Chest Tube

PROCEDURE

STEPS

1. Assess: respiratory rate, work of breathing, breath sounds, SpO2
2. Inspect the dressing: note any drainage; assess the insertion site for subcutaneous emphysema or tube migration
3. Keep the unit below the level of the patient's chest
4. Keep tubing free of kinks, loops, and occlusions
5. Monitor water levels in the water seal and suction-control chambers
6. Check the suction: is the drain connected, and how much is applied? (accordion visible = suction applied; deflated/not visible = no suction)

IF IT GOES WRONG

- Tidaling is normal: fluctuation in the water seal with respiratory effort means the drain is in the pleura, transducing pleural pressure
- Intermittent bubbling (end of inspiration) = lung/airway injury; should resolve as the lung re-expands — have the patient cough to test
- Continuous bubbling = large lung/airway injury or a leak in the tubing — check around the site and back through the system for leaks
- Be cautious applying suction to large effusions: rapid drainage can precipitate re-expansion pulmonary edema

BEFORE YOU START

- Tube sizes (internal diameter, 1 Fr = 0.3 mm): 14–22 Fr stable pneumothorax, 24–28 Fr tension pneumothorax, 28–32 Fr hemothorax/empyema
- Smaller pigtail drains placed by Seldinger technique may have equivalent outcomes
- Ideal direction: for air, anterior superiorly; for fluid, posterior inferiorly
- The underwater system combines drainage, a one-way water-seal valve, and a pressure regulator (suction -20; water seal 2 cm; 10–20 cm scale)

KIT YOU NEED

- Chest drain unit with drainage, water seal, and pressure regulator chambers

Take Home Message:

Keep the chest drain below the chest, patent, and monitored: tidaling is normal, continuous bubbling is a leak until proven otherwise.