

A 67-year-old woman with a past medical history of hypertension, hypercholesterolemia, and type 2 diabetes calls 911 for severe dyspnea. Her symptoms started 2 hours ago with chest pain and progressed rapidly to orthopnea and dyspnea. Her blood pressure is 170/100 mm Hg and pulse is 120/min and regular. A third heart sound is present. Bilateral crackles are heard on chest auscultation. Her oxygen saturation is 78% with 40% inspired oxygen. She is intubated in the field by paramedics for progressive respiratory failure and treated with nitrates and diuretics. After initial measures, breath sounds on the left side are markedly decreased. Her repeat blood pressure is 168/96 mm Hg. Which of the following is most likely to restore breath sounds to the left hemithorax?

- ☐ A. Left-sided chest tube
- ☐ B. Left-sided needle thoracostomy
- ☐ C. Pericardiocentesis
- ☐ D. Repositioning the endotracheal tube
- ☐ E. Tidal volume increase



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- ☐ A. Left-sided chest tube [15%]
- ☐ B. Left-sided needle thoracostomy [14%]
- ☐ C. Pericardiocentesis [3%]
- ☒ D. Repositioning the endotracheal tube [67%]
- ☐ E. Tidal volume increase [1%]

[Proceed to Next Item](#)**Explanation:**

User Id: [REDACTED]

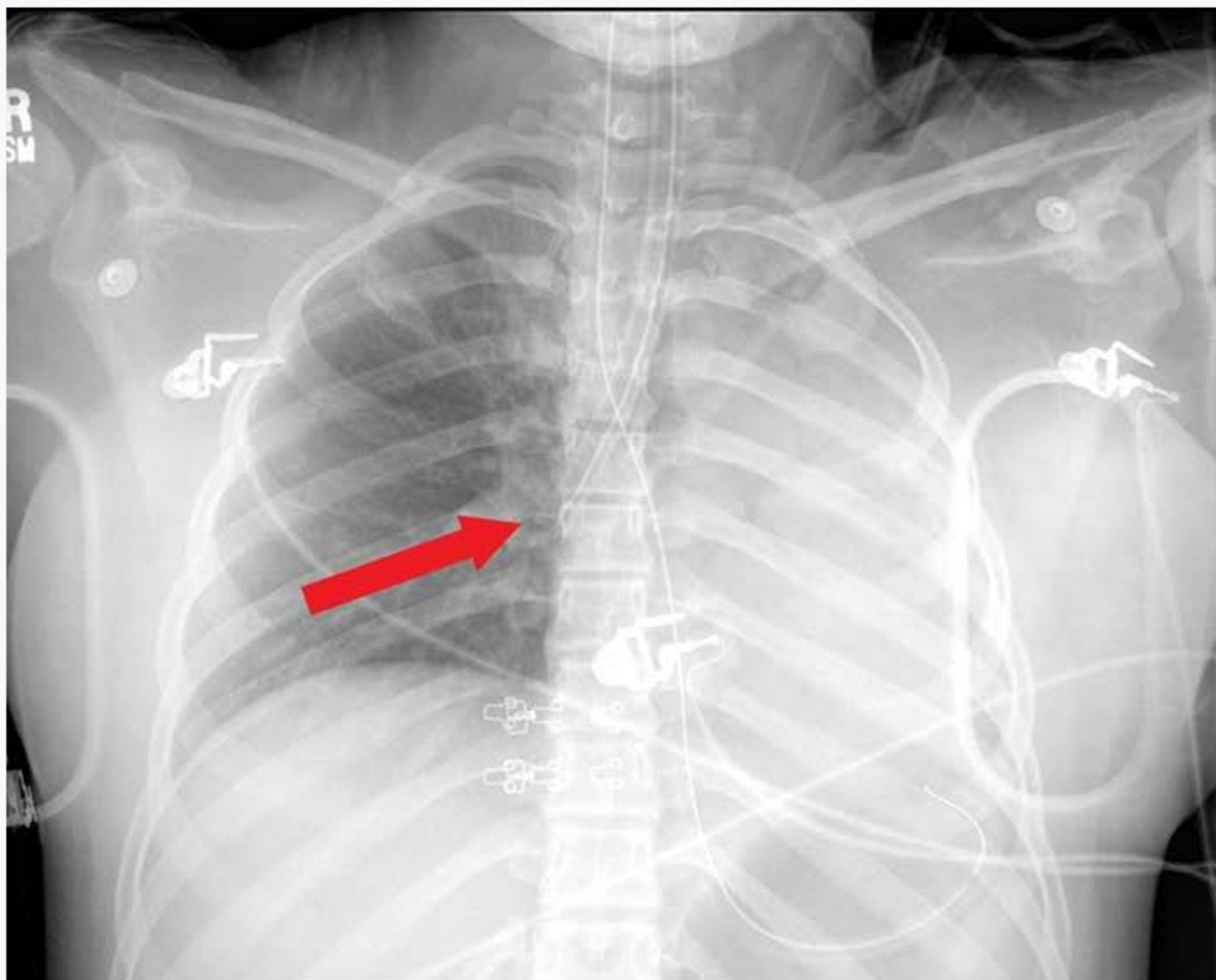




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Explanation:

User Id: [REDACTED]



This patient's presentation is consistent with acute pulmonary edema. She was intubated for adequate oxygenation and further airway security. The ideal location of the distal tip of the endotracheal tube (ETT) is 2-6 cm above the carina. Because the right mainstem bronchus diverges from the trachea at a relatively non-acute angle, an ETT advanced too far will preferentially enter into the right main bronchus. This results in overinflation of the right lung, underventilation of the left lung, and asymmetric chest expansion. Auscultation will show markedly decreased or absent breath sounds. Chest x-ray confirms the diagnosis. Repositioning the ETT by pulling back slightly will move the tip between the carina and vocal cords and solve the problem.

(Choices A and B) A left-sided chest tube may be used if the patient has a



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**(Choices A and B)** A left-sided chest tube may be used if the patient has a pneumothorax, hemothorax, empyema, or malignant effusion requiring drainage on that side. Needle thoracostomy is usually performed as an emergency procedure in patients with a life-threatening tension pneumothorax. Tension pneumothorax can occur after blunt chest trauma. Although it can present similarly to this patient, there is usually significant hemodynamic compromise (eg, hypotension). This patient's markedly decreased breath sounds immediately after intubation makes malpositioned ETT more likely.

**(Choice C)** Pericardiocentesis is performed in patients with cardiac tamponade or large symptomatic pericardial effusions. Unlike in this patient, cardiac tamponade presents with hypotension, distended neck veins, pulsus paradoxus, and muffled heart sounds.

**(Choice E)** This patient's clinical presentation suggests right main bronchus intubation. Increasing the tidal volume will increase the minute ventilation into her right lung and potentially worsen the ventilation perfusion mismatch. As a result, tidal volume increases are contraindicated in this setting.

#### Educational objective:

Right mainstem bronchus intubation is a relatively common complication of endotracheal intubation. It causes asymmetric chest expansion during inspiration and markedly decreased or absent breath sounds on the left side on auscultation. Repositioning the endotracheal tube by pulling back slightly will move the tip between the carina and vocal cords and solve the problem.

#### References:

1. [Clinical test to confirm tracheal intubation: a new method to confirm endotracheal intubation in the absence of capnography.](#)