GI Tract Physiologic Disturbances

Intestinal Obstruction

- Obstruction to the antegrade flow of intestinal contents
- Mechanical
  - Blockage within the lumen
  - Blockage from outside of the lumen
- Ileus – non mechanical
  - Paralysis of the intestine
    - Trauma
    - Neurologic
    - Inflammatory
Mechanical Obstruction
Small Intestine

- Small intestine dilated > 3 cm with gas (swallowed air) and fluid (excreted by digestive glands). Forms multiple air/fluid levels
- Plain abdominal films (erect and supine view) to confirm the diagnosis

Mechanical Obstruction
Small Intestine

- Observing number, location and mucosal pattern of the dilated bowel may roughly indicate the point of obstruction
- Commonly due to post-surgical adhesion or hernia
Mechanical Small Intestine Obstruction

- Plain film supine
- Distended gas filled loops

Mechanical Small Intestine Obstruction

- Upright film
- Multiple air-fluid levels
- Step laddering (differential air fluid levels)
- Prominent mucosal folds - edema
Mechanical Obstruction
Large Intestine

- Distended colon from cecum to level of obstruction with air and fluid inside
- If you have an “Incompetent” ileocecal valve, gas flow retrograde into small intestine

Mechanical Obstruction
Large Intestine

- Barium enema to confirm the diagnosis
- Commonly due to
  – Cancer
  – Volvulus
    • Child – midgut volvulus
    • Adults – cecal volvulus
    • Elderly – sigmoid volvulus
Distal Colon Obstruction

- Supine
- Dilated colon in ascending and proximal transverse portions

Distal Colon Obstruction

- Upright view
- Multiple air fluid levels
Paralytic (Adynamic) Ileus

- The intestinal lumen is patent
- Functional defect
- Decreased propulsion, generalized or localized
- Large and small intestine dilatation, occasionally stomach dilated

Paralytic (Adynamic) Ileus

- Commonly due to intra-abdominal inflammation, post surgical or post-traumatic reaction, spinal injury
- Can be generalized or localized
Paralytic (adynamic) Ileus

- Supine film
- Dilatation of both large and small intestine
- Long tube coiled in stomach

Pneumoperitoneum

- Free air in the peritoneal cavity
- Commonly due to:
  - Perforation of gastrointestinal tract – peptic ulcer
  - Following surgical procedure – laparotomy
  - Following laparoscopy
Pneumoperitoneum

- X-ray signs:
  - On erect abdominal or chest film,
    - a curvilinear (small amount) or a crescent (moderate amount) of low density beneath the opacity of the dome of the diaphragm and the liver on the right
    - Most reliable sign

- Severely ill patient, one who cannot maintain an erect position
  - Perform a lateral decubitus film.
  - The air floats to the top of the peritoneal cavity forming a crescentic lucent area between the abdominal wall and adjacent organs
Pneumoperitoneum

• X-ray signs:
  – With no additional gas introduced, or other complicating condition the free air will be absorbed in 7-10 days in adults or much faster 1-2 days in children.

Pneumoperitoneum

• PA chest upright
• Curvilinear area between right diaphragm and the liver (arrows)
• Small amount of free air on the left (single arrow)