Acute Abdomen

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Disclosures

- None

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Overview

- Basic Definition and Principles
- Clinical Diagnosis / DDx
  - Characterizing the pain
  - Other history to elicit
  - Ways to remember such a broad differential
  - History & Physical / Labs / Imaging
  - Non-surgical causes of acute abdomen
- Clinical Management
- Decision to Operate
- Atypical presentations

Definition of ‘the acute abdomen’?

The Acute Abdomen

- 1. pain in the abdomen
- 2. discomfort in the abdomen
- 3. abdominal pathology that leads to an emergent operation
- 4. any patient with abdominal symptoms that needs to see a surgeon

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Internal Medicine definition of an acute abdomen

- Any patient with abdominal pain

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Medical Dictionary Definition

An Acute Abdomen -

- A serious condition within the abdomen characterized by sudden onset, pain, tenderness, and muscular rigidity, and usually requiring emergency surgery. Also called *surgical abdomen*.

Basic Definition and Principles

- Signs and symptoms of intra-abdominal disease *usually* best treated by surgery
- Proper eval and management requires one to recognize:
  - 1. Does this patient need surgery?
  - 2. Is it emergent, urgent, or can wait?
    - In other words, is the patient unstable or stable?
- Learn to think in "worst-case" scenario
- But remember medical causes of abd pain

Clinical Diagnosis

- Characterizing the **pain** is the key
  - Onset, duration, location, character
- Visceral pain (bowel) → dull & poorly localized
  - i.e. distension, inflammation or ischemia
- Parietal pain (peritoneum) → sharper, better localized
  - Sharp "RUQ pain"(chol'y), "LLQ pain"(divertic)
- Kidney / ureter → flank pain

Clinical Diagnosis – Pain cont'd

- Location
  - Upper abdomen → PUD, chol'y, pancreatitis
  - Lower abdomen → Divertic, ovary cyst, TOA
  - Mid abdomen → early app'y, SBO
- Migratory pattern
  - Epigastric → Peri-umbil → RLQ = Acute app'y
  - Localized pain → Diffuse = Diffuse peritonitis

Embryology

- Three segments of the bowel – foregut, midgut and hindgut

- Foregut – mouth to the Ligament of Treitz
- Midgut – Ligament of Treitz to the mid-transverse colon
- Hindgut – mid-transverse colon to the anus

Location of pain related to Embryology

- Foregut – epigastric pain

- Midgut – periumbilical pain

- Hindgut – suprapubic pain

Clinical Diagnosis

- "Referred pain"
  - Biliary disease → R shoulder or back
  - Sub-left diaphragm abscess → L shoulder
  - Above diaphragm (lungs) → Neck/shoulder
- Acute onset & unrelenting pain = bad
- Pain which resolves *usu.* not surgical

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Other history

- GI symptoms
  - Nausea, emesis (? bilious or bloody)
  - Constipation, obstipation (last BM or flatus)
  - Diarrhea (? bloody)
  - Both Nausea/Diarrhea present *usu.* medical
  - Change in sx w eating?
- NSAID use (perf DU)
- Jaundice, acholic stools, dark urine
- Drinking history (pancreas)
- Prior surgeries (adhesions → SBO, ? still have gallbladder & appendix)
- History of hernias
- Urine output (dehydrated)
- Constitutionals Sx
  - Fevers/chills
- Sexual history

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Divide the Abdomen into 4 Quadrants

- Right upper quadrant
- Left upper quadrant
- Right lower quadrant
- Left lower quadrant

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The 4 Abdominal Quadrants

- RUQ – gallbladder, liver, duodenum, pancreas, kidney, diaphragm, common bile duct, adrenal gland
- LUQ – stomach, spleen, kidney, diaphragm, adrenal
- RLQ – appendix, cecum, ileum, ovary, fallopian tube, ureter, iliac artery and vein, psoas muscle
- LLQ – sigmoid colon, ovary, fallopian tube, ureter, iliac artery and vein, psoas muscle

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3 Additional Locations

- Epigastric – Gallbladder, Common bile duct, stomach, aorta, pancreas
- Periumbilical – Small bowel, appendix, ileum, cecum, aorta
- Suprapubic – colon, prostate, urinary bladder, uterus

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The 'Real' Acute Abdomen

- Diffuse Peritonitis – perforated viscus with peritonitis, pancreatitis, ruptured AAA, dead bowel, abdominal catastrophy

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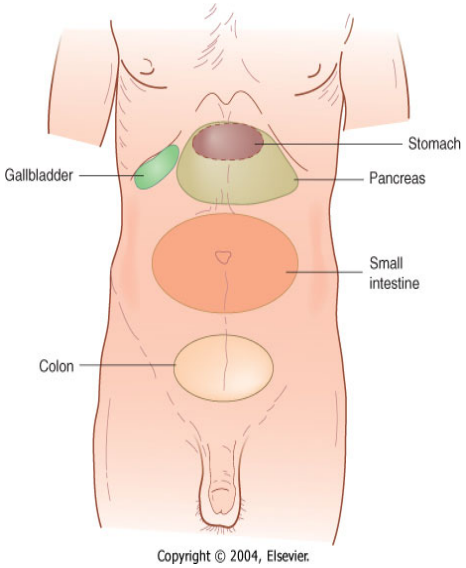
Clinical Diagnosis



- **Location of pain by organ**
- RUQ
  - Gallbladder
- Epigastrum
  - Stomach
  - Pancreas
- Mid abdomen
  - Small intestine
- Lower abdomen
  - Colon, GYN pathology

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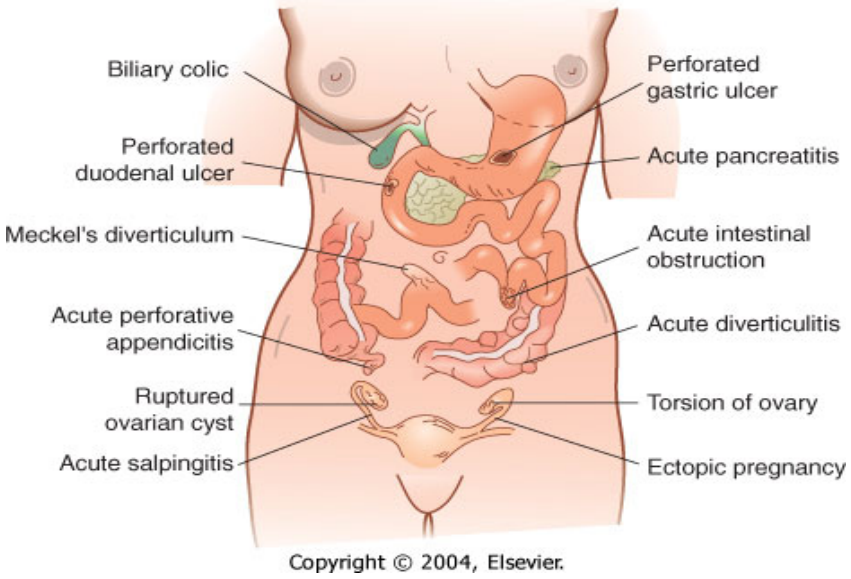
Clinical Diagnosis



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Think **Broad** categories for DDx

- Inflammation
- Obstruction
- Ischemia
- Perforation (any of above can end here)
  - Offended organ becomes distended
  - Lymphatic/venous obstrux due to ↑pressure
  - Arterial pressure exceeded → ischemia
  - Prolonged ischemia → perforation

Inflammation versus Obstruction

Organ	Lesion
Stomach	Gastric Ulcer Duodenal Ulcer
Biliary Tract	Acute chol'y +/- choledocholithiasis
Pancreas	Acute, recurrent, or chronic pancreatitis
Small Intestine	Crohn's disease Meckel's diverticulum
Large Intestine	Appendicitis Diverticulitis

Location	Lesion
Small Bowel Obstruction	**A**dhesions **B**ulges **C**ancer **C**rohn's disease Gallstone ileus Intussusception Volvulus
Large Bowel Obstruction	Malignancy Volvulus: cecal or sigmoid Diverticulitis

Ischemia / Perforation

- Acute mesenteric ischemia
  - Usually acute occlusion of the SMA from thrombus or embolism
- Chronic mesenteric ischemia
  - Typically smoker, vasculopath with severe atherosclerotic vessel disease
- Ischemic colitis
- Any inflammation, obstructive, or ischemic process can progress to perforation
- **Ruptured abdominal aortic aneurysm**

GYN Etiologies

Organ	Lesion
Ovary	Ruptured graafian follicle Torsion of ovary Tubo-ovarian abscess (TOA)
Fallopian tube	Ectopic pregnancy Acute salpingitis Pyosalpinx
Uterus	Uterine rupture Endometritis

In the Urgent Care/Emergency Room

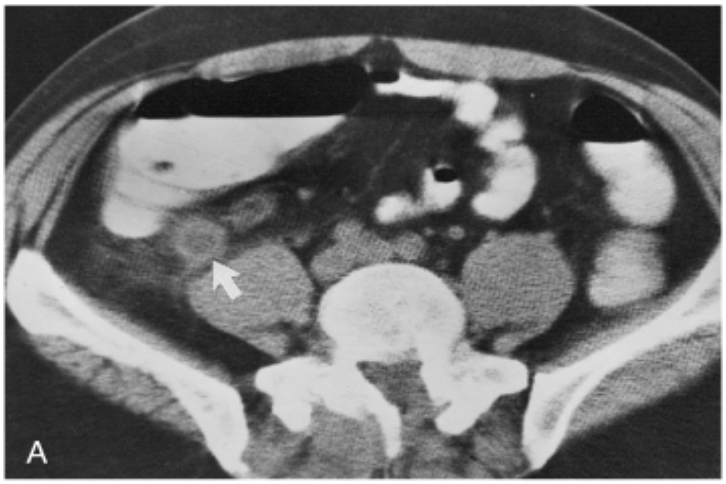
- 1. History – CC, HPI, PMHx, meds, allergies, Surgery, ROS
- 2. Physical exam including vitals, rectal, pelvic
- 3. Tests – labs, imaging
- * Do ALL of the above BEFORE calling the surgeon UNLESS the patient is decompensating*

Labs & Imaging

Test	Reason
CBC w diff	Left shift can be very telling
BMP	N/V, lytes, acidosis, dehydration
Amylase	Pancreatitis, perf DU, bowel ischemia
LFT	Jaundice,hepatitis
UA	GU- UTI, stone, hematuria
Beta-hCG	Ectopic

Test	Reason
KUB Flat & Upright	SBO/LBO, free air, stones
Ultrasound	Chol'y, jaundice GYN pathology
CT scan -Diagnostic accuracy	Anatomic dx Case not straightforward
CXR/EKG	Assess for Pneumonia or Assess for MI

CT scan



What is the diagnosis? Acute appendicitis

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Non-Surgical Causes by Systems

System	Disease	System	Disease
Cardiac	Myocardial infarction Acute pericarditis	Endocrine	Diab ketoacidosis Addisonian crisis
Pulmonary	Pneumonia Pulmonary infarction PE	Metabolic	Acute porphyria Mediterranean fever Hyperlipidemia
GI	Acute pancreatitis Gastroenteritis Acute hepatitis	Musculo-skeletal	Rectus muscle hematoma
GU	Pyelonephritis	CNS PNS	Tabes dorsalis (syph) Nerve root compression
Vascular	Aortic dissection	Heme	Sickle cell crisis

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Decision to operate

- Peritonitis
  - Tenderness w/rebound, involuntary guarding
- Severe / unrelenting pain
- "Unstable" (hemodynamically, or septic)
  - Tachycardic, hypotensive, white count
- Intestinal ischemia, including strangulation
- Pneumoperitoneum
- Complete or "high grade" obstruction

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Special Circumstances

- Situations making diagnosis difficult
  - Stroke or spinal cord injury
  - Influence of drugs or alcohol
- Severity of disease can be masked by:
  - Steroids
  - Immunosuppression (i.e. AIDS)
  - Threshold to operate must be even lower

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Take Home Points

- Careful history (pain, other GI symptoms)
- Remember DDx in **broad** categories
- Narrow DDx based on hx, exam, labs, imaging
- Always perform ABC, Resuscitate before Dx
- If patient's sick or "toxic", get to OR (surgical emergency)
  - Ideally, resuscitate patients before going to the OR
- Don't forget GYN/medical causes, special situations
- For acute abdomen, think of these commonly (below)

Perf DU	Appendicitis +/- perforation	Diverticulitis +/- perforation	Bowel obstruction
Cholecystitis	Ischemic or perf bowel	Ruptured aneurysm	Acute pancreatitis

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REMEMBER: Before calling Surgery…

- 1. History
- 2. Physical Exam
- 3. Tests

- Otherwise, the surgeon will have to come in 2-3 times to examine the patient, check the labs and check the x-rays.

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Thank you

- Dr Zane Kelley
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