Airway Disease

- Airway obstruction – increased volume
  - Acute: foreign body, aspiration
  - Chronic: chronic obstructive pulmonary disease (COPD)
  - Partial or ball valve obstruction: Over-inflation, emphysema
- Airway obstruction – decreased volume
  - Complete obstruction: collapse, atelectasis
  - Complications: pneumonia, abscess
Overinflation, Overexpansion

Increased aeration with expanded volume

• Commonly Due to:
  – COPD
  – Asthma
  – Emphysematous bullae or bleb

• X-ray signs
  – Decreased lung density
  – Scanty pulmonary vascularity

Overinflation, Overexpansion

Increased aeration with expanded volume

• Volume expansion manifestations
  – Mediastinum and trachea shift towards normal side (when unilateral)
  – Depressed diaphragm
  – Widening of thoracic cage and intercostal spaces
Foreign Body Aspiration

- Peanut aspiration
- Radiolucent FB left main bronchus
- FB not seen
- Inspiration film normal

6-18-79 (insp)

Foreign Body Aspiration

- Expiration film
- FB causes ball valve
- Air trapping on the left
- Left lung increased lucency
- Shift of heart and mediastinum to right

6-18-79
Emphysema

- PA chest
- Increased lung volume
- Low, flat diaphragm
- Narrow heart
- Widened intercostal spaces

Emphysema

- Lateral view
- Flattened diaphragm
- Increased AP diameter
Pulmonary Bullae

- PA film
- Air spaces with arcuate walls right lower lobe
- Bullae expanded within lung parenchyma
- Bullae – air containing spaces in parenchyma
- Bleb – air space on the surface of lung

Pulmonary Bullae

- Lateral view
- Curvilinear opacity inferior wall of bullae
Atelectasis

• Decrease aeration with volume loss (collapse)
• Commonly due to bronchial obstruction of various causes
• X-ray signs
  – Increased lung density (grey or white)

Atelectasis

• Volume loss manifestations:
  – Shift of hilum and/or fissure towards the collapsed segment / lobe
  – Elevation of ipsilateral hemidiaphragm
  – Mediastinum and trachea shift toward affected side
  – Ipsilateral narrowing of thoracic cage and intercostal space
RUL Collapse Asthmatic

- Mucous plug
- Increased density area right upper lung
- Minor fissure shifted up
- Right diaphragm and hilum elevated

RML Collapse

- Poor definition of right heart border
- Subtle area of increased density
- Representing collapsed right middle lobe
RML Collapse

- Lateral view
- Band-like opacity over the cardiac shadow
- Represents the collapsed middle lobe

LUL Collapse

- PA film
- Left diaphragm slightly elevated
- Slight shift of heart to left due to volume loss
- Upper left hilum obscured by partially collapsed LUL
- Right lung hyperinflated
LUL Partial Collapse

- Lateral film
- Opacity in upper anterior chest area representing the LUL
- Anterior displacement of the left major fissure