Assessing Abdominal Pain: A Practical Review

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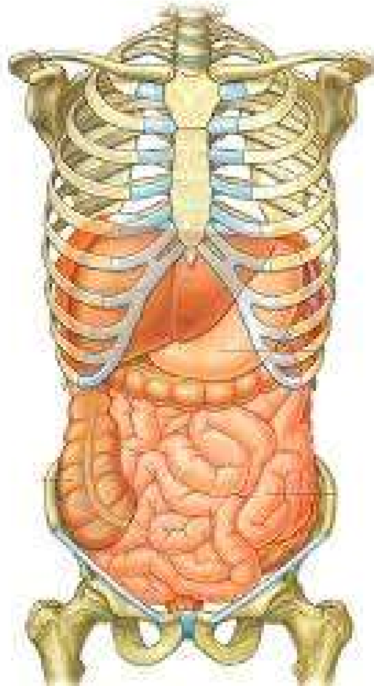
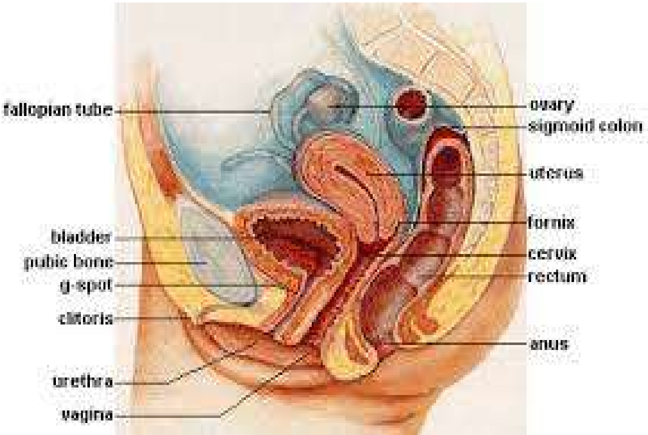
Objectives

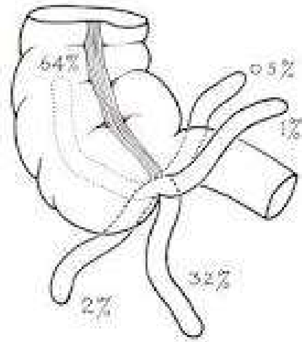
- To describe atypical locations of GI illnesses
- To identify pitfalls when diagnosing and treating diverticulitis
- To recognize frequently encountered gallbladder and common duct dilemmas
- To examine controversies in evaluating and treating appendicitis

Atypical Locations of GI Illnesses





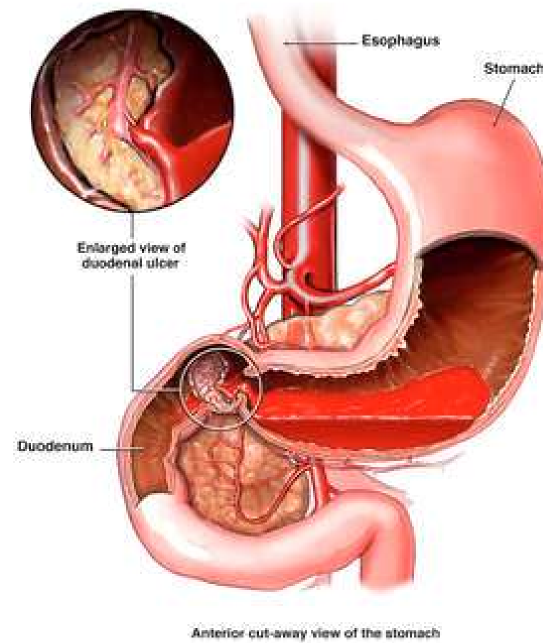
Atypical Locations for Appendicitis



Usually located 2 cm below the ileo cecal valve

Also located: in pelvis
outside the peritoneum
behind the cecum

Posterior Duodenal Ulcer



Pearl

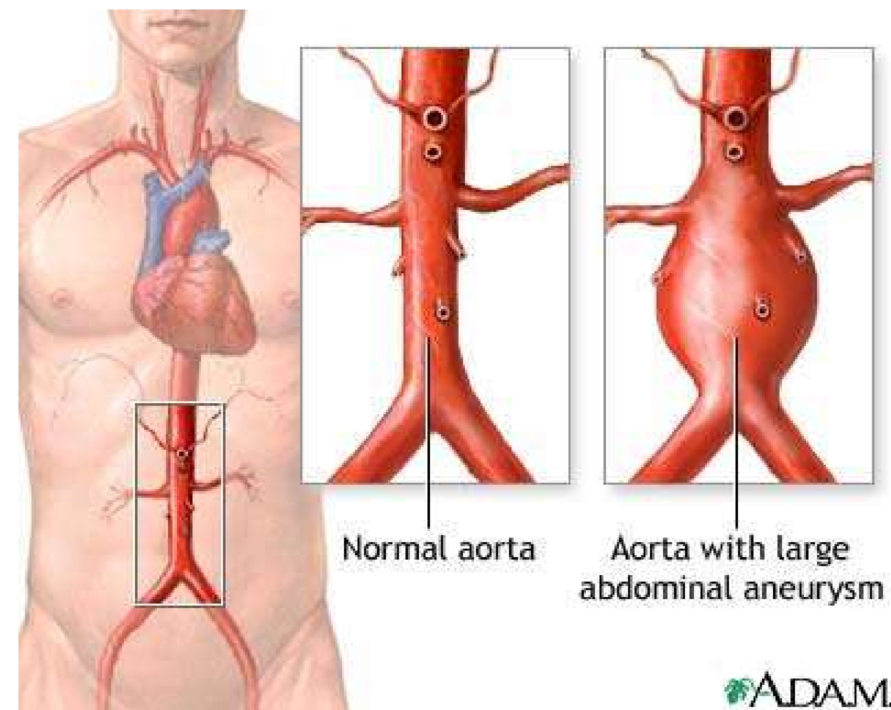
- Right sided diverticulitis can be confused with appendicitis*

Name Some Non GI Sources of Abdominal Pain

Begin with the most serious

Abdominal Aortic Aneurysms

- Severe mid abdominal pain
- ”Tearing” in nature
- Shock
- Pulsatile mass



Missed Diagnosis of Ruptured AAA (meta analysis)

32%

Misdiagnosed as: ureteric colic
MI
colonic inflammation
GI perforation

Azhar B et al
Misdiagnosis of ruptured abdominal aortic aneurysm: systematic review and meta-analysis
J Endovascular Ther 2014:21;568

Name Some Non GI Sources of Abdominal Pain

Name some more

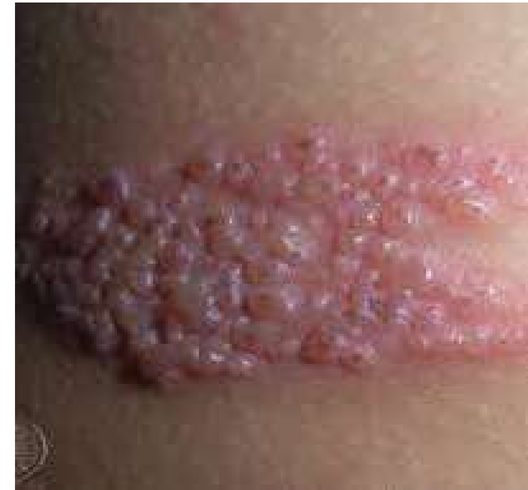
More non GI Sources of Abdominal Pain

- Abdominal wall hernias
- MI*
- Pneumonia
- Ectopic pregnancy
- Kidney stones
- Diabetic ketoacidosis

- *Canto JG et al
- Association of age and sex with myocardial infarction symptom presentation and in-hospital mortality
- JAMA 2012:307;813

More non GI Sources of Abdominal Pain

- **Herpes zoster**



- 75% of patients have prodromal pain that precedes the rash
- Prodromal pain can precede the rash by 3+ days
- Prior to the appearance of the rash, the pain is often confused with other diseases

Dworkin RH et al
Recommendations for the management of herpes zoster
Clin Infect Dis 2007:44; suppl 1:S1

GI Symptoms with COVID-19

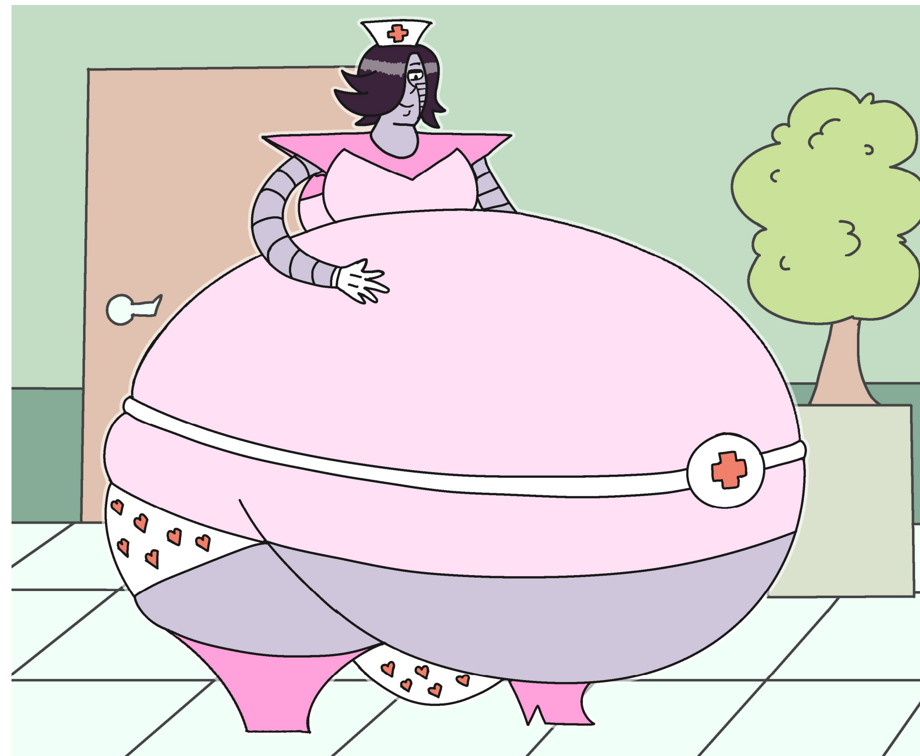
16% of patients presented with GI symptoms without pulmonary symptoms

Luo S et al

Don’t overlook digestive symptoms in patients with 2019 novel coronavirus disease (COVID-19)

Clin Gastroenterol Hepatol 2020:18;1636

Can Gastroparesis Cause Abdominal Pain?



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Can Gastroparesis Cause Abdominal Pain?

- Yes
- Occurs in up to 90% of patients

Hoogerwerf WA et al

Pain: The Overlooked Symptom in Gastroparesis

Am J Gastroenterol 1999:94;1029

What is the most common source of gastroparesis?

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What is the most common source of gastroparesis?

- **Idiopathic**
- Diabetes
- Viral
- Medications
- Post surgical

How do we diagnose gastroparesis?

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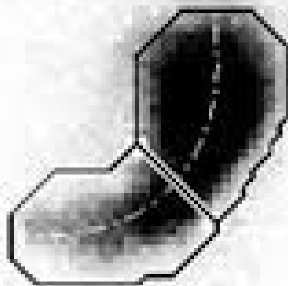
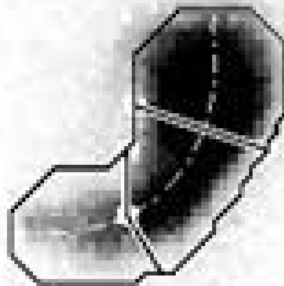
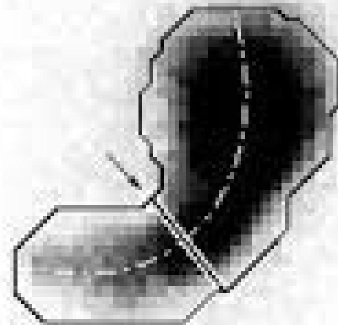
How do we diagnose gastroparesis?

- Eliminate the possibility of mechanical obstruction
- 4 hour gastric emptying study (scintigraphy)

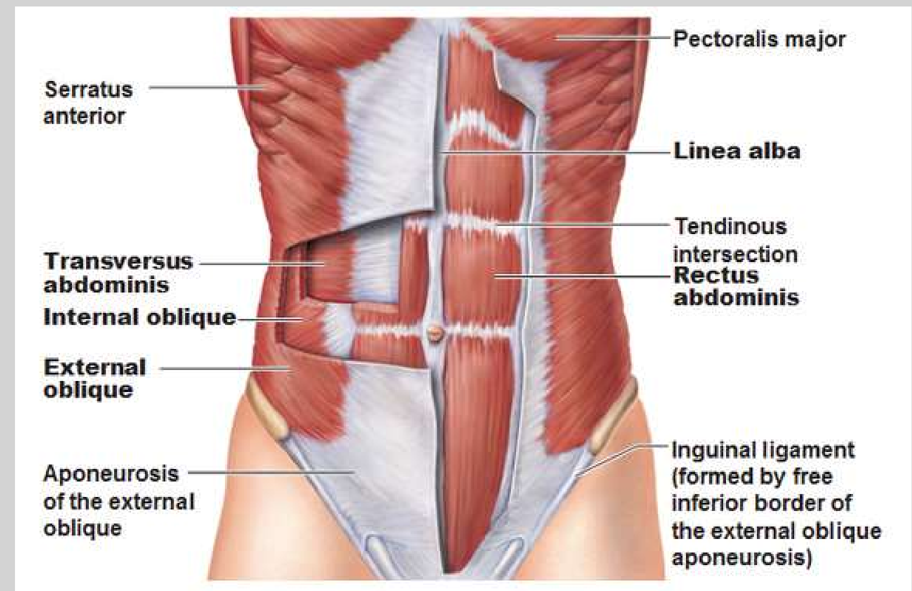






Abdominal Pain From Muscles

- Key Finding: Pain exacerbated by flexion of the abdominal musculature



Clinical Pearl

- Up to **30%** of patients with chronic abdominal pain have components of abdominal wall pain
- Patients can point to a specific site
- Previous surgery and sports related injuries are common sources of abdominal wall pain

Glissen Brown JR et al

Chronic abdominal wall pain: An under-recognized diagnosis leading to unnecessary testing

J Clin Gastroenterol 2016:50;828

Sweetser S

Abdomminal wall pain: A common clinical problem

Mayo Clin Proc 2019:94;347

Treatment of Abdominal Wall Pain

- Lidocaine injection
- Lidocaine + triamcinolone
- NSAIDs in those who fail to respond to injections
- Lidocaine patches, topical diclofenac or capsaicin

Singla M et al

A stick and burn: our approach to abdominal wall pain

Am J Gastroenterol 2020:115;645

Nancy

- Age 73 has a 2 day history of severe LLQ pain and a temp of 101^0
- PE: BP 160/92 p84 rr 16 t 99.8^0
- Abdominal exam demonstrates tenderness in LLQ, no rebound, no masses

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Nancy

MRI demonstrates an inflamed segment of sigmoid colon without abscess or perforation

Amoxicillin-Clavulanate 500mg po q8h initiated

The MRI does not demonstrate a colon mass

Should this patient have a colonoscopy?

YES, at a later date with resolution of symptoms

- Colon cancer occurs in 2.8% of all patients with diverticulitis

- Cancer detection rate much higher after complicated diverticulitis:

  Perforation
  Abscess
  Fistula
  Obstruction

Lau KC et al

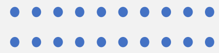
Is colonoscopy still mandatory after CT diagnosis of left-sided diverticulitis: can colorectal cancer be confidently excluded?

Dis Colon Rectum 2011:54;1265

Roberta

- Age 73 had 2 episodes of acute diverticulitis in the past 8 months
  diagnosed with CT scans
- Now with moderate LLQ pain, no N/V
- History of normal screening colonoscopy 2 years ago
- VS BP 130/68 p 68 rr 12   t 100.0
  Abd: mild tenderness, no rebound, no masses

WBC 12,500 75% neutrophils



What testing do you recommend for Roberta:

1. Another CT or MRI
2. Another colonoscopy
3. No additional testing necessary

Should Roberta have surgery?

Paradigm Shift

- Previous guidelines recommend surgery after two episodes of diverticulitis
- Now more conservative approach
- Complicated* or uncomplicated** diverticulitis

Hall J et al

The American Society of Colon and Rectal surgeons clinical practice guidelines for the treatment of left-sided colonic diverticulitis

Diseases of the Colon and Rectum 2020;63;728

- **Uncomplicated Diverticulitis:** Inflammation in wall of colon
- **Complicated Diverticulitis**

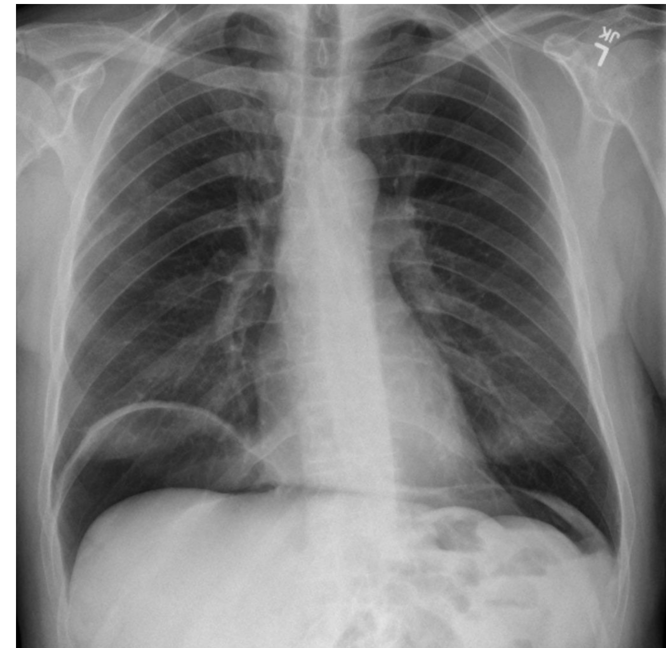
  Inflammation has evolved into:

  Abscess

  Fistula

  Obstruction

  Free perforation



Paradigm Shift

- Individualized approach because:

  Increased morbidity and mortality in elderly

  Recurrent diverticulitis may be LESS serious than the first episode

- Decide on a case by case basis

Hall J et al

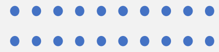
The American Society of Colon and Rectal Surgeons clinical practice guidelines for the treatment of left sided colonic diverticulitis

Diseases of the Colon and Rectum 2020:63;728

Does the severity of pain help us distinguish Irritable Bowel Syndrome from surgical emergencies?

Jeff

- Age 55 has longstanding Irritable Bowel Syndrome (IBS) manifested by intermittent bouts of severe abdominal pain and diarrhea.
- The IBS has been thoroughly evaluated; including colonoscopy done 5 years ago.
- Jeff now comes to see you for rectal bleeding that seems to fill the toilet bowl
- H/H 11/33



What would you do next?

1. Symptomatic treatment of presumed hemorrhoids
2. Another colonoscopy
3. Do Fecal Immunochemical Test (FIT) to r/o Ca
4. Do a fecal DNA test (Cologuard) to r/o Ca

The Presence of "Alarm Symptoms" Helps Distinguish Irritable Bowel Syndrome from Other Potential Serious Medical Problems

- Rectal bleeding
- Anemia
- Weight loss
- Fever

Brandt LJ et al

An evidence based position statement on the management of irritable bowel syndrome

American College of Gastroenterology Task Force on Irritable Bowel Syndrome

Am J Gastroenterol 2009:104;Suppl 1:S1

The Presence of "Alarm Symptoms" Also Helps Determine if Another Colonoscopy is Warranted Sooner Than Planned

Interval Ca: a colon cancer diagnosed after a normal exam

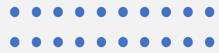
Interval Ca rate 1.1% of all diagnosed cancers

Jennings P et al

A twelve year study of the prevalence, risk factors and characteristics of interval colorectal cancers after negative colonoscopy

Clin Research Hepatol Gastroenterol 2020:44;230

Should a CT ever be used to diagnose acute cholecystitis?



CT Should Generally NOT Be Used to Make the Diagnosis of Acute Cholecystitis

- Low positive predictive value
- Does not visualize gallstones
- Underestimates gallbladder wall thickening

MRCP in Biliary Track Disease

- Less sensitive than U/S in evaluating gb disease (69 vs 96%)

- Common duct stones

  sensitivity 87%

  specificity 92%

Meeralam Y et al

Diagnostic accuracy of EUS compared with MRCP in detecting choledocholithiasis: a meta-analysis of diagnostic test accuracy in head to head studies

Gastrointest Endosc 2017:86;986

When should we be utilizing HIDA scans in 2023?

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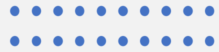

HIDA Scan Use 2023

- Use limited to:

1. Suspected cholecystitis where ultrasound normal
2. Leaks after cholecystectomy

Wendy

- A 40 y o otherwise healthy, with severe RUQ pain for the past 2 weeks
- Also nausea/vomiting
- On no meds
- Exam: Normal except for moderate RUQ pain
- CBC, LFTs, Lipase all normal
- U/S normal gallbladder, normal CBD

What is the differential?

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Thoughts

- Can it still be gallstone disease despite a negative ultrasound?
- Can it be something else?
- Peptic ulcer disease
- Muscular pain
- Cardiac/pulmonary
- Herpes that has not yet manifested with a rash
- etc

Myra

- Is a 42 y o female, otherwise healthy with severe RUQ pain for 1 week
- With N/V
- Cholecystectomy 5 years ago
- On no meds
- PE t 101.6, scleral icterus

  moderate RUQ tenderness

Labs

- Alk Phos 272 (nl 50-136 U/L)
- AST 200 (nl 12-78 U/L)
- ALT 150 (nl 15-37 U/L)
- Total Bilirubin 4.0 mg/dL
- Lipase normal

- U/S shows s/p cholecystectomy, 1.2cm CBD (dilated)

What should we do next

1. MRCP
2. ERCP
3. CT
4. HIDA scan

Would we approach Myra differently if she had a normal common bile duct

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Very Strong Predictor of a Common Bile Duct Stones

- Cholangitis
- Bilirubin over 4mg/dL

Maple JT

The role of endoscopy in the evaluation of suspected choledocholithiasis

ASGE Standards of Practice Committee

Gastrointestinal Endoscopy 2010/T1/1

MRCP vs ERCP in detecting common duct stones

- MRCP* sensitivity 90%
  specificity 86%

- ERCP** sensitivity 90% +
  specificity 97%

*Badger WR et al

Utility of MRCP in clinical decision making of suspected choledocholithiasis: An institutional analysis and literature review

Am J Surg 2017:214;251

**Moon JH et al

The detection of bile duct stones in suspected biliary pancreatitis

Am J Gastroenterol 2005:100;1051

Is it possible to have an acute pancreatitis with a normal amylase/lipase?

Two Out of Three Rule to Make a Diagnosis

- To diagnose acute pancreatitis, we must have two out of three of these:

- SEVERE EPIGASTRIC PAIN

- ELEVATED AMYLASE/LIPASE

- CHARACTERISTIC FINDINGS ON IMAGING

Emma

- Is a 58 yr old P.A. with a 2 hour history of epigastric abdominal pain and nausea
- No significant PMH
- No meds

- PE: WDWN female BP 170/90 p110 rr 20 t 99.9

  Lungs clear

  Cor tachycardia no murmurs or gallops or rubs

  Abd mild epigastric tenderness, no masses, stool heme neg

Emma; Labs

- CBC
- General Chem
- Amylase
- Lipase
- Abdominal ultrasound
- MRI of abd/pelvis

All normal

Missed Cardiac Issues in Women

- Women often mistake cardiac symptoms for other diseases
- Women with an acute coronary syndrome have less chest pain than men

Canto JG et al

Association of age and sex with myocardial infarction symptom presentation and in-hospital mortality

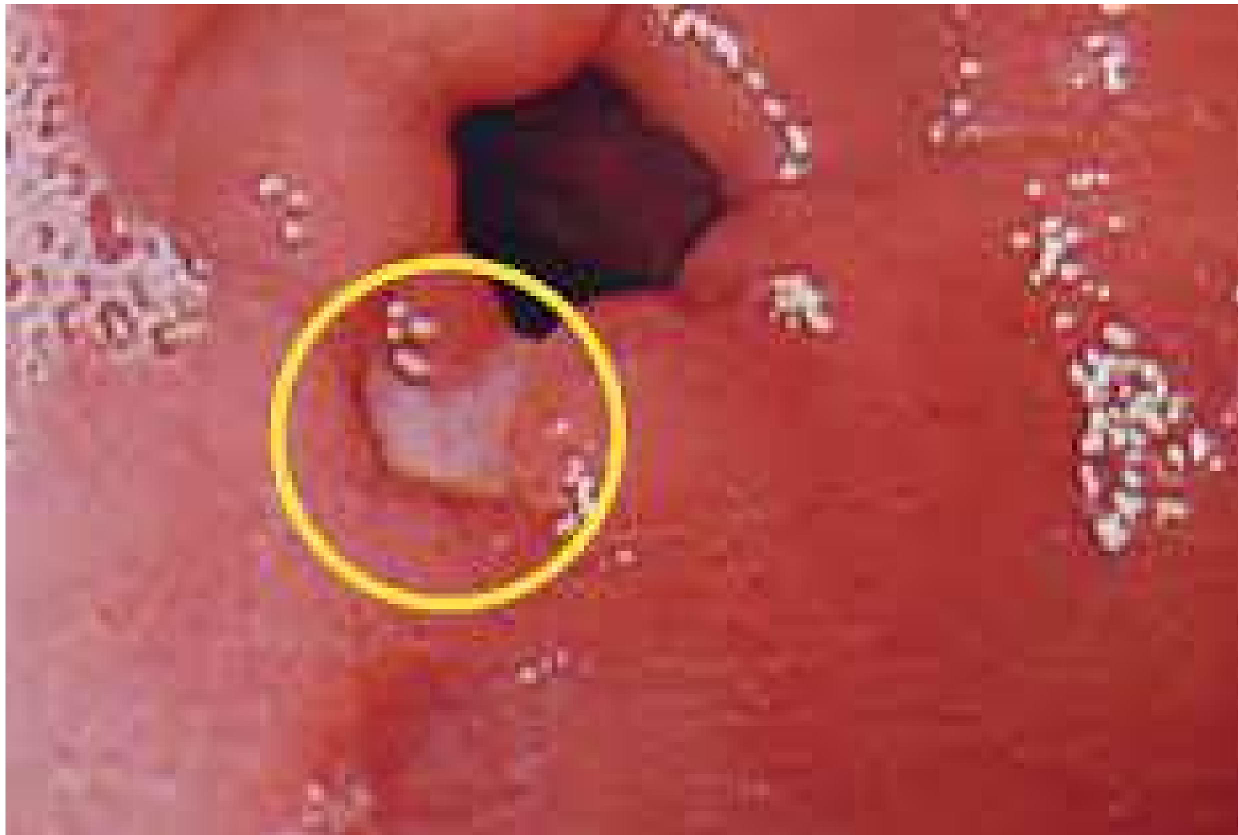
JAMA 2012;307;813

Charlene

- Is a 56 y o with a 2 week history of RUQ pain.
- Family history is significant for 2 first degree relatives with acute cholecystitis
- She had taken Ibuprofen 2 caplets every 3 hours for the pain
- PE WDWN BP 140/90 p 110 rr18 t 99
- Abd: Epigastric tenderness, no masses
- Labs: CBC normal
  Gen Chem normal
  ‘ Lipase normal
  U/S normal

What would you recommend as the next step?

1. MRCP
2. Repeat U/S
3. Endoscopy
4. Evaluate for stress factors



Seen on endoscopy

Ed

- Is a 75 yr old admitted with a small bowel obstruction
- History: two recent episodes of small bowel obstruction
  appendectomy 60 yrs prior
- Has been hospitalized 5 days with NG tube in place

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- Testing to date includes routine bloods plus:
  CT scan demonstrating small bowel obstruction that arises around the terminal ileum

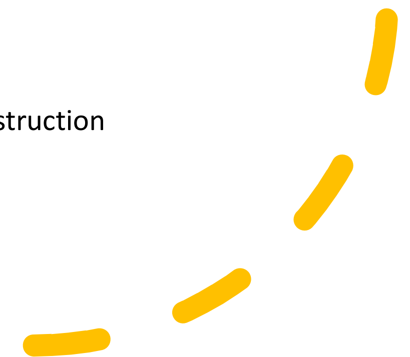
What percentage of patients with adhesive small bowel obstruction resolve spontaneously?

1. 25%
2. 50%
3. 65-80%

Tamaka S et al

Predictive factors for surgical indication in adhesive small bowel obstruction

Am J Surg 2008:196;23



Ella

- Is a 19 y o who came to the ER with an 8 hour history of RLQ pain and nausea
- No significant PMH

- PE Ill female writhing on the exam table
    - BP 150/96 P 120 rr 24 t 100.2
    - Severe RLQ tenderness

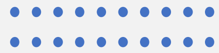
The surgeon orders a CBC WBC 12,000
Gen Chem nl
U/A nl
Pregnancy test neg
CT of abd/pelvis nl

The surgeon decides to do an exploratory laparotomy

The laparotomy is completely normal

- Questions:

What is the accuracy of CT in diagnosing appendicitis?



Diagnosing Appendicitis

- 3540 urgent appendectomies
- 86% of patients had preop CT
- Accuracy of CT 90%

Cuschieri J et al

Negative appendectomy and imaging accuracy in the Washington State surgical care and outcomes assessment program

Ann Surg 2008:248;557

The laparotomy is completely normal

- Questions:

Was the surgeon wrong in doing the laparotomy?

Would additional tests/treatments have been useful?

Consider

- Pelvic ultrasound

- IV antibiotics while maintaining close observation

  1552 patients randomized surgery vs antibiotics

  In and out patients
- With antibiotics, 29% still needed surgery

Flum DR et al

A randomized trial comparing antibiotics with appendectomy for appendicitis

NEJM 2020:383;1907

Dawn

- Age 23 has a 4 hour history of worsening LLQ pain
- She has no significant PMH and is not taking any meds
- PE: Ill patient BP 80/40 p 120 rr 24 t 100.2

  Abd very tender LLQ, no rebound, heme -

Which of the following tests should we NOT initially consider?

1. Colonoscopy
2. CT of abd/pelvis
3. hCG
4. Pelvic ultrasound

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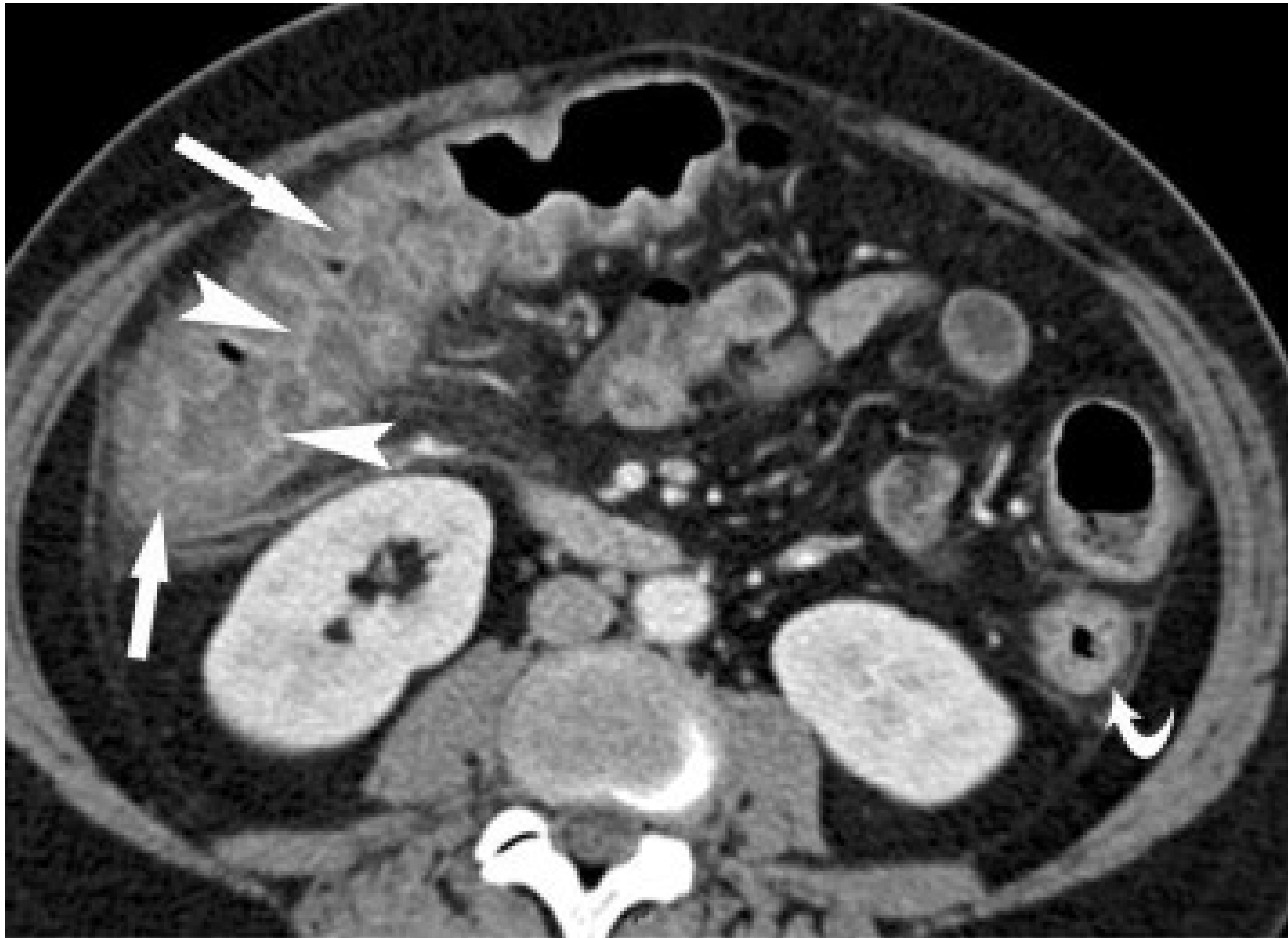
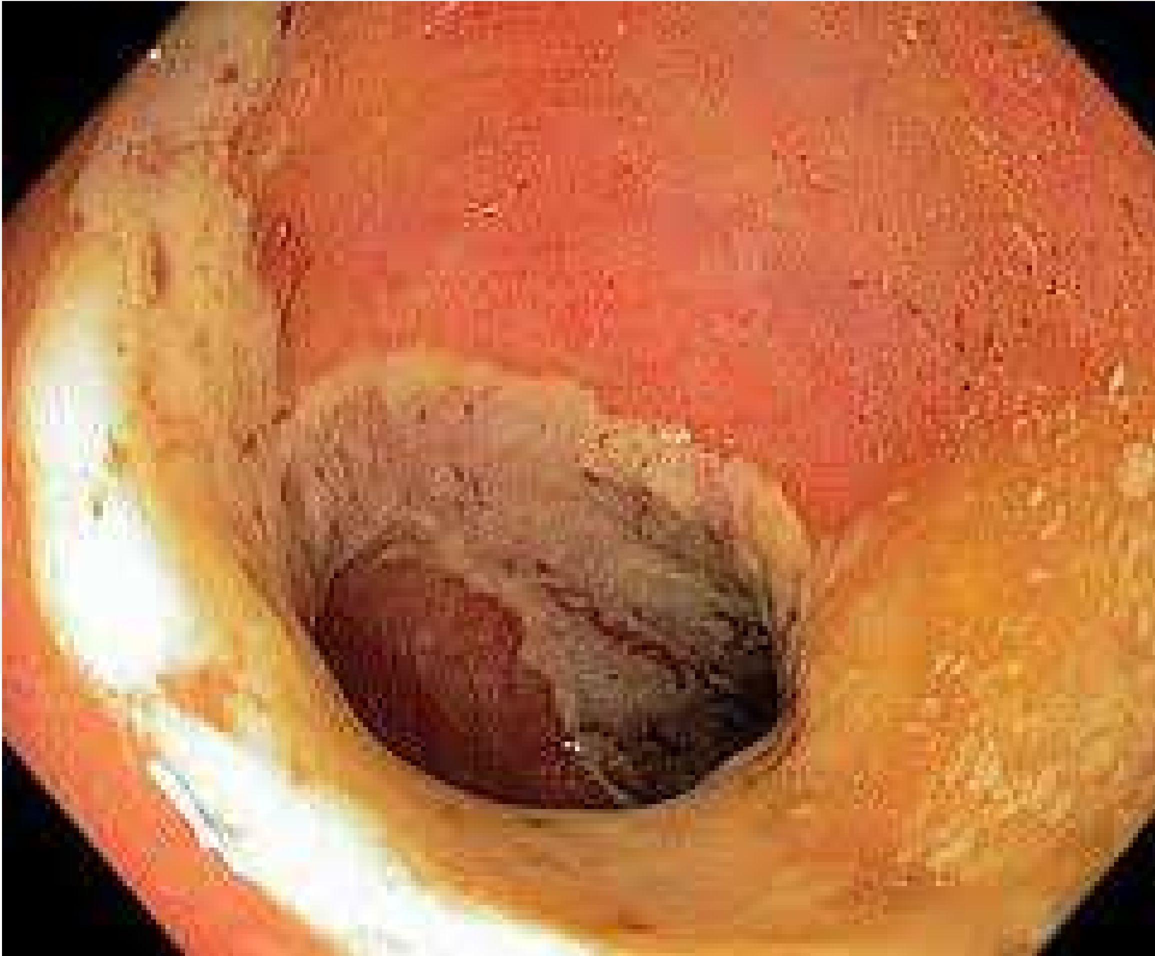
Rita

- Age 46 has a 5 day history of diarrhea and LLQ pain
- Also 1 day history of rectal bleeding
- Rita has a history of **thrombocytosis**
- Rita has been taking birth control pills for 20 years

- PE: Ill female BP 160/100 p 120 rr20 t 100
- Abd: LLQ pinpoint tenderness, no rebound; bright red blood on rectal exam

- Lab: CBC WBC 20,000 shift to left
  H/H 9.7/ 30





Rita Colonoscopy

Given the patient’s history, what is the most likely diagnosis?

1. Diverticulitis

2. Crohn’s disease

3. Ischemic colitis

4. Colon cancer

Ischemic Colitis

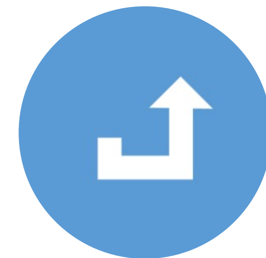
- Usually occurs in the elderly
- Vascular injury confined to the colon
- From inadequate blood supply/hypotension

Treatment of Ischemic Colitis

GUT REST

IV FLUIDS

GIVE IT TIME



CONTINUE TO MONITOR FOR WORSENING

Summary

- The severity of pain does not help distinguish Irritable Bowel Syndrome (IBS) from other medical conditions
- The presence of “Alarm Symptoms” helps distinguish IBS from organic conditions
- Ultrasonography is the preferred test to evaluate for acute cholecystitis
- Ischemic colitis usually occurs in the elderly, is not usually life threatening and readily reverses in most situations with bowel rest and IV fluids

Thank You

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