SURGICAL COMPLICATIONS

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Modified from Elisha Scott

COMPLICATIONS

- What operation did the patient have?
- What are the most common complications of this operation?
- What is most life-threatening?
- What comorbidities does that particular patient have?

CLASSIFICATION

- Wound
- Thermal regulation
- Postoperative fever
- Pulmonary
- Cardiac
- Gastrointestinal
- Metabolic
- Neurological

WOUND COMPLICATIONS

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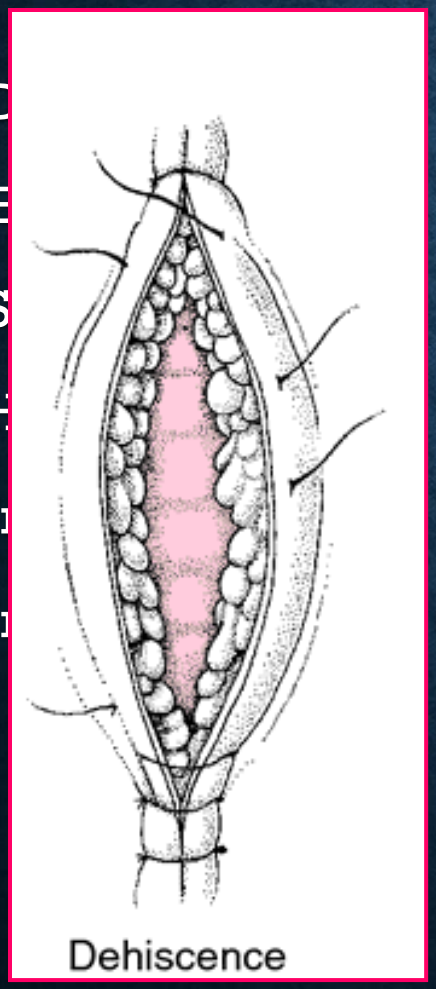
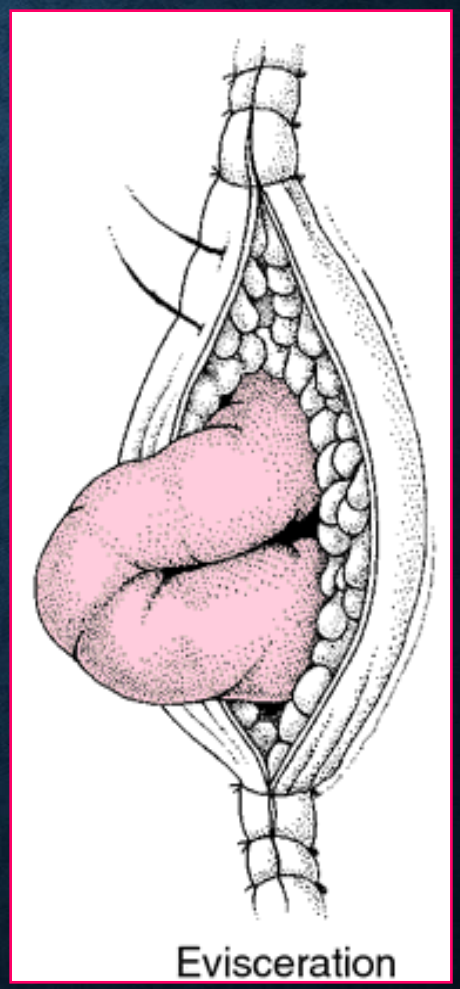


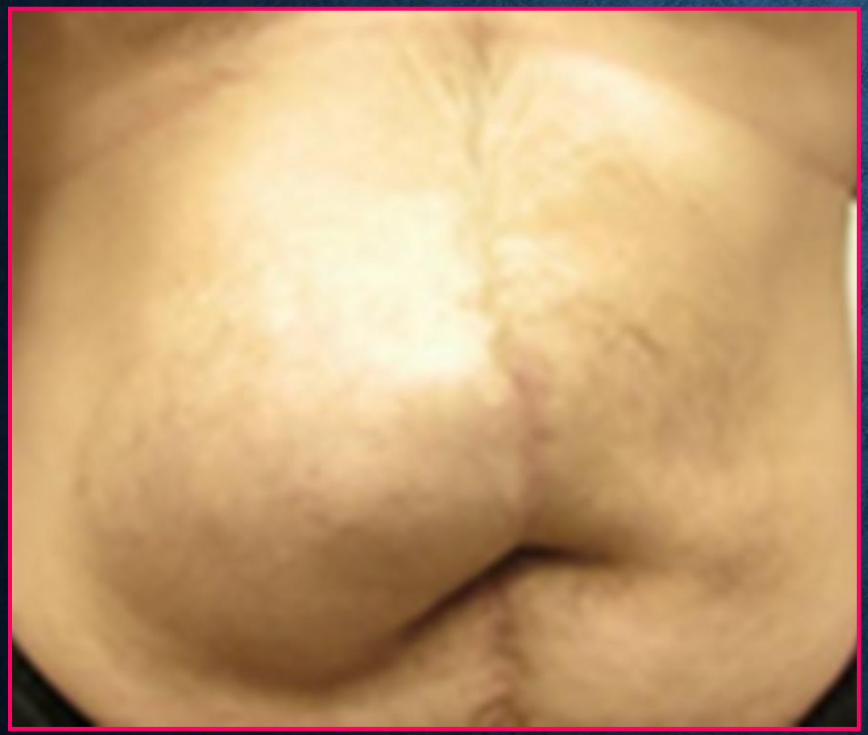
Dehiscence



Evisceration

WHAT DO YOU DO?

SEROMA



- Collection of liquefied fat, serum and lymphatic fluid under the incision
- Benign
- No erythema or tenderness
- **Associated procedures**: mastectomy, axillary and groin dissection
- Treatment: evacuation, pack, suction drains

SCENARIO

- You are called by the nurse about a patient who has just undergone a **thyroidectomy** with report of the patient having **difficulty breathing and desaturations**?

- **What do you do?**
- **What are you concerned about?**

HEMATOMA

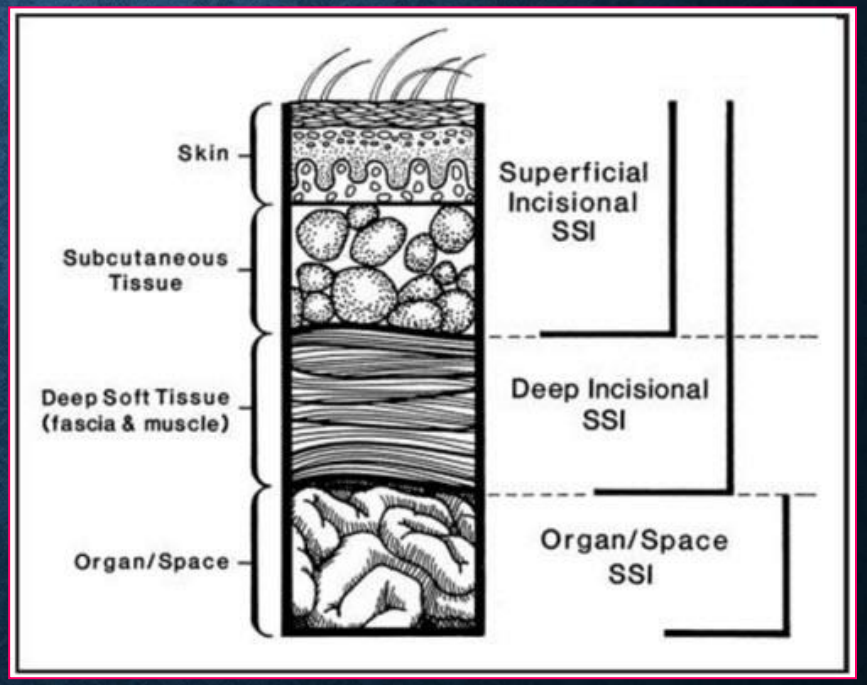
- Abnormal collection of blood
- **Presentation**: discoloration of the wound edges (purple/blue), blood leaking through sutures
- Etiology: imperfect hemostasis

- **What is the biggest concern with retained hematoma in the wound?**

- Potential for infection

WOUND INFECTION

- **Superficial Site Infection (SSI)**
- Superficial
- Deep (involving the fascia/muscle
- Presentation: erythema, tenderness, drainage



- **Organ Space**
- Occurring 4-6 days postop
- Presentation: SIRS symptoms

WOUND INFECTION

1. **Group A β-hemolytic streptococcal gangrene** – following penetrating wounds
2. **Clostridial myonecrosis** – postoperative abdominal wound

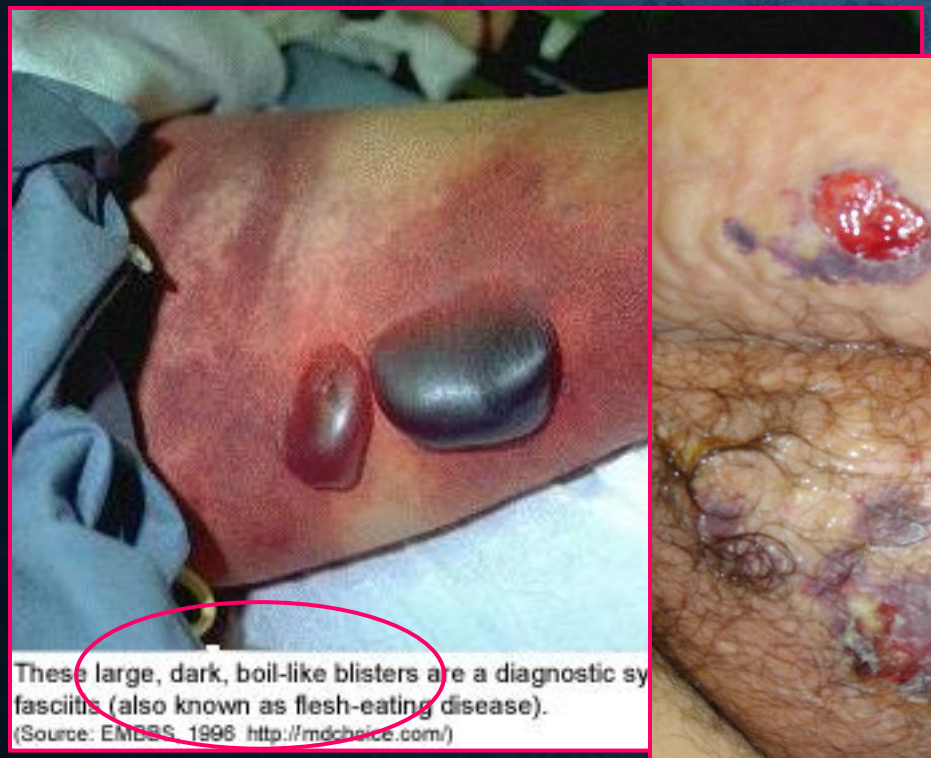
- **Presentation**: sudden onset of pain at the surgical site following abdominal surgery, crepitus → edema, tense skin, bullae = EMERGENCY

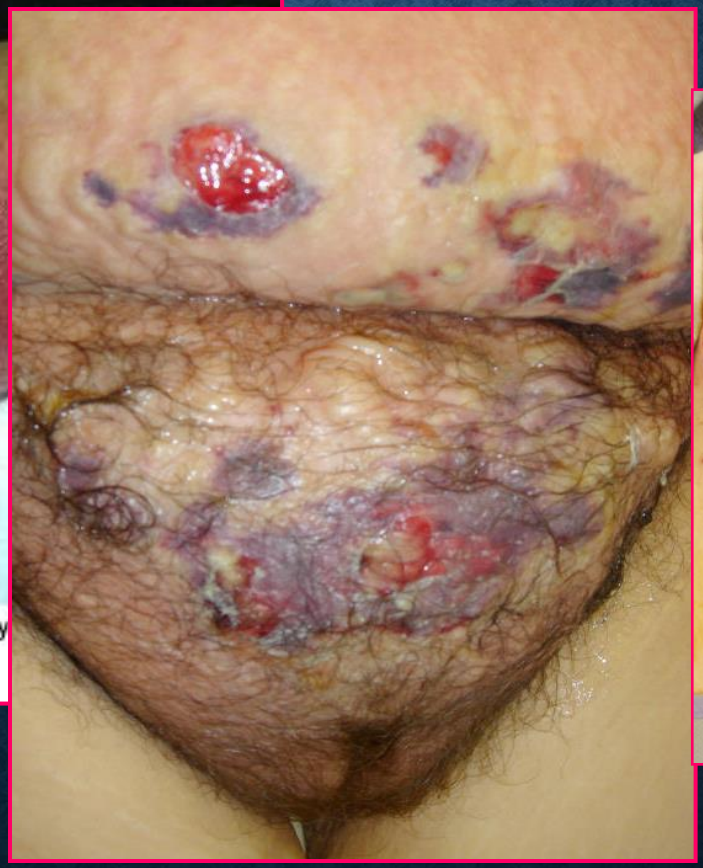
3. **Necrotizing fasciitis** – 4 types (type 1 accounts for 70%-80% of cases and is polymicrobial), type 2 (one third of cases)- Strep. *pyogenes*.

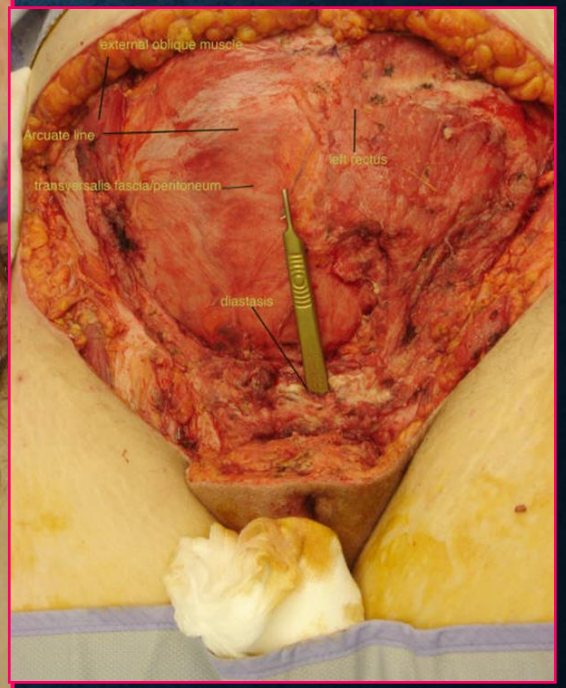
Sarani, Babak; Strong, Michelle; Pascual, Jose; Schwab, C. William (2009). "Necrotizing Fasciitis: Current Concepts and Review of the Literature". *Journal of the American College of Surgeons*. **208**(2): 279–88.

- **Management**: aggressive early debridement, IV antibiotics

NECROTIZING FASCIITIS







COMPLICATIONS OF THERMAL REGULATION

- Hypothermia
- Malignant hyperthermia

COMPLICATIONS OF THERMAL REGULATION

- **Hypothermia**
- Drop in temp by 2° C
- Temp below 35 ° C → coagulopathy, platelet dysfunction
- **Risks**: (1) 3x risk increase of cardiac events, (2) 3x risk increase of SSI, (3) increase risk of blood loss and transfusion requirement

- **Malignant hyperthermia**
- Autosomal dominant, rare
- **Presentation**: fever, tachycardia, rigidity, cyanosis
- **Treatment**: Dantrolene 1 to 2 mg/kg →10 mg/kg total until symptoms subside

POSTOPERATIVE FEVER

- **What is the number #1 culprit of fever Post-operative day (POD) #1?**

- **Atelectasis**
- **Management**: IS (incentive spirometry), early ambulation

- **Work-up > 48h**:
- Blood cultures
- UA/urine culture
- CXR
- Sputum culture
- …then Treat the Fever

- **The 6 W's**
- WIND– pneumonia, atelectasis
- WOUND – infection
- WATER – UTI
- WALKING – DVT, possible PE
- WASTE – Abscess
- **What day do we expect abscesses?**

- WONDER – medications

PULMONARY COMPLICATIONS

- **Atelectasis** – peripheral alveolar collapse due to shallow tidal breaths, MC cause of fever within 48h

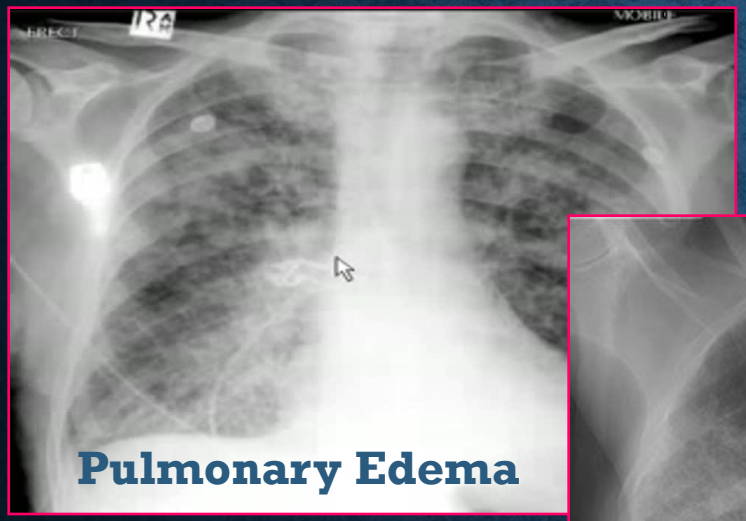
- **Aspiration pneumonitis** – only requires 0.3 ml per kilogram of body
- weight (20 to 25 ml in adults)

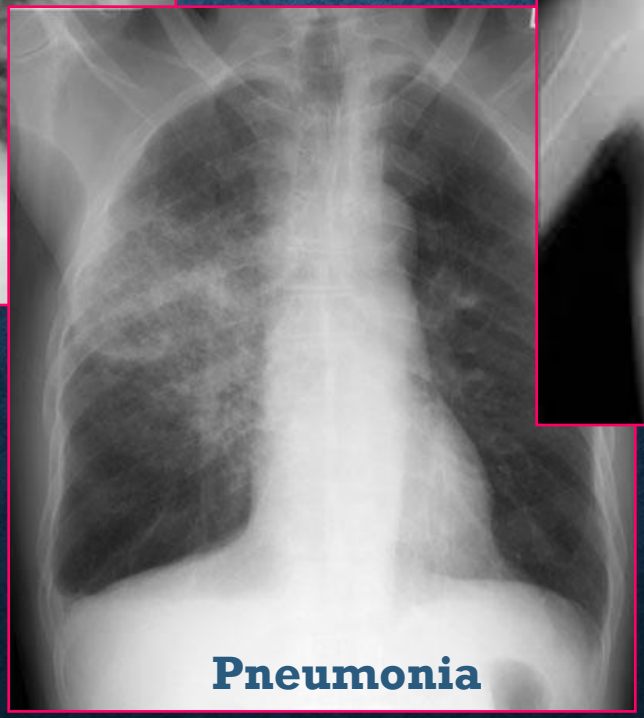
- **Nosocomial pneumonia**

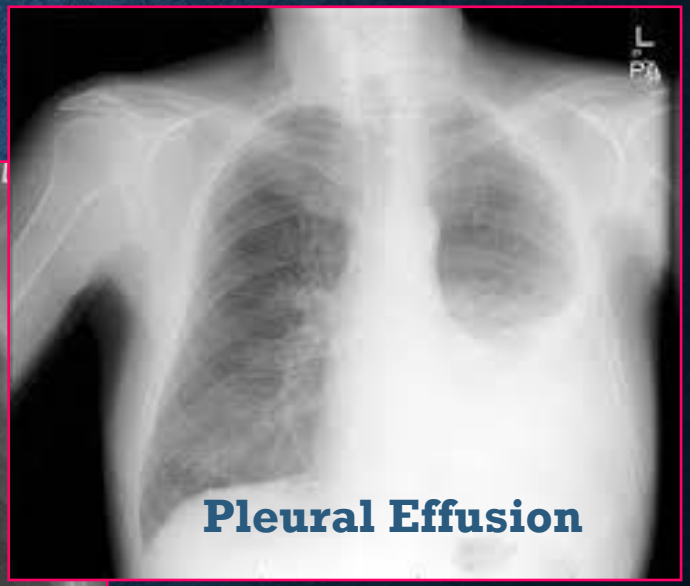
- **Pulmonary edema** – CHF, ARDS

- **Pulmonary embolus** – 1/5 are fatal, greatest management = prevention

CHEST X-RAY







CARDIAC COMPLICATIONS

- **Hypertension**
- **Ischemia/Infarction**
  - Leading cause of death in any surgical patient
  - Key to treatment = prevention
  - First steps: MONA

- **Arrhythmias**
  - 30 seconds of abnormal cardiac activity
  - Key to treatment = correct underlying medical condition, electrolyte replacement (Mg > 2, K > 4)

RENAL COMPLICATIONS

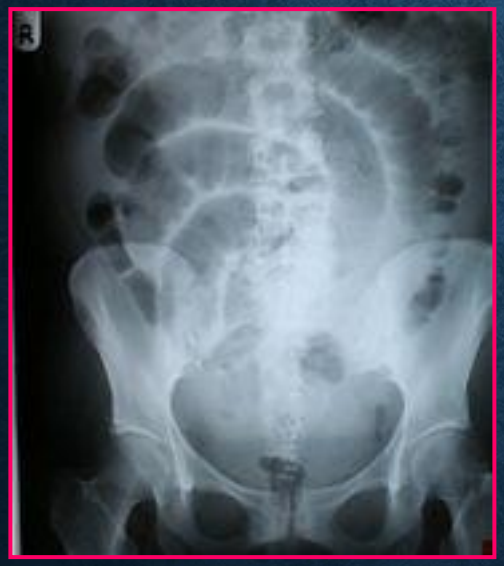
- **Urinary retention**
- Inability to evacuate urine-filled bladder after 6 hours
  - 250-300 mL urine → catheterization
  - >500 mL trigger foley replacement

- **Acute renal failure**
- Oliguria < 0.5 cc/kg/hr
- Pre-renal (FeNa < 1)
- Intrinsic (FeNa > 1)
- Post-renal (FeNa > 1)

GASTROINTESTINAL COMPLICATIONS

- Postoperative ileus
- GI bleeding
- Pseudomembranous colitis
- Ischemic colitis
- Anastomotic leak
- **Enterocutaneous fistula**

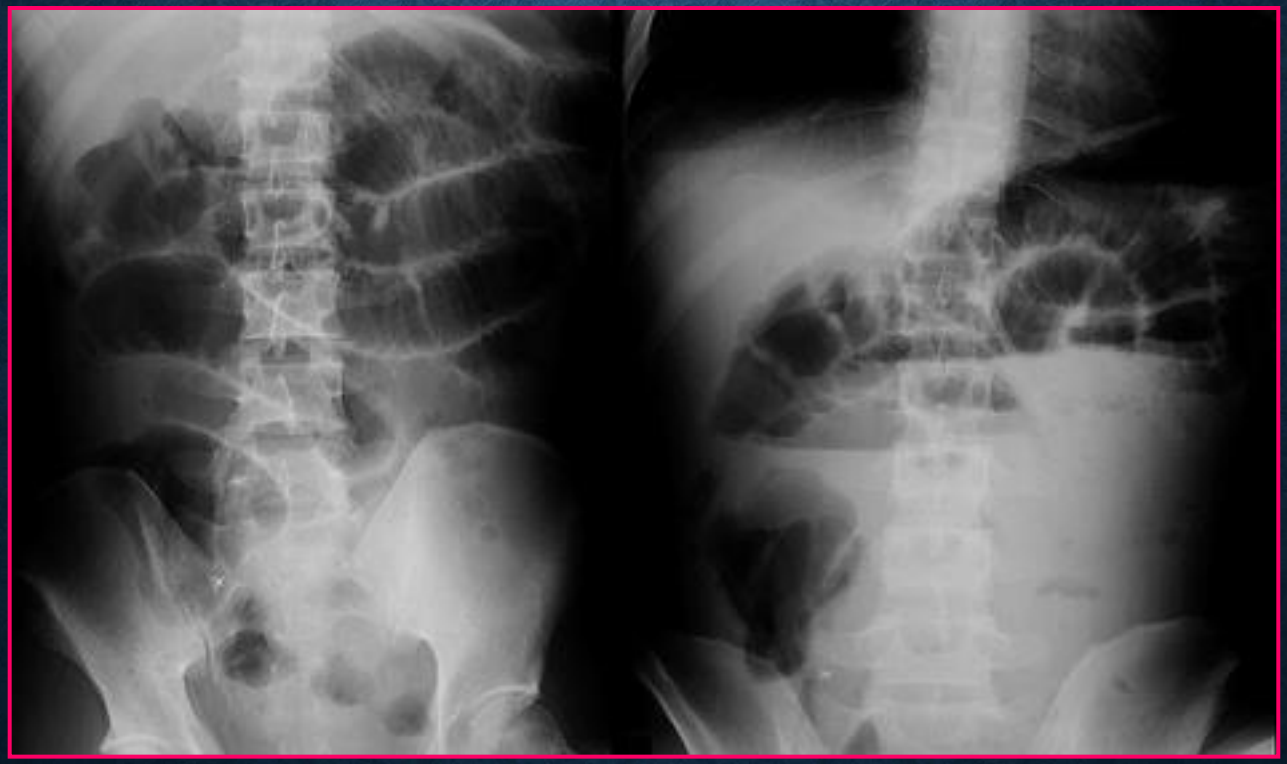
POSTOPERATIVE ILEUS



- Lack of function without evidence of obstruction
- Prolonged by extensive operation/manipulation, SB injury, narcotic use, abscess and pancreatitis
- Must be distinguished from SBO

- **Imaging**: KUB flat/upright
- **Diagnosis**: dilation throughout with air in colon and rectum
- **VS.**
- SBO – air fluid levels, no colonic or rectal air

SMALL BOWEL OBSTRUCTION

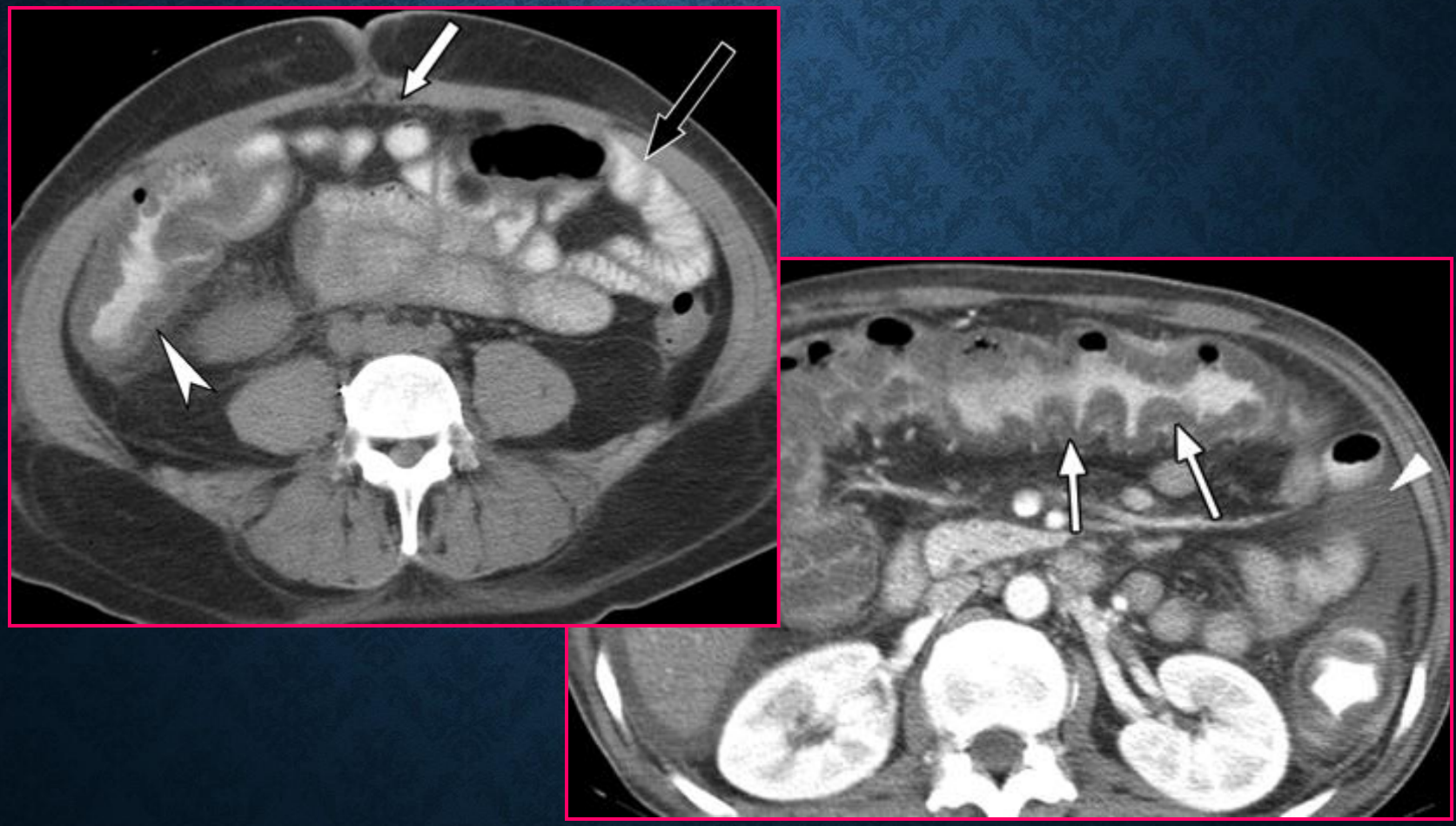


GASTROINTESTINAL COMPLICATIONS

- **GI Bleeding**
- From any source → get detailed history, place NG tube
- Etiology: Cushing's ulcer (less common with PPI use)

- **Pseudomembranous colitis**
- Superinfection with C difficile due to alteration in normal flora
- Toxic colitis is a surgical EMERGENCY (mortality 20-30%)

C DIFF COLITIS



GASTROINTESTINAL COMPLICATIONS

- **Ischemic colitis**
- Bowel affected helps determine cause
- Surgical devascularization, hypercoagulable states, hypovolemia, emboli

- **Anastomotic leak**
- POD# ?

- **Enterocutaneous fistula**
- The most complex and challenging complication

METABOLIC COMPLICATIONS

- **Adrenal insufficiency**
- Uncommon but potentially lethal
- Sudden cardiovascular collapse
- Presentation: hypotension, fever, confusion, abdominal pain
- Work-up: Stim test with administration of hydrocortisone (baseline cortisol at 30 minutes and 60 minutes)

- **Hyper/Hypothyroidism**

- **SIADH**
- Continue ADH secretion despite hyponatremia
- Neurosurgical procedures, trauma stroke, drugs (ACEI, NSAIDs)

NEUROLOGIC COMPLICATIONS

- Beware the drugs that you will be subscribing
- Delirium, dementia, psychosis
- Seizure disorders
- Stroke and TIA

THANK YOU