Acute Abdominal Pain

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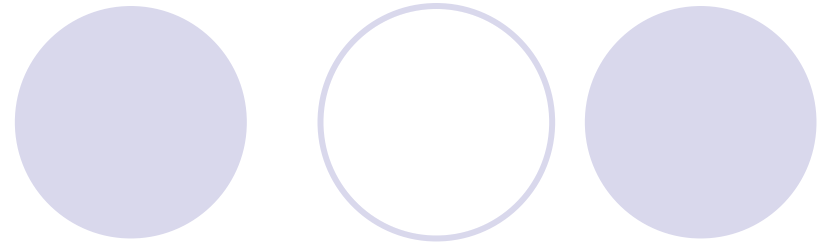
Case #1

- 24 healthy M with 1 day Hx of abd. pain.
- Pain was generalized at first, now worse in right lower abd & radiates to his right groin.
- Vomited X2 . No appetite today.
- ROS otherwise negative.

Abdominal pain



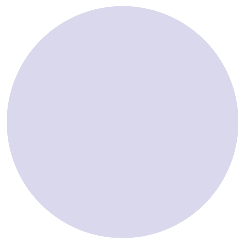
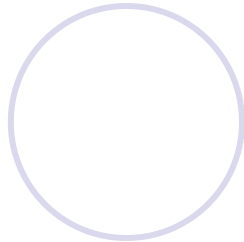
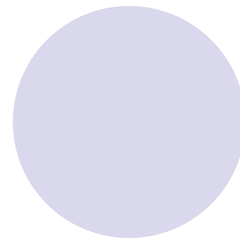
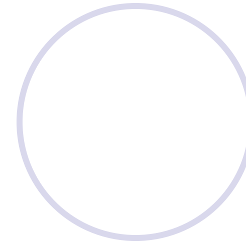
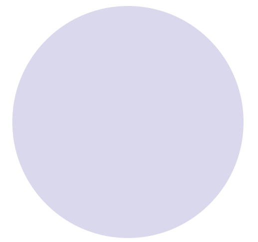
- What else do you want to know?
- What is on your differential diagnosis so far?
  - (healthy male with RLQ abd pain….)
- How do you approach the complaint of abdominal pain in general?

Abdominal pain

- Let's review in this lecture:
- Types of pain
- History and physical examination
- Labs and imaging
- Clinical pearls to help you in the ED

“Tell me more about your pain….”

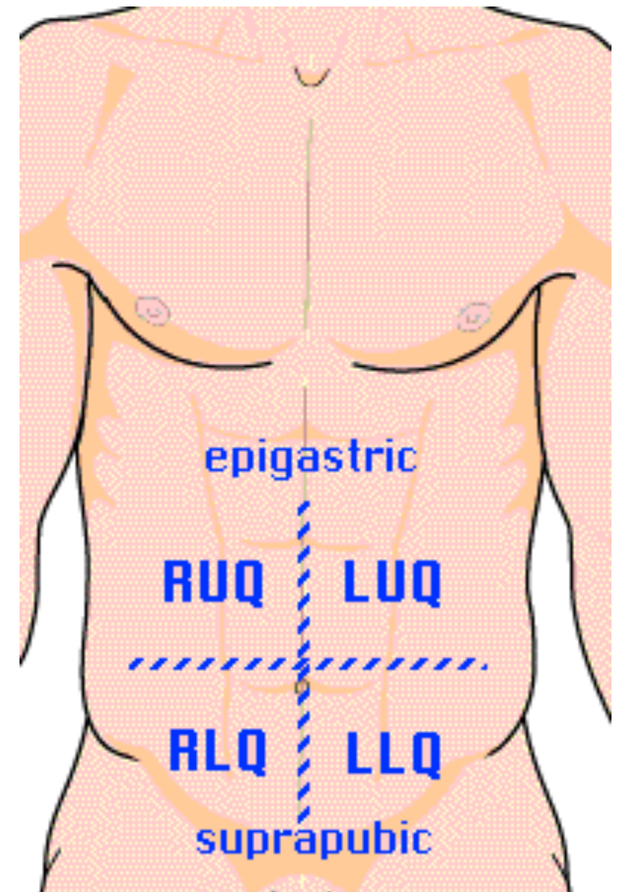
- Location
- Quality
- Severity
- Onset
- Duration
- Modifying factors
- Change over time

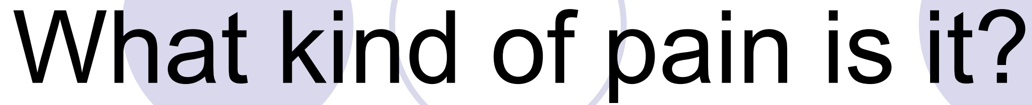






Right		Left
Gallstones Stomach Ulcer Pancreatitis	Stomach Ulcer Heartburn/ Indigestion Pancreatitis, Gallstones Epigastric hernia	Stomach Ulcer Duodenal Ulcer Biliary Colic Pancreatitis
Kidney stones Urine Infection Constipation Lumbar hernia	Pancreatitis Early Appendicitis Stomach Ulcer Inflammatory Bowel Small bowel Umbilical hernia	Kidney Stones Diverticular Disease Constipation Inflammatory bowel disease
Appendicitis Constipation Pelvic Pain (Gynae) Groin Pain (Inguinal Hernia)	Urine infection Appendicitis Diverticular disease Inflammatory bowel Pelvic pain (Gynae)	Diverticular Disease Pelvic pain (Gynae) Groin Pain (Inguinal Hernia)

What kind of pain is it?

- Visceral
- Parietal
- Referred

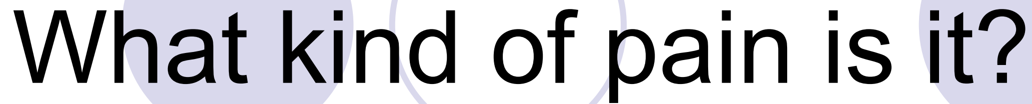




What kind of pain is it?

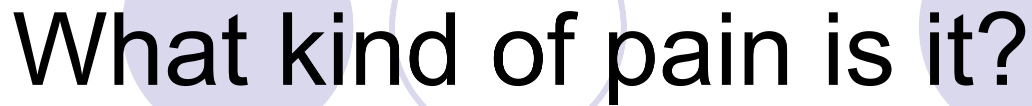
- Visceral
  - Involves hollow or solid organs; midline pain due to bilateral innervation
  - Steady ache or vague discomfort to excruciating or colicky pain
  - Poorly localized

What kind of pain is it?



- Parietal
  - Involves parietal peritoneum
  - Localized pain
  - Causes tenderness and guarding which progress to rigidity and rebound as peritonitis develops

What kind of pain is it?



- Referred
  - **Produces symptoms not signs**
  - Based on developmental embryology
    - Ureteral obstruction → testicular pain
    - Biliary disease → right infrascapular pain
    - MI → epigastric, neck, jaw or upper extremity pain

Ask about relevant ROS?

- GI symptoms
  - Nausea, vomiting, hematemesis, anorexia, diarrhea, constipation, bloody stools, melena stools
- GU symptoms
  - Dysuria, frequency, urgency, hematuria, incontinence
- Gyn symptoms
  - Vaginal discharge, vaginal bleeding
- General
  - Fever, lightheadedness

And don’t forget the history

- GI
  - Past abdominal surgeries, h/o GB disease, ulcers; FamHx IBD
- GU
  - Past surgeries, h/o kidney stones, pyelonephritis, UTI
- Gyn
  - Last menses, sexual activity, contraception, h/o PID or STDs, h/o ovarian cysts, past gynecological surgeries, pregnancies
- Vascular
  - h/o MI, heart disease, a-fib, anticoagulation, CHF, PVD, Fam Hx of AAA
- Other medical history
  - DM, organ transplant, HIV/AIDS, cancer
- Social
  - Tobacco, drugs – Especially cocaine, alcohol
- Medications
  - NSAIDs, H2 blockers, PPIs, immunosuppression, warfarin

Moving on to the Physical Exam ?

- General
  - Pallor, diaphoresis, general appearance, level of distress or discomfort, is the patient lying still or moving around in the bed
- **Vital Signs**

- Cardiac
  - Heart sounds
- Lungs
  - Auscultation

Moving on to the Physical Exam ?

- Abdomen
  - Look for distention, scars, masses
  - Palpate for tenderness, masses, aortic aneurysm, organomegaly, rebound, guarding, rigidity
  - Percuss for tympany
  - Look and palpate for hernias!
  - rectal exam
- Back
  - CVA tenderness
- Pelvic exam

Abdominal Findings

- Guarding
  - Voluntary
    - Contraction of abdominal musculature in anticipation of palpation
    - Diminish by having patient flex knees
  - Involuntary
    - Reflex spasm of abdominal muscles
    - aka: rigidity
    - Suggests peritoneal irritation
- Rebound
  - Present in 1 of 4 patients without peritonitis

Abdominal Findings

- Pain referred to the point of maximum tenderness when palpating an adjacent quadrant is suggestive of peritonitis
  - Rovsing's sign in appendicitis
- Rectal exam
  - Little evidence that tenderness adds any useful information beyond abdominal examination
  - **Gross blood or melena** indicates a GIB
- Genital exam:

Differential Diagnosis ??

- It's Huge!

- Use history and physical exam to narrow it down
- **Rule out life-threatening pathology**
- Half the time you will send the patient home with a diagnosis of nonspecific abdominal pain (NSAP)
  - 90% will be better or asymptomatic at 2-3 weeks

Differential Diagnosis

- Gastritis, ileitis, colitis, esophagitis
- Ulcers: gastric, peptic, esophageal
- Biliary disease: cholelithiasis, cholecystitis
- Hepatitis, pancreatitis, Cholangitis
- Splenic infarct, Splenic rupture
- Pancreatic psuedocyst
- Hollow viscous perforation
- Bowel obstruction, volvulus
- Diverticulitis
- Appendicitis
- Ovarian cyst
- Ovarian torsion
- Hernias: incarcerated, strangulated
- Kidney stones
- Pyelonephritis
- Hydronephrosis
- Inflammatory bowel disease: crohns, UC
- Gastroenteritis, enterocolitis
- pseudomembranous colitis, ischemia colitis
- Tumors: carcinomas, lipomas
- Meckels diverticulum
- Testicular torsion
- Epididymitis, prostatitis, orchitis, cystitis
- Constipation
- Abdominal aortic aneurysm, ruptures aneurysm
- Aortic dissection
- Mesenteric ischemia
- Organomegaly
- Hemilith infestation
- Porphyrias
- ACS
- Pneumonia
- Abdominal wall syndromes: muscle strain, hematomas, trauma,
- Neuropathic causes: radicular pain
- Non-specific abdominal pain
- Group A beta-hemolytic streptococcal pharyngitis
- Rocky Mountain Spotted Fever
- Toxic Shock Syndrome
- Black widow envenomation
- Drugs: cocaine induced-ischemia, erythromycin, tetracyclines, NSAIDs
- Mercury salts
- Acute inorganic lead poisoning
- Electrical injury
- Opioid withdrawal
- Mushroom toxicity
- AGA: DKA, AKA
- Adrenal crisis
- Thyroid storm
- Hypo- and hypercalcemia
- Sickle cell crisis
- Vasculitis
- Irritable bowel syndrome
- Ectopic pregnancy
- PID
- Urinary retention
- Ileus, Ogilvie syndrome

Most Common Causes in the ED ??

Non-specific abd pain	34%
Appendicitis	28%
Biliary tract dz	10%
SBO	4%
Gyne disease	4%
Pancreatitis	3%
Renal colic	3%
Perforated ulcer	3%
Cancer	2%
Diverticular dz	2%
Other	6%

What kind of tests should you order?

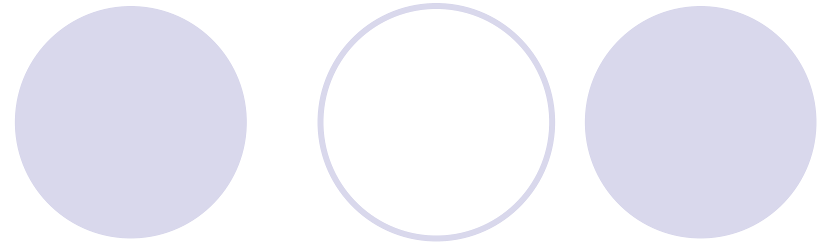
- **Depends what you are looking for!**

- Abdominal series
  - Free air
- Ultrasound
  - Good for diagnosing AAA
  - Good for pelvic pathology
- **CT** abdomen/pelvis
  - free air, renal colic, ruptured AAA, (bowel obstruction)
  - abscess, infection, inflammation, unknown cause

What kind of tests should you order?

- Labs
  - CBC: “What’s the white count?”
  - Chemistries
  - Liver function tests, Lipase
  - Coagulation studies
  - Urinalysis, urine culture
  - GC/Chlamydia swabs
  - Lactate

Disposition ??



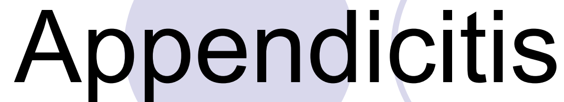
- Depends on the source
  - Home
  - OR
  - Admit
- Non-specific abdominal pain

Back to Case #1….24 yo with RLQ pain

- Physical exam:
- T: 37.8, HR: 95, BP 118/76, R: 18, O2 sat: 100%
- Uncomfortable appearing
- Abdomen: Soft, non-distended, tender to palpation in RLQ
- Genital exam: normal

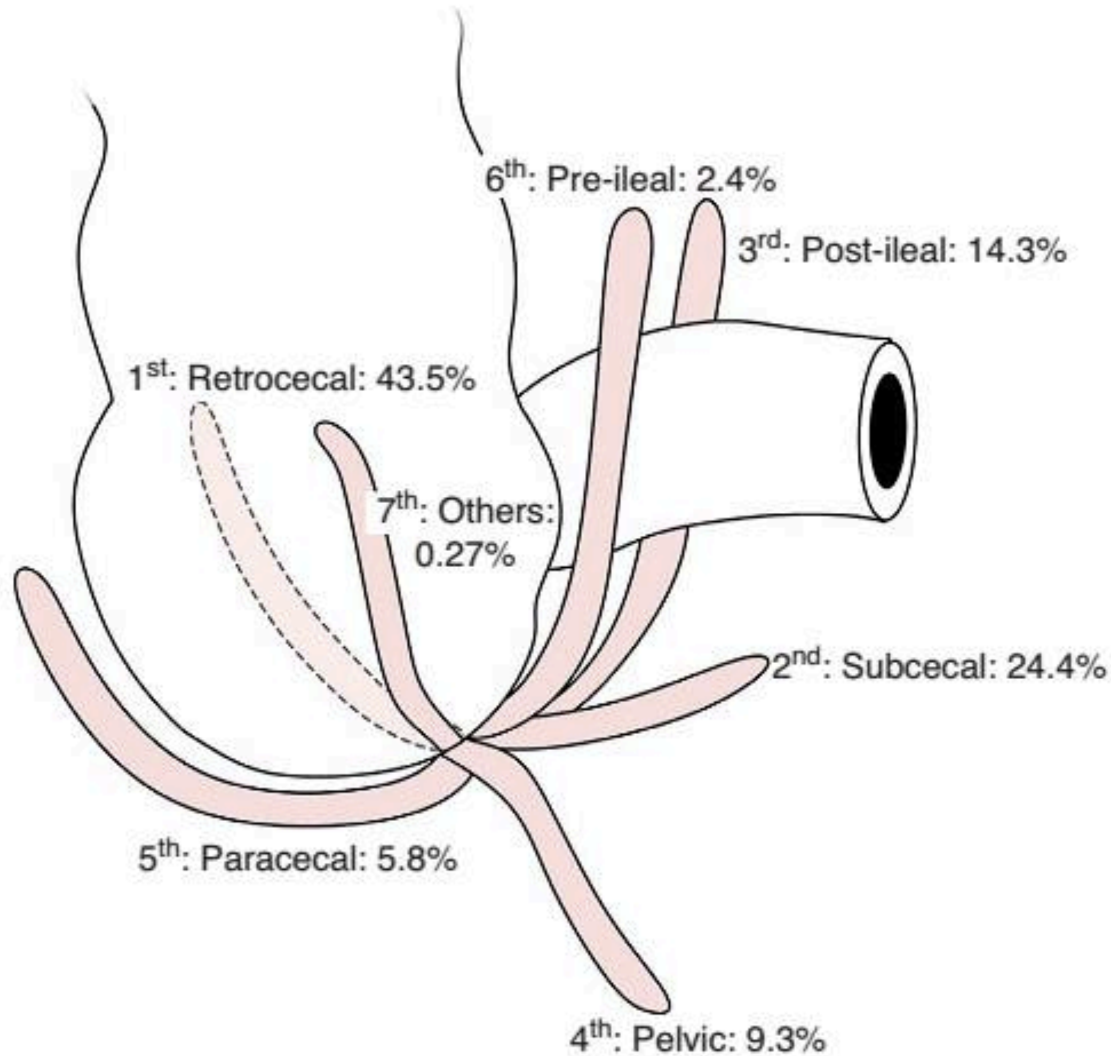
- **What is your differential diagnosis and what do you do next?**

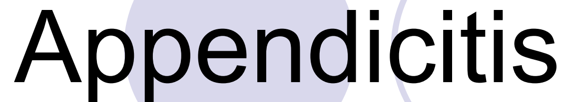
Appendicitis



- Classic presentation
  - Periumbilical pain
  - Anorexia, nausea, vomiting
  - Pain localizes to RLQ
  - Occurs only in ½ to 2/3 of patients
- A pelvic appendix can cause suprapubic pain, dysuria
- Males may have pain in the testicles

Appendicitis

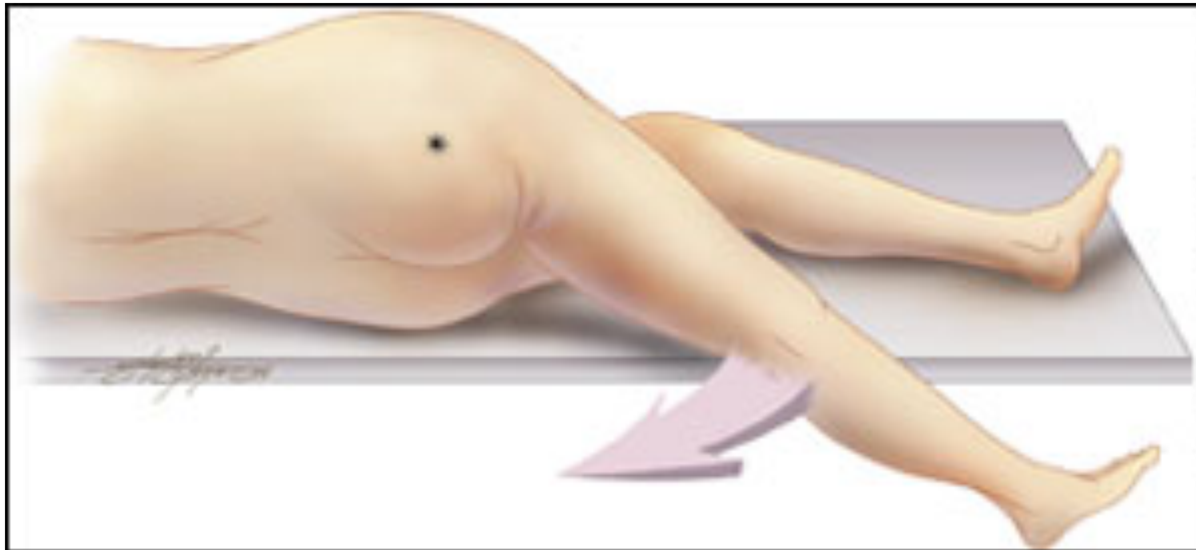




Appendicitis

- Findings ?
  - Depends on duration of symptoms
  - Rebound, voluntary guarding, rigidity, tenderness on rectal exam
  - Psoas sign
  - Obturator sign
  - Fever (a late finding)
- CBC is not sensitive or specific
- CT scan
- U/S

Appendicitis: Psoas Sign



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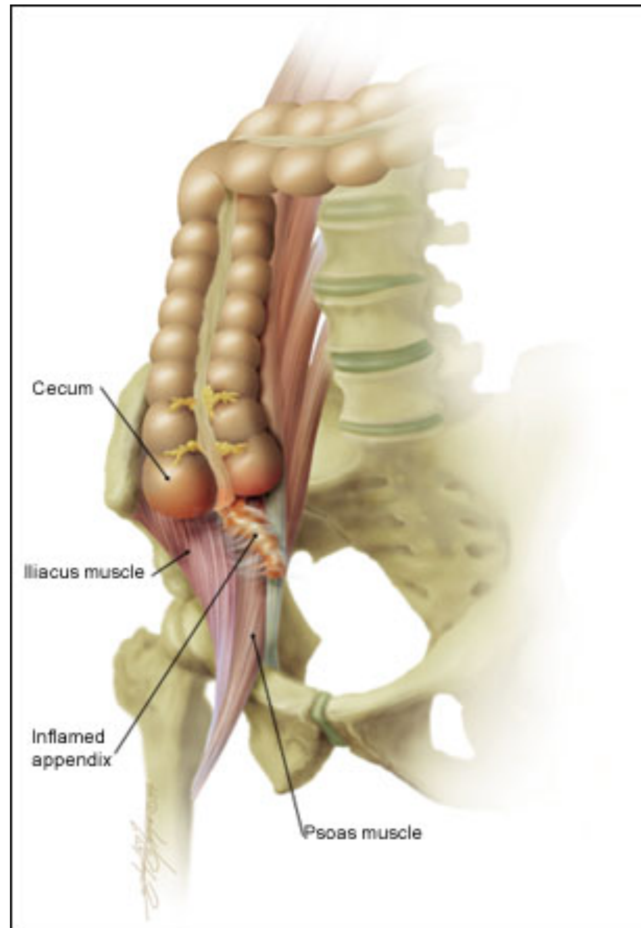
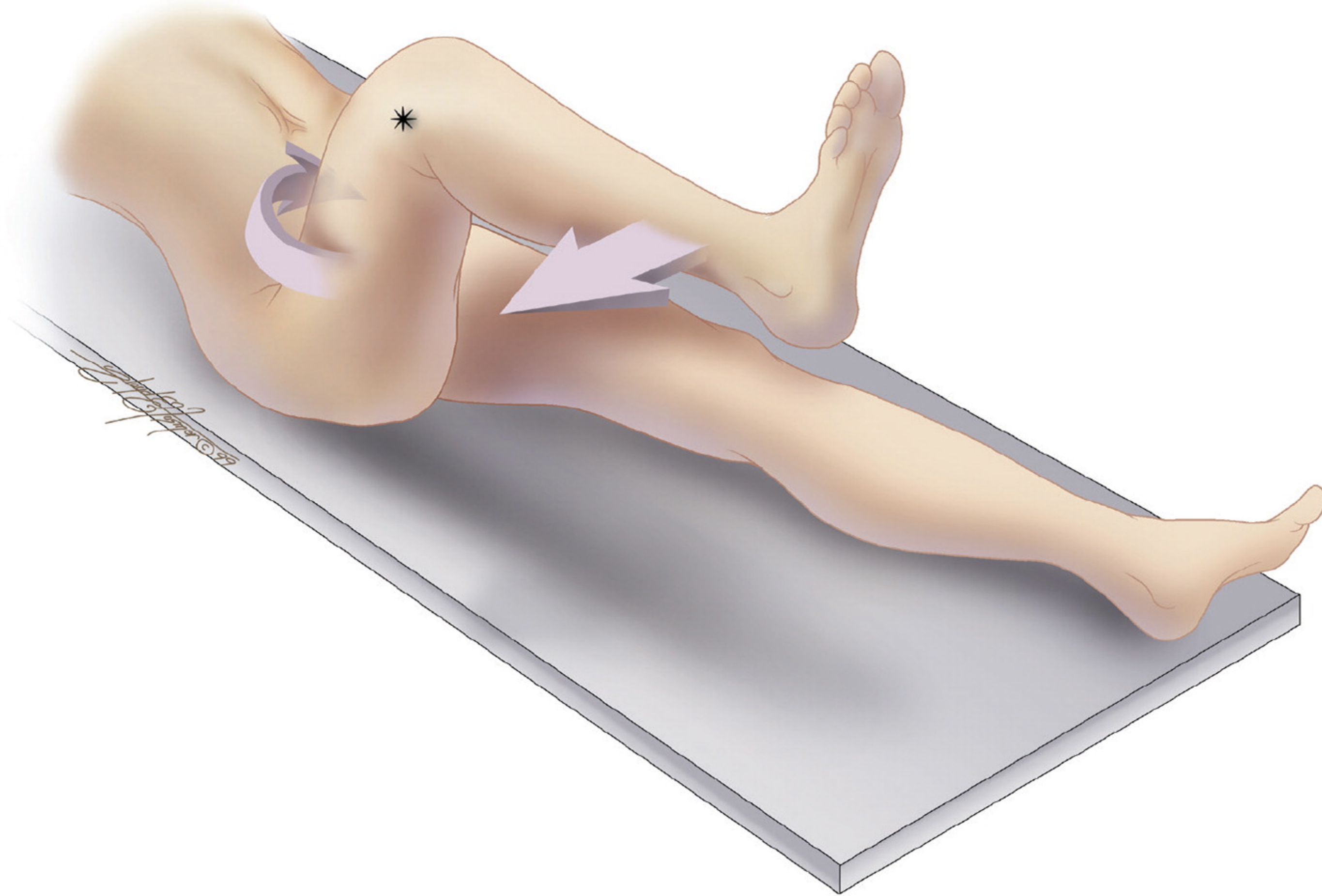
Appendicitis: Psoas Sign

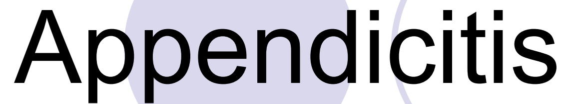


Appendicitis: Obturator Sign



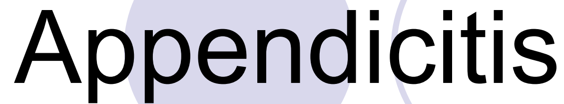
Passively flex right hip and knee then internally rotate the hip

Appendicitis



- Diagnosis?
  - WBC
  - Clinical appendicitis – call your surgeon
  - Maybe appendicitis - CT scan
  - Not likely appendicitis – observe for 6-12 hours or re-examination in 12 hours

Appendicitis



- Treatment ?
  - NPO
  - IVFs
  - Preoperative antibiotics – decrease the incidence of postoperative wound infections
  - Analgesia

Case #3

- 46 yo M with hx of alcohol abuse with 3 days of severe upper abd pain, vomiting, subjective fevers.
- Social hx: homeless, heavy alcohol use,

Case #3 Exam

- V/S: T: 37.4, HR: 115, BP: 98/65, R: 22, O2sat: 95%
- General: ill-appearing, appears in pain
- CV:, Tachycardia
- Abdomen: mildly distended, Tender epigastric, guarding
- Rectal: heme neg stool

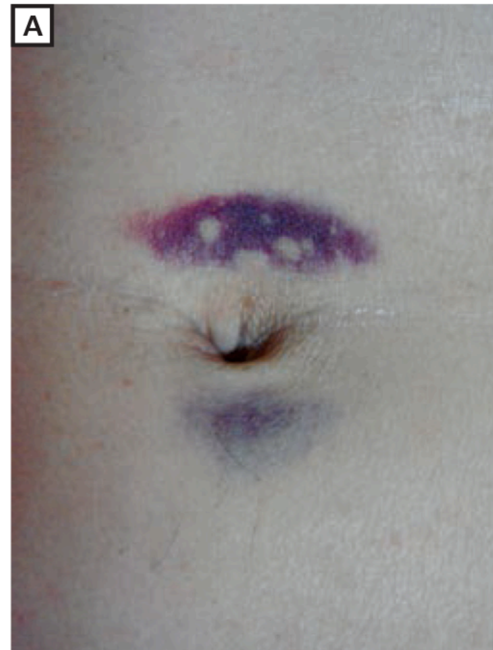
- **What is your differential diagnosis & what next?**

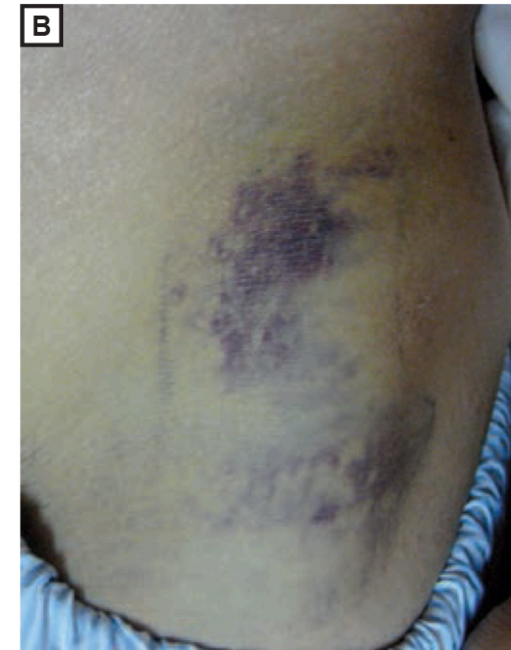
Pancreatitis

- Risk Factors ?
  - Alcohol
  - Gallstones
  - Drugs
    - Amiodarone, antivirals, diuretics, NSAIDs, antibiotics, more…..
  - Severe hyperlipidemia
  - Idiopathic
- Clinical Features?
  - Epigastric pain
  - Constant, boring pain
  - Radiates to back
  - Severe
  - N/V
  - bloating

Pancreatitis

- Physical Findings ?
  - Low-grade fevers
  - Tachycardia, hypotension
  - Respiratory symptoms
    - Atelectasis
    - Pleural effusion
  - Peritonitis – a late finding
  - Ileus
  - Cullen sign*
  - Grey Turner sign*





*Signs of hemorrhagic pancreatitis

Pancreatitis

- Diagnosis
  - **Lipase**
    - Elevated more than 2 times normal
    - Sensitivity and specificity >90%
  - Amylase
    - Nonspecific
    - Don’t bother…
  - **RUQ US** if etiology unknown
  - CT scan

Pancreatitis

- Treatment ?
  - NPO
  - IV fluid resuscitation
  - NGT
  - No antibiotics unless severe disease
  - Mild disease, tolerating oral fluids

Case #4

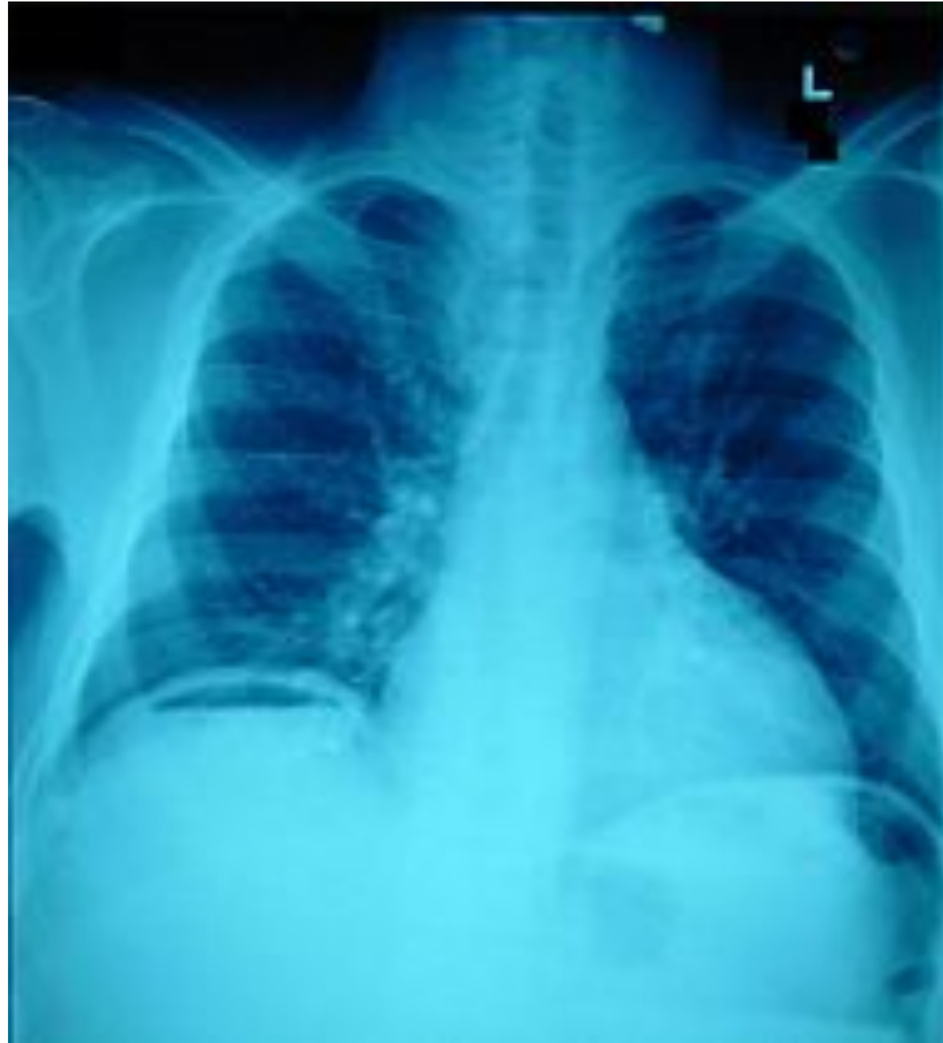
- 72 yo M with hx of CAD on aspirin and Plavix with several days of dull upper abd pain and now sudden sever pain “in entire abdomen” today.

- Med Hx: CAD, HTN, CHF
- Surg Hx: appendectomy
- Meds: Aspirin, Plavix, Metoprolol, Lasix
- Social hx: smokes 1ppd

Case #4 Exam

- T: 37.1 , HR: 70, BP: 90/45, R: 22, O2sat: 96%
- General: elderly, ill-appearing
- Abd: mildly distended and diffusely tender to palpation, +rebound and guarding
- Rectal: blood-streaked heme + brown stool
- **What is your differential diagnosis & what next?**

Here is your patient's x-ray….



Perforated Peptic Ulcer ?

- Abrupt onset of severe epigastric pain followed by peritonitis
- IV, oxygen, monitor
- CBC, Crossmatch, Lipase
- Acute abdominal x-ray series
- Broad-spectrum antibiotics
- NPO
- Surgical consultation

Case #5

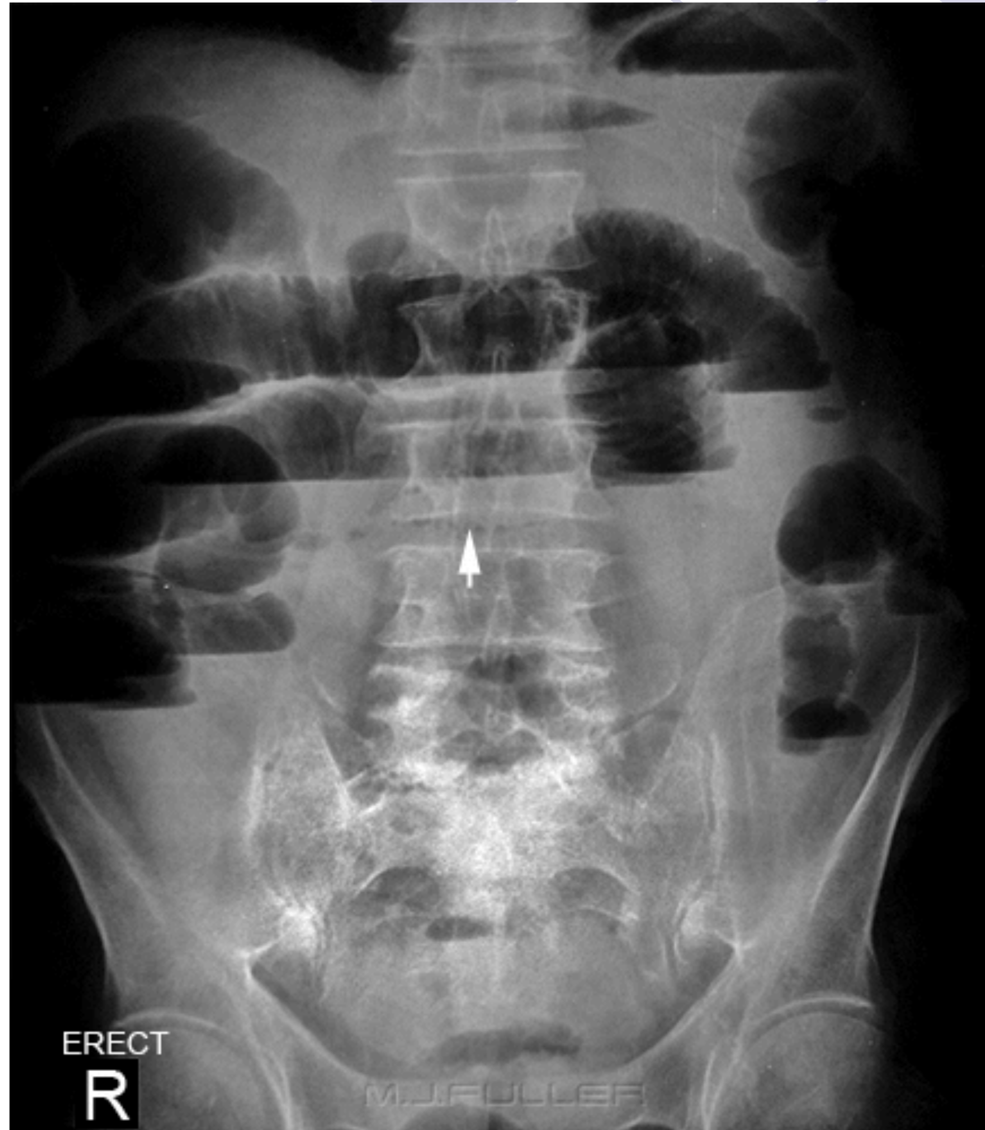
- 35 yo healthy F to ED c/o nausea and vomiting since yesterday along with generalized abdominal pain, +anorexia. Last stool 2 days ago.
- Surg Hx: s/p hysterectomy (for fibroids)

Case #5 Exam

- T: 37, HR: 100, BP: 130/85, R: 22, O2 sat: 97%
- General: mildly obese female, vomiting
- Abd: moderately distended, mild Tenderness diffusely,

- **What is your differential and what next?**

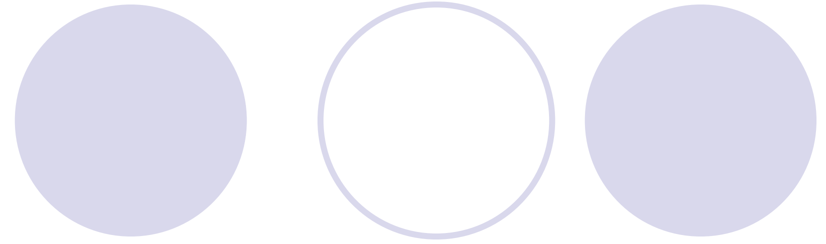
Upright abd x-ray



Bowel Obstruction

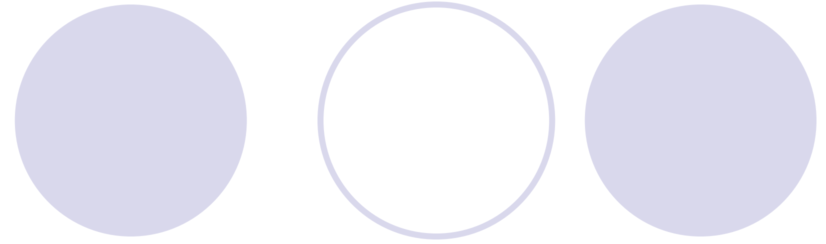
- Mechanical or nonmechanical causes ?
  - #1 - Adhesions from previous surgery
  - #2 - Groin hernia incarceration
- Clinical Features ?
  - Crampy, intermittent pain
  - Periumbilical or diffuse
  - Inability to have BM or flatus
  - N/V
  - Abdominal bloating
  - Sensation of fullness, anorexia

Bowel Obstruction



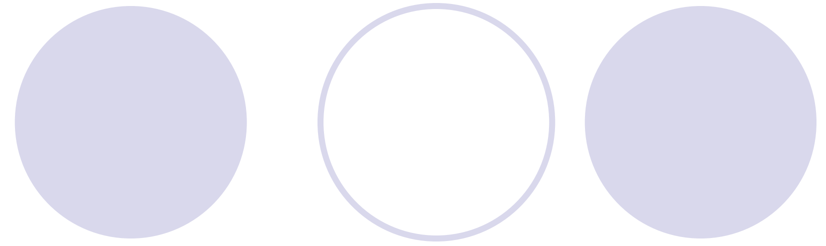
- Physical Findings ?
  - Distention
  - Tympany
  - Absent, high pitched or tinkling bowel sound or “rushes”
  - Abdominal tenderness: diffuse, localized, or minimal

Bowel Obstruction



- Diagnosis?
  - CBC and electrolytes
  - Abdominal x-ray series
  - CT scan

Bowel Obstruction

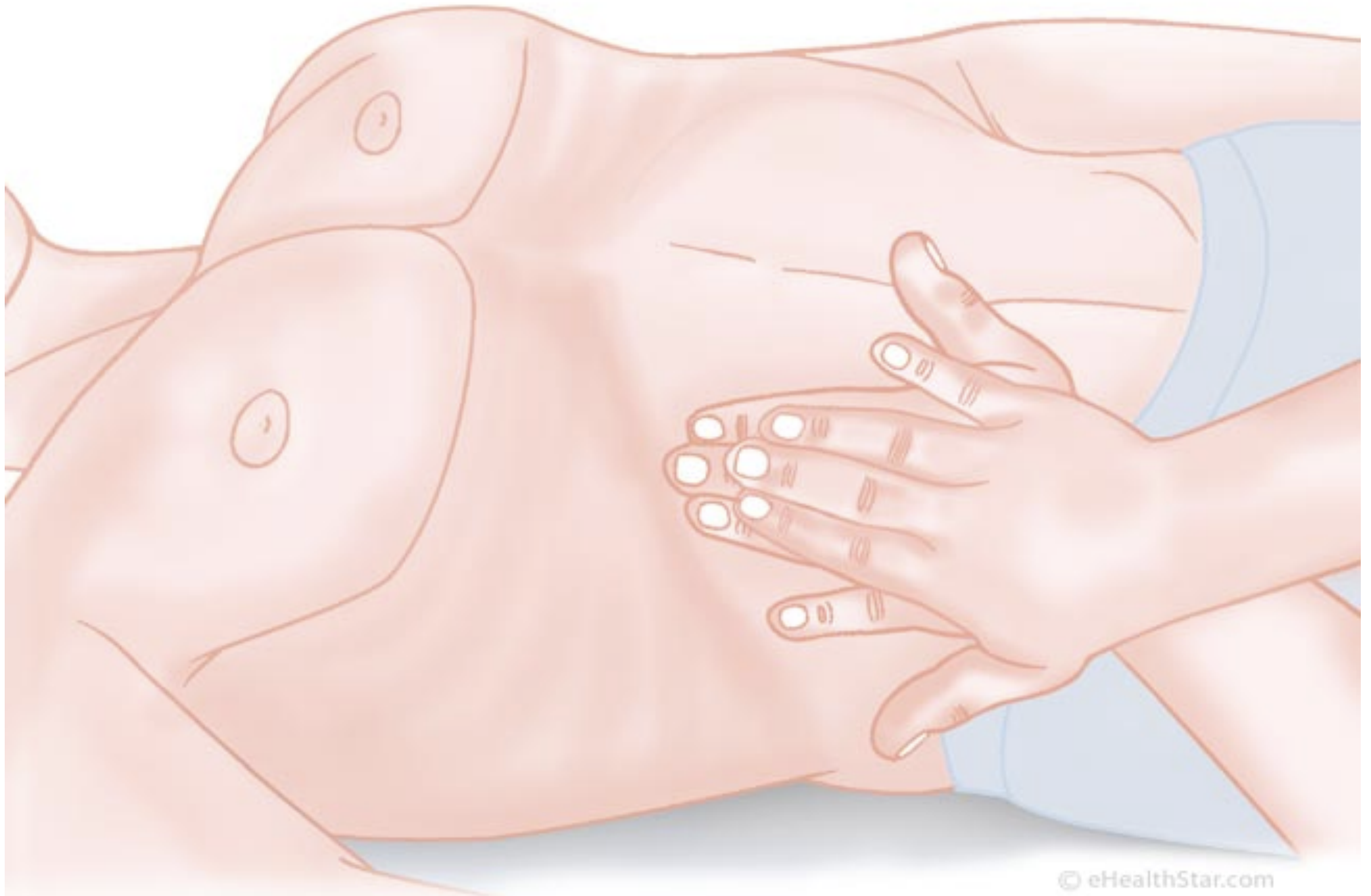


- Treatment
-
  - Fluid resuscitation
  - NPO, NGT
  - Analgesia
  - Surgical consult
  - Hospital observation for ileus
  - OR for complete obstruction
    - Peri-operative antibiotics

Case #6

- 48 obese F with one day hx of upper abd pain after eating, does not radiate, is intermittent cramping pain, +N/V,
- No diarrhea, subjective fevers. Med hx: denies
- O/E: Tenderness RUQ ?

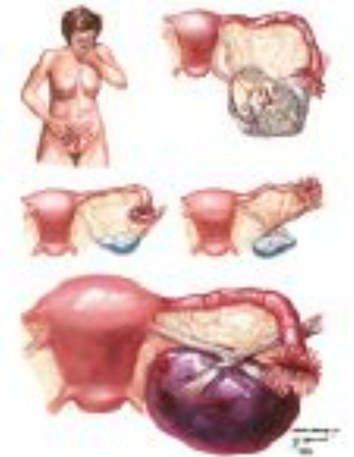
Murphy's Sign



Just a few more to go….hang in there

- Ectopic/Ovarian torsion
- Testicular torsion

Don't' forget the Gyne-side



- Acute onset severe pelvic pain
- Gyne Hx
- Ectopic is a killer
- Ovarian torsion

Every walking woman gets a pregnancy test (Age 10-50)

- ultrasound
- Labs
  - , **Beta-hCG**
- GYN consult

Mesenteric Ischemia

- Consider this diagnosis in all elderly patients with risk factors
- Severe pain, often refractory to analgesics
- Relatively normal abdominal exam
- Embolic source: sudden onset (more gradual if thrombosis)
- Nausea, vomiting and anorexia are common
- Metabolic acidosis and extreme leukocytosis when advanced disease is present (bowel necrosis)
- Diagnosis requires Contrast CT

Abdominal Aortic Aneurysm

- Risk increases with age,
- Abdominal pain in 70-80% (not back pain!)
- Back pain in 50%
- Sudden onset of pain
- Atypical locations of pain: Flank, hips, inguinal area
- Syncope can occur
- Hypotension may be present
- Palpation of a tender, enlarged pulsatile mass
- Ultrasound / CT abd/pelvis

Abdominal Pain Clinical Pearls

- Significant abdominal tenderness should never be attributed to gastroenteritis
- Always perform genital examinations when lower abdominal pain is present – in males *and* females, in *young* and *old*
- In older patients with renal colic symptoms, exclude AAA
- Severe pain should be taken as an indicator of serious disease
- Pain awakening the patient from sleep should always be considered signficant
- Sudden, severe pain suggests serious disease
- A lack of free air on a chest xray does NOT rule out perforation