



FOUNDATIONS
of Emergency Medicine

Foundations Frameworks

Approach to Abdominal Imaging

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Your patient has abdominal pain. Does their exam show signs of peritonitis?

The peritonitic abdomen will show rigidity or involuntary guarding, rebound tenderness, or pain with shaking the bed. If any are present, get emergent surgical consultation and imaging.

What are your imaging options?

X-ray, CT, MR, US

X-ray

Chest: Make sure to get upright XR

- Only looks for pneumoperitoneum, which is seen under the diaphragm above the liver

Abdomen: rarely useful except for a few specific concerns

- Volvulus: air will collect opposite the site of obstruction (i.e. RUQ in sigmoid volvulus, LUQ in cecal volvulus) – consider especially in elderly patients with signs/symptoms of obstruction
- SBO: only worth the time if the person has had SBOs in the past, has a good history for SBO, and has symptoms identical to previous SBOs (i.e. you can spare them the radiation/cost of a CT); poor sensitivity means it cannot rule out obstruction

MRI

- Poor visualization of bowel due to inadequate tissue plane differentiation; also expensive and time-consuming
- Useful in only specific populations in whom CT is not ideal (children, pregnant women), and then only if expedited MR is available

US

- Ideal for hepatic or biliary evaluation and for finding intraperitoneal fluid (e.g. trauma)
- Could also be used for gynecologic pathology in women with abdominal pain (i.e. ovarian torsion, ectopic pregnancy)
- Also useful for children (intussusception, apy, etc.) and pregnant women (apy) due to the lack of ionizing radiation, although lower sensitivity than other modalities

CT

IV contrast?

- Useful almost all of the time, as it increases tissue differentiation, distinguishes vascular and non-vascular structures, and can highlight abscesses, tumors, etc.
- Exception: kidney stones (IV contrast may obscure the stone)
- Vascular-specific studies (e.g. CT aortogram) use a tight contrast bolus injected at a high rate and pressure to visualize the structures, so requires at least a 20g PIV in a large vein

PO contrast?

- Highlights the bowel lumen which makes it easier to diagnose bowel pathology, and can aid in finding the transition point of an SBO
- Often poorly tolerated (vomiting), and takes a while

Sources: <https://radiopaedia.org/articles/ct-intravenous-contrast-summary>