

- Used to assess patients with potential thoracoabdominal injuries.
- Sole purpose is the detection of free intraperitoneal or pericardial fluid in haemodynamically unstable patients and will require urgent OT rather than CT
- A FAST may allow the Trauma Surgeon to predict the most appropriate sequence of operative or angiographic interventions in these critically injured patients.
- FAST has largely supplanted diagnostic peritoneal lavage (DPL) and has been increasingly used in conjunction with CT scanning for serial abdominal examinations.

Sensitivity

- The sensitivity 81-98% and specificity 94-98% of FAST
- 700mL of free intraperitoneal fluid required for sensitivity >95%, >250ml for >90%.
- FAST examinations do not reliably exclude organ injury or retroperitoneal injury (sensitivity ~30%).
- 1cm rim of fluid in Morrison's pouch = 1L free fluid
- A negative FAST must not be used to "clear" the abdomen in stable patients with potential thoracoabdominal injuries based on mechanism or clinical features. CT imaging where available should be used in these patients.

Pros:

- Rapid
- Done in Resus/ED
- Reliable
- Easily repeatable
- Non-invasive
- Doesn't require radiologist
- No contrast or radiation
- Safe in pregnancy

Cons:

- Operator dependent
- Poor sensitivity for solid organ and bowel injury
- Subcutaneous air, copious bowel gas and obesity will make interpretation difficult
- Less info than CT
- Availability
- Less sensitive for small injuries
- Retroperitoneum not seen well
- Unable to distinguish blood & ascites

Indications

- Blunt or penetrating trauma patients in Grade 3-4 shock who are unable to proceed to CT scan. E.g.:
 - Major pelvic # associated with blunt torso injury and Grade 3-4 shock
 - Major chest trauma who are in need of urgent or resuscitative thoracotomy
 - Unstable penetrating upper abdomen or epigastric trauma going to OT, to assess pericardium prior to operation
- Serial abdominal examinations on trauma patients in ED who subsequently develop abdominal signs or haemodynamic instability after CT abdomen.

Contraindications

- Haemodynamically unstable patients with a clear indication for OT in whom the performance of FAST would delay transfer to definitive care.
- Lack of experienced staff.

Views:

- Perihepatic
 - RUQ visualised - right lobe of liver, kidney & hepatorenal space (Morrison's pouch).
 - Probe: right mid to posterior axillary line at the level of the 11th and 12th ribs.
- Perisplenic
 - LUQ visualised - spleen, kidney, perisplenic area
 - Probe: left posterior axillary line between the 10th and 11th ribs
- Pelvis
 - Bladder & pouch of Douglas between bladder and uterus in females, or rectovesical pouch in males
 - Probe: in midline, slightly above the symphysis pubis.
- Pericardial
 - Essentially a subcostal echocardiographic view of the heart, liver and pericardium
 - Probe: under xiphisternum in midline angled slightly upward toward left shoulder.

Diagnostic peritoneal lavage (DPL)

- Infrequently used now.
- Looks for intraperitoneal blood (98% sensitive).
- More sensitive than CT/FAST for hollow viscus injuries
- Doesn't exclude retroperitoneal injury.
- Useful if equivocal Hx/Exam in unstable pat with multiple injuries.

Technique

1. Ensure that the patient has a gastric tube and urinary catheter in place
2. Prep the abdomen with Betadine and drape the umbilical region.
3. Inject LA+adrenaline 2-3cm in midline subumbilical region (supraumbilical if pelvic #)
4. Open procedure:
 - a. Vertically incise the skin and subcutaneous tissue down to the fascia.
 - b. Insert a small self-retaining retractor to hold the tissues open and stop bleeding.
 - c. Incise fascia & identify peritoneum. Insert a purse-string suture to prevent leakage of lavage fluid if used.
 - d. Make a small hole in the peritoneum and insert the lavage catheter, directing it into the pelvis.

Or closed procedure:

- a. Seldinger - Std wire through needle and then catheter over the wire technique.
5. Connect the catheter to a 20ml syringe and aspirate.
 6. If <10mls frank blood aspirated, instil 1L of warmed NS & agitate the abdomen gently.
 7. Allow the fluid to siphon off. At least 250mls must be removed for true result.
 8. Remove the catheter and suture the fascia and skin.

Positive if >10-20ml frank blood on initial aspiration. Otherwise >100,000 RBC/ml in blunt or >5,000 RBC/ml in penetrating, or >500WBC/ml if <3hr, bacteria, bile or food particles.

Intermediate if pink fluid on initial aspiration or lower cell counts than above.

Summary of FAST vs CT vs DPL

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|-----------------|-------------------|---------------------|-----------------|
| • Speed: | FAST > DPL > CT | • Ease/portability: | FAST > DPL > CT |
| • Sensitivity: | DPL > CT and FAST | • Safety: | FAST > CT > DPL |
| • Specificity: | CT > FAST > DPL | • Cost: | CT > FAST > DP |
| • Localisation: | CT > FAST > DPL | | |