

Summary of Reading Abdominal X Rays and Head CTs

Abdominal X Rays: The basics

The standard abdominal x ray (AXR) is an AP projection taken when the patient is supine. A standard film is ordered to evaluate the bowel gas pattern (assess for obstruction or perforation), look for calcifications, or check placement of an object. Upright AXR allow for better visualization of air-fluid levels and potentially pneumoperitoneum. Left lateral decubitus films allow for better visualization of free air above the liver.

Approach to Reading AXRs:

- Intraluminal gas: amount and distribution of gas, size and distribution of bowel loops
- Extraluminal gas: pneumoperitoneum, gas in biliary tree, gas in bowel wall
- Calcifications: calcium either *indicates* or actually *is* the underlying pathology
- Bones and Soft Tissues
- Artifacts

Features of Bowel Obstruction

Feature	Small Bowel	Large Bowel
Bowel Diameter (in adults)	> 3 cm	> 5 cm
Position of Loops	Central	Peripheral
Number of Loops	Many	Few
Fluid Levels (on erect film)	Many, short	Few, long
Abdominal markings	Valvulae (all the way across)	Haustra (partially across)
Gas in Large Bowel	No	Yes

Head CTs: The basics

Non-contrast CTs

- Cerebral edema, Herniation, Ventricle size, Masses and mass effect, Midline shift, Hemorrhage
- Bony, air space and soft tissue abnormalities

Although some of these structures may be visualized on normal head CT, there are also dedicated CTs with thinner slices that may be ordered to better delineate anatomy (eg orbital CT, facial bone CT, internal auditory canal CT, etc.)

Contrast CTs

- Inflammation (vasculitis), Infection (intraparenchymal or extra-axial abscesses, meningeal), Neoplasms, Vascular malformations, aneurysms, thromboses

If a contrast CT is indicated, a plain CT is typically done beforehand to avoid missing hemorrhage or calcifications. An exception to this may be if the contrast exam is performed as a follow-up for a known lesion.

Approach to Reading Head CTs

Mnemonic: Blood Can Be Very Bad

- Blood: Acute blood is bright on CT. Be careful not to confuse with choroid plexus calcifications.
- Cisterns (Can): Look for blood, symmetry, and effacement (sign of increased ICP).
- Brain (Be): Look for symmetry, grey-white differentiation, midline shift, focal hyper or hypodensities suggestive of mass, pneumocephalus
- Ventricles (Very): Look for size, effacement, shift, blood
- Bone (Bad): Look for fractures, widened sutures, blood or air in sinus and mastoids, surrounding soft tissue swelling

Signs of increased intracranial pressure on head CT:

- Effacement and encroachment upon normal CSF spaces: cisterns, sulci/gyri, extra-axial space
- Slit-like and compressed ventricles in generalized cerebral edema; increased size, effacement and rounded shape in setting of hydrocephalus
- Decreased grey-white differentiation due to cerebral hypoperfusion