PULMONARY AIR LEAK SYNDROME
RT 256
AIR LEAKS:

Pathophysiology

- High transpulmonary pressures applied to the lungs
- Alveoli overdistend and rupture
- Air leaks into the interstitium
  - Gas may remain local or spread
  - Rupture the visceral pleura and/or pulmonary hila
- Pulmonary Interstitial Empysema (PIE)
- Pneumothorax
- Pneumomediastinum
- Intravascular Systemic Air Embolism
Pulmonary Consequences of Air Leak

- Restriction from the trapped gas
- Atelectasis
- Inflammatory response at the site of rupture
- Hypoxemia and ........
ETIOLOGY

- High risk with:
  - Mechanical ventilation
  - Preterm infant

- Trauma

- Spontaneous manifestations may occur at any age but not very common in infant and pediatric patients
Pneumothorax

- Presence of air or gas in the pleural cavity
- Can be life threatening
- Occurs as:
  - Primary spontaneous
  - Secondary spontaneous
  - Traumatic
  - Iatrogenic
- Simple or complicated (tension)
- Severity of symptoms depends on extent of lung collapse
PIE

- Collection of gas outside the normal air passages
- Rarely seen in the absence of mechanical ventilation or CPAP
- Compresses adjacent lung tissue and vascular structures
PNEUMOMEDIASTINUM

- Spontaneous occurrence is a rare condition
- Infrequently develops clinically significant complications
  - Tension pneumomediastinum will decrease cardiac output
- Common symptoms: subcutaneous emphysema and neck/chest pain, cough, voice change
- Associated / result of trauma, neonatal lung disease, mechanical ventilation, chest surgery
MANAGEMENT

- Diagnosis through transillumination of the neonate or CXR
- PREVENTION!
- Treatment is supportive:
  - Oxygenation
  - Bronchial hygiene
  - Hyperinflation
- Chest tube placement
- May require mechanical ventilation to support gas exchange (high frequency ventilation)