Causes of abdominal pain by location

Right upper quadrant
Hepatitis
Cholecystitis
Cholangitis
Biliary colic
Pancreatitis
Budd-Chiari syndrome
Pneumonia/empyema pleurisy
Subdiaphragmatic abscess
Right lower quadrant
Appendicitis
Salpingitis
Ectopic pregnancy
Inguinal hernia
Nephrolithiasis
Inflammatory bowel disease
Mesenteric adenitis (yersina)
Epigastric
Peptic ulcer disease
Gastroesophageal reflux disease
Gastritis
Pancreatitis
Myocardial infarction
Pericarditis
Ruptured aortic aneurysm
Periumbilical
Early appendicitis
Gastroenteritis
Bowel obstruction
Ruptured aortic aneurysm

Left upper quadrant
Splenic abscess
Splenic infarct
Gastritis
Gastric ulcer
Pancreatitis
Left lower quadrant
Diverticulitis
Salpingitis
Ectopic pregnancy
Inguinal hernia
Nephrolithiasis
Irritable bowel syndrome
Inflammatory bowel disease
Diffuse
Gastroenteritis
Mesenteric ischemia
Metabolic (eg, DKA, porphyria)
Malaria
Familial Mediterranean fever
Bowel obstruction
Peritonitis
Irritable bowel syndrome

Abdominal pain and neoplasms

Abdominal pain – Clinical pearls

- Age
  - Pediatric causes
    - intussusception, gastroenteritis, appendicitis, and hemolytic uremic syndrome
  - Older patients
    - bowel obstruction, mesenteric ischemia, diverticulitis, and aneurysmal disease.
- Medications
  - Narcotics
    - obstipation and obstruction
  - NSAIDs
    - ulceration and perforation
  - Blood thinners
    - rectus sheath and retroperitoneal hematomas

Pain characteristics

- Onset: sudden/insidious
- Duration: short-lived/persistent
- Initial site of pain
- Radiation/referral
- Character of pain: Dull/stabbing/colicky
- Relation with food
- Aggravating and relieving factors: vomiting/medicines

Surgical abdomen

- *Acute abdomen*
  - **Severe hemodynamic instability is the essential indication.**
  - Ruptured abdominal aortic or visceral aneurysm
  - Ruptured ectopic pregnancy,
  - Spontaneous hepatic or splenic rupture,
  - Ruptured neoplasm
  - Blunt or penetrating abdominal trauma
- *Urgent laparotomy*
  - Perforated hollow viscus
  - Appendicitis
  - Strangulated hernia
  - Mesenteric ischemia
  - Ectopic pregnancy

Table 2 Extraperitoneal Causes of Acute Abdominal Pain

- Genitourinary
  - Pyelonephritis
  - Perinephric abscess
  - Renal infarct
  - Nephrolithiasis
  - Ureteral obstruction (lithiasis, tumor)
  - Acute cystitis
  - Prostatitis
  - Seminal vesiculitis
  - Epididymitis
  - Orchitis
  - Testicular torsion
  - Dysmenorrhea
  - Threatened abortion
- Pulmonary
  - Pneumonia
  - Empyema
  - Pulmonary embolus
  - Pulmonary infarction
  - Pneumothorax
- Cardiac
  - Myocardial ischemia
  - Myocardial infarction
  - Acute rheumatic fever
  - Acute pericarditis
- Metabolic
  - Acute intermittent porphyria
  - Familial Mediterranean fever
  - Hypolipoproteinemia
  - Hemochromatosis
  - Hereditary angioneurotic edema
- Endocrine
  - Diabetic ketoacidosis
  - Hyperparathyroidism (hypercalcemia)
  - Acute adrenal insufficiency (addisonian crisis)
  - Hyperthyroidism or hypothyroidism
- Musculoskeletal
  - Rectus sheath hematoma
  - Arthritis/diskitis of thoracolumbar spine
- Psychogenic
  - Hypochondriasis
  - Somatization disorders
- Factitious
  - Munchausen syndrome
  - Malingering
- Neurogenic
  - Herpes zoster
  - Tabes dorsalis
  - Nerve root compression
  - Spinal cord tumors
  - Osteomyelitis of the spine
  - Abdominal epilepsy
  - Abdominal migraine
  - Multiple sclerosis
- Inflammatory
  - Schönlein-Henoch purpura
  - Systemic lupus erythematosus
  - Polyarteritis nodosa
  - Dermatomyositis
  - Scleroderma
- Infectious
  - Bacterial
  - Parasitic (malaria)
  - Viral (measles, mumps, infectious mononucleosis)
  - Rickettsial (Rocky Mountain spotted fever)
- Hematologic
  - Sickle cell crisis
  - Acute leukemia
  - Acute hemolytic states
  - Coagulopathies
  - Pernicious anemia
  - Other dyscrasias
- Vascular
  - Vasculitis
  - Periarteritis
- Toxins
  - Bacterial toxins (tetanus, *Staphylococcus*)
  - Insect venom (black widow spider)
  - Animal venom
  - Heavy metals (lead, arsenic, mercury)
  - Poisonous mushrooms
  - Drugs
  - Withdrawal from narcotics
- Retroperitoneal
  - Retroperitoneal hemorrhage (spontaneous adrenal hemorrhage)
  - Psoas abscess

- A 55-year-old man is brought to the emergency department with severe mid-epigastric pain. He is diaphoretic and hypotensive. What tests will you obtain?

- A 25-year-old woman presents with a 5-hour history of right lower quadrant pain. What is your approach to evaluating this patient?

- A 42-year-old woman presents with abdominal pain that has been increasing in severity over the past 3 days. The patient has had previous abdominal surgery, as well as previous episodes of this pain. What information is important to obtain during history taking?

- A 55-year-old man with a history of hypertension status post–liver transplant presents to the emergency department with 3-4 days of persistent abdominal pain. On examination, he is afebrile and does not exhibit peritoneal signs. What is your approach to evaluating this patient?

- A 70-year-old male presents to the emergency department with an hour of acute-onset epigastric pain. He has a history of diabetes, hypertension, and alcoholism. He has had persistent nausea and is tachycardic. Initial laboratory studies included a complete blood count, basic metabolic panel, and lipase, all of which were normal. Of the following tests, which should be ordered next to explain the etiology of his abdominal pain?

- No additional tests are needed
- Abdominal CT
- Right upper quadrant ultrasound and liver function pan
- Esophagogastroduodenoscopy
- EKG and chest x-ray

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- Which of the following abdominal illnesses has been associated with cardiopulmonary bypass?

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- B. Ogilvie's syndrome
- C. Acute pancreatitis
- D. All of the above
- E. None of the above

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- A 65-year-old, 100 kg patient is in the intensive care unit, intubated, after being admitted with sepsis. He has received a large volume of intravenous fluid resuscitation, and his intra-abdominal pressure, as measured via the bladder, is 18 mmHg. He has a normal urine output and peak airway pressures. Of the following options, which describes the most appropriate management of this patient?

  - A. Continue current management, as 18 mmHg is a normal intra-abdominal pressure.
  - B. Reduce fluid administration and minimize enteral feedings.
  - C. Paralyze the patient
  - D. insert an intraabdominal drain
  - E. Decompressive laparotomy, as 18 mmHg is indicative of grade III hypertension

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- A 25-year-old, 220-kg female presents to the emergency department with three hours of acute-onset right lower quadrant pain. She describes the pain as mild and reports persistent nausea and vomiting. There is moderate diffuse tenderness on exam. Laboratory studies reveal a white blood cell count of 17,000 and a negative urine hCG. She is too heavy to fit onto the CT table. Which of the following diagnostic tests would be most helpful in finding the cause of this patient's abdominal pain?

- A. Abdominal plain film
- B. Abdominal ultrasound
- C. Diagnostic peritoneal lavage
- D. Diagnostic laparoscopy
- E. None of the above

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- B. perforated peptic ulcer.
- C. ureteral stone.
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- A 65-year-old woman has left lower abdominal pain, fever, and elevated WBC count. Forty-eight hours later, symptoms persist and she has not improved in spite of antibiotic therapy. The diagnostic evaluation most helpful in this setting is:
- A. CT
- B. plain and upright abdominal x-rays.
- C. flexible sigmoidoscopy
- D. barium enema.
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- A. Pregnancy
- B. Children.
- C. Immunosuppression
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- An 11-year-old girl presents with 4 days of right lower quadrant pain, fevers, and a white blood count (WBC) of 18,000/µL. Ultrasound is consistent with appendicitis with an adjacent 4-cm fluid collection. She is started on ceftriaxone and Flagyl, and a percutaneous drain is placed with drainage of purulent material. Three days after placement of the percutaneous drain, she remains febrile and her WBC is 19,000/µL. Repeat ultrasound shows near resolution of the abscess but continued phlegmon. What is the appropriate course in management?

    - Switch antibiotics to vancomycin and Zosyn.
    - Place another percutaneous drain.
    - Perform appendectomy
    - Continue ceftriaxone, Flagyl, and the percutaneous drain, and continue to monitor
    - Switch her antibiotics to Augmentin

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A 35-year-old male patient with Crohn's disease presents to the emergency department with complaints of diarrhea, left lower quadrant pain, fevers and jaundice. He has a low-grade temperature but is hemodynamically stable and without peritoneal signs. A CT scan is obtained that demonstrates inflammation of the terminal ileum with associated ileosigmoid fistula and a 7 cm right-sided liver abscess.The treatment for this patient would include:

- Broad-spectrum antibiotics with operative resection of the terminal ileum and sigmoid colon and operative drainage of liver abscesses
- Broad-spectrum antibiotics and IV steroids
- Broad-spectrum antibiotics and percutaneous drainage of liver abscess
- Mebendazole
- Broad-spectrum antibiotics and ileocectomy during this admission

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A 34-year-old woman with Crohn's disease presents with fevers, abdominal pain, and emesis. Her white blood count is 17,000/µL, and a computed tomography scan shows multiple large interloop abscesses. What is the best course of management?

- Perform surgical drainage of the abscesses
- Place a percutaneous drain through the overlying bowel to drain the abscesses
- Start broad-spectrum intravenous antibiotics and continue to monitor.
- Decrease current steroid dose and continue to monitor.
- Start oral antibiotics and continue to monitor.

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A 79-year-old man with multiple medical comorbidities, including congestive heart failure, aortic stenosis, and chronic obstructive pulmonary disease develops appendicitis with an appendiceal abscess. He has been treated nonoperatively with antibiotics and a percutaneous drain for the past 5 days. His elevated white blood count, pain, and fevers have resolved. What do you recommend for future management?

- Keeping a percutaneous drain in place for 6 to 8 weeks
- Interval appendectomy in 6 to 8 weeks
- Colonoscopy or barium enema 1 month after discharge
- Remove drain and no further treatment
- Continued antibiotics for 6 to 8 weeks

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Tumors Of The Peritoneum

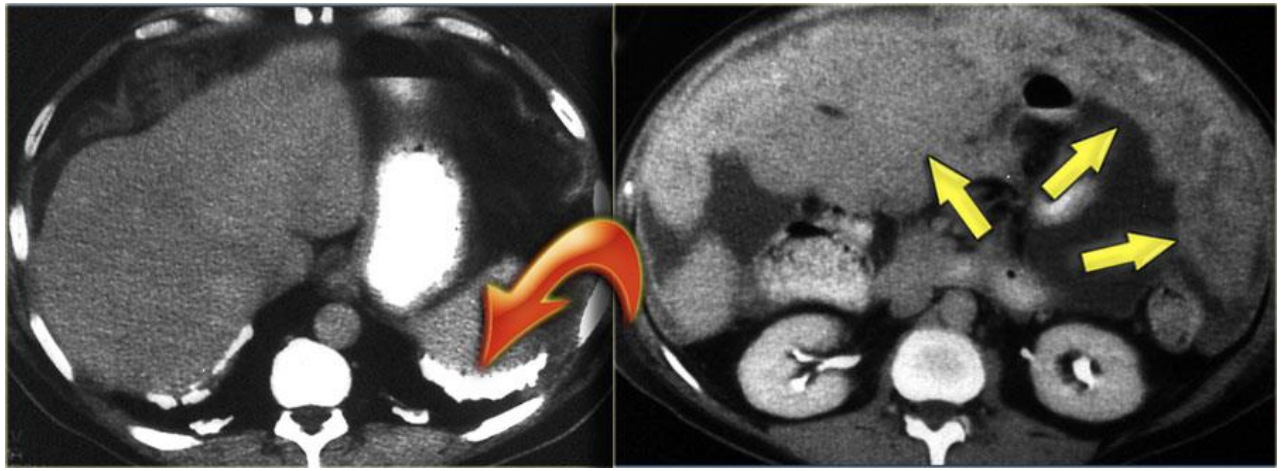
- Primary peritoneal malignancies
  - mesothelial tumors, epithelial tumors, and smooth muscle tumors
- Secondary peritoneal tumors
  - metastatic lesions, infectious origins, and other nonmalignant origins such as endometriosis

Peritoneal Mesothelioma

- Arises from the mesothelium which lines the peritoneal cavity, 4 subtypes
  - Well-differentiated papillary
  - Epithelioid
  - Sarcomatoid,
  - Mixed
- Presenting symptoms are vague
  - Pain, increased abdominal girth, new hernia, abdominal mass
  - Obstruction is a late finding

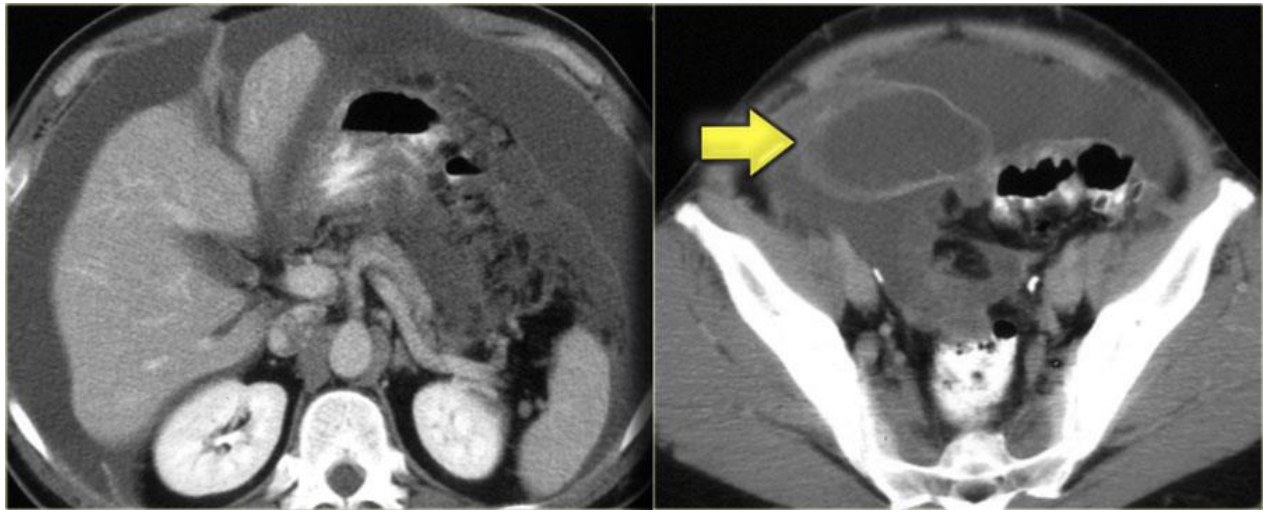
Peritoneal Mesothelioma

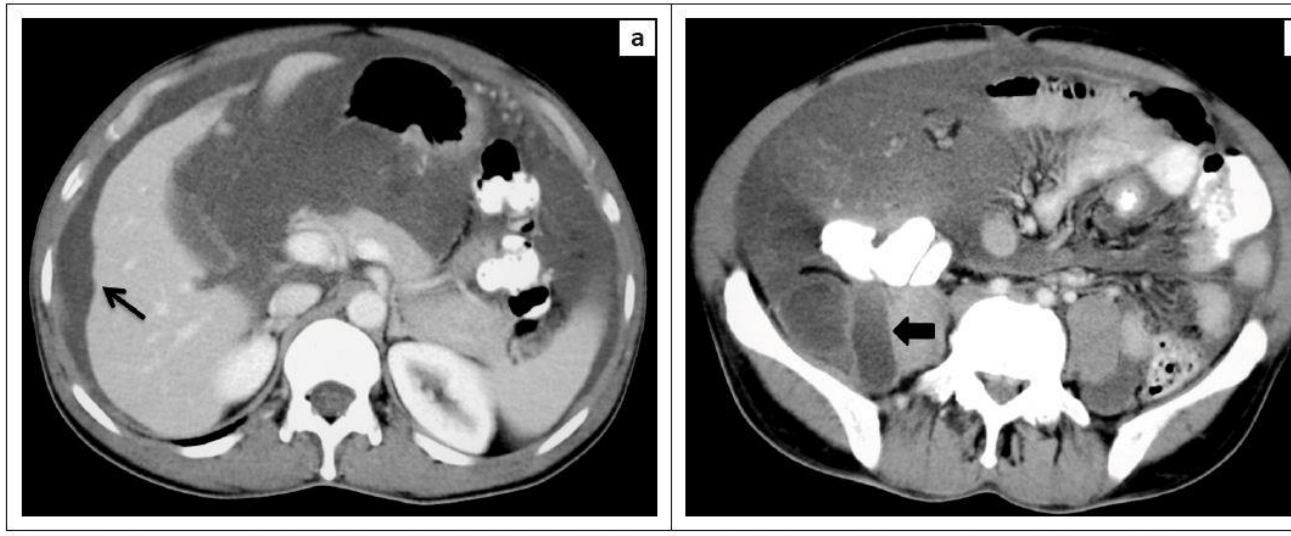
- Imaging:
  - CT w IV contrast: sheet like thickening of the peritoneum with peritoneal nodules; no LNpathy
- Dx:
  - CT guided biopsy with staining for *calretinin, cytokeratin 5/6, mesothelin, and Wilms tumor 1 antigen*
- *Tx:*
  - Debulking surgery and intraperitoneal chemotherapy



Pseudomyxoma Peritonei

- Caused by a low-grade mucinous cystadenocarcinoma of the appendix or ovary.
- Sx:
  - abdominal distention and pain
  - chronic partial small bowel obstruction
- CT scan:
  - *Peritoneal scalloping of the liver margin*, calcified plaques, ascites, and low-density masses
- Tx:
- Remove the gelatin, omentectomy, R hemi, appy, oophorectomy
- Some advocate radical peritonectomy (including splenectomy, cholecystectomy, appendectomy, sigmoid colectomy, and hysterectomy)
- Intraperitoneal fluorouracil-based adjuvant chemotherapy





Desmoplastic Small Round Cell Tumor

- Rare
- Highly aggressive
- Poor prognosis when diagnosed
- CT w IV contrast
  - sheet like thickening of the peritoneum with peritoneal nodules; + LNpathy