Essential Learning

Blunt Abdominal Trauma

- **What is the most commonly affected organ in blunt abdominal injury?**
    - The spleen is the most commonly injured visceral organ in blunt trauma.
    - The spleen is a highly vascular organ that filters an estimated 10% to 15% of total blood volume/min.

- **How do vital signs and imaging dictate management of someone with blunt vs penetrating abdominal trauma?**
    - Blunt trauma
        - Negative CXR and FAST exam --> CT vs observation
            - An initial negative FAST exam should not be reassuring that intra-abdominal injury is absent; repeat FAST may be necessary
        - Positive FAST exam + stable vitals --> CT
        - Positive FAST exam + unstable vitals --> OR
        - Free air on CXR --> OR
    - Penetrating trauma
        - GSW
            - Go directly to OR if peritoneal penetration due to the high incidence of visceral injury
        - Stab wounds
            - Peritonitis -> OR
            - Stable vitals, no evidence of peritonitis --> CT
            - Unstable vitals or positive FAST --> OR

- **How well does CT imaging identify intra-abdominal injury in blunt abdominal trauma?**
    - CT abdomen/pelvis has high sensitivity (range 97-100% sensitivity) for detecting intra-abdominal injury in the setting of trauma patients who present with a seat belt sign (abrasions or ecchymosis over lower abdomen/across abdomen where seat belts are located).
    - CT is less sensitive for mesenteric, bowel, pancreatic duct and diaphragmatic injuries

- **POCUS Pearls**
    - FAST: Focused Assessment of Sonography for Trauma
        - Used to screen blunt or penetrating trauma patients for life threatening intra-abdominal and thoracic injuries; includes right upper quadrant (RUQ), left upper quadrant (LUQ), subxiphoid (SX) or parasternal long (PSL) view of heart and suprapubic (SP) view.

- RUQ - Most sensitive single view for free fluid. In a supine patient, fluid typically collects between the liver and the kidney, but don't miss the inferior tip of the liver and R paracolic gutter where a small amount of fluid will often collect first.
- LUQ - fluid preferentially collects between the spleen and the diaphragm, therefore do not miss the subdiaphragmatic view.
- SP - obtaining both a sagittal and transverse view of the pelvis and fanning completely though the pelvis will help you to distinguish pathologic free fluid from normal fluid in the bladder.
- SX or PSL - performed to evaluate for pericardial effusions, trace or small pericardial effusions may be physiologic but should be interpreted in the clinical context.
    - In the setting of trauma, any free fluid in the abdomen is presumed to be blood and will appear as an anechoic stripe with sharp borders.
    - Sensitivity as compared to gold standard (CTAP) for detection of intra abdominal free fluid is around 86-97%, with high specificity 95-100%; sensitivity increases in the stable blunt abdominal patient with a repeat examination as in this case. Keep in mind that these specificities and sensitivities are for patients with **abnormal** vital signs. In the stable trauma patient the FAST exam is not specific nor sensitive enough to rule out intra-abdominal injuries.
    - Many algorithms exist for management, however an unstable patient with blunt abdominal trauma and a positive FAST exam should go to the OR for an emergent laparotomy.

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