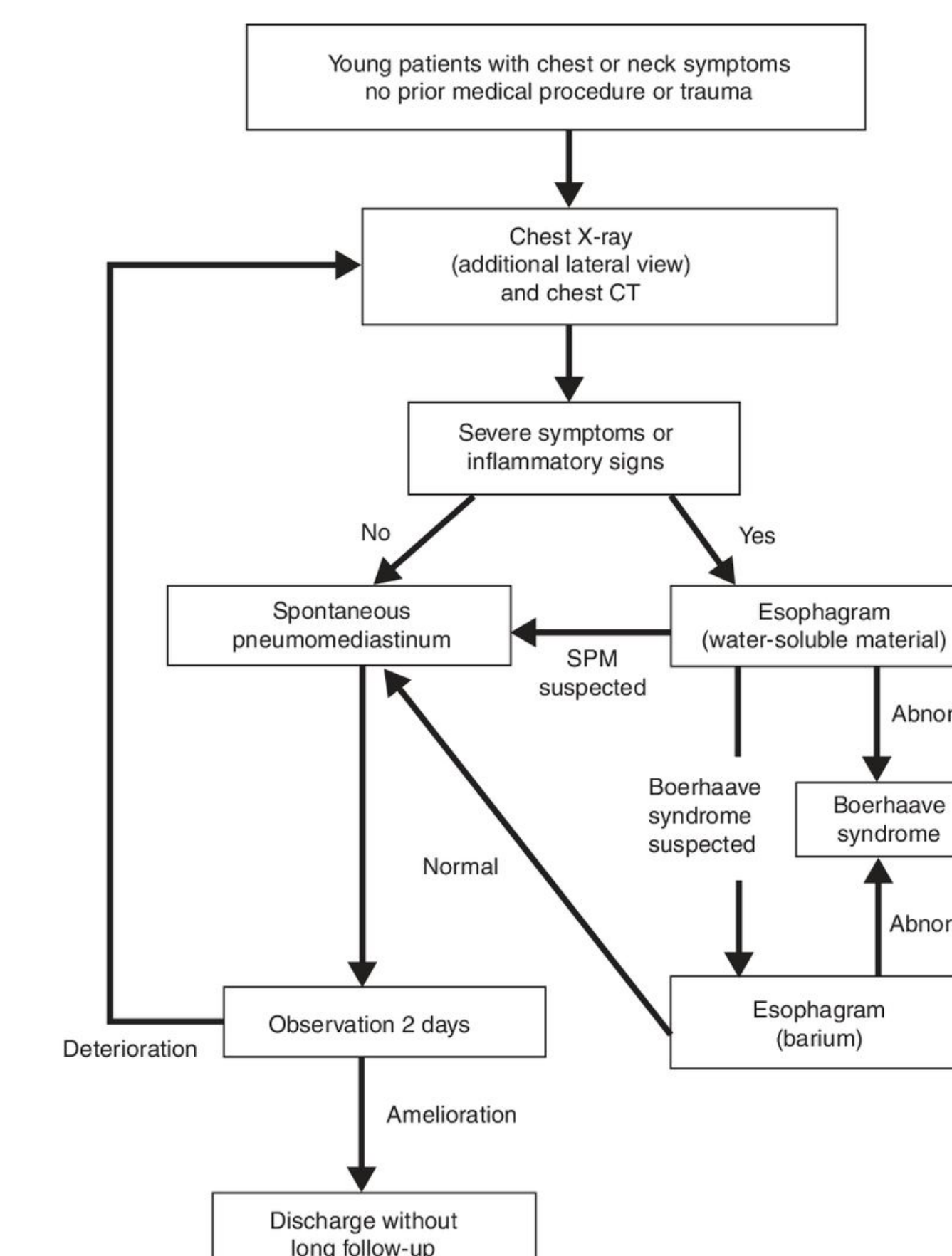
Representative Slices from CT Neck/Chest



Emphysema of Supraclavicular and Deep Neck Spaces



Water Soluble Esophagram - No extravasation of contrast.



Algorithm for diagnosis and management of spontaneous pneumomediastinum

SIGNS & SYMPTOMS

- Hamman's sign
- Subcutaneous crepitation
- Neck vein distension
- Cyanosis
- Hypotension
- Decreased venous return and cardiac output
- Low-grade fever from inflammatory response
- Retrosternal pain
- Dysphonia
- Dyspnea
- Dysphagia
- Hypernasal speech

DIAGNOSIS

- AP and Lateral Chest Radiograph
- Chest and Neck CT
- EKG
- Water Soluble Esophagram
- Observe patient to confirm stability of emphysema.
- Patients rarely need treatment
 - unless associated with pneumothorax or condition progresses

MANAGEMENT

Given the patient's stable clinical course, the decision was made to make this patient NPO, closely monitor for any status or symptom changes, and repeat a chest radiograph in 4 hours. This was completed and showed interval worsening of the patient's pneumomediastinum along with their cervical emphysema. We will discuss differential diagnoses, evaluation methods, and interventions for these findings as we continue.

CONCLUSION

Pneumomediastinum is a rare complication in Oral and Maxillofacial surgery, and most often treated by observation without any specific intervention. Nevertheless, when it does occur, other causes of emphysema discussed in this report must be ruled out in order to move forward with appropriate treatment (figure 3).

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