Abdominal and Pelvic Trauma

External Landmarks



Mechanism of Injury

When should you suspect abdominal and pelvic injury?

Blunt

SpeedSafety devices

Point of impact Position

IntrusionEjection

Penetrating

- · Weapon
- Distance
- Number, location of wounds

Explosion

Combined mechanism

Blunt Force Mechanism

Common Injuries

- · Spleen
- Liver
- · Small bowel
- · Pelvis



Penetrating Mechanism

Any Organ at Risk

- · Stab
 - Low energy, lacerations
- Gunshot
 - Ballistics
 - Type of weapon
 - Shrapnel
- Shotgun
 - Distance from target
 - Spread of projectiles
- Explosion / blast



Explosions

- · ABCDE
- Combination mechanism
 - · Blunt
 - Penetrating fragments (multiple)
 - · Blast

Consider proximity, enclosed space, multiple fragments, and secondary impacts (thrown or fall from height).



Assessment

How do I determine if there is an abdominal or pelvic injury?

Physical Exam

- Inspection
- Auscultation
- Percussion
- Palpation
- Examination of pelvis and perineum

Adjuncts of Primary Survey

- Pelvic x-ray
- FAST
- DPL
- CT Scan

Assessment

Factors that Compromise the Exam

- Alcohol and other drugs
- Injury to brain, spinal cord
- Injury to ribs, spine, pelvis

Caution

A missed abdominal injury can cause a preventable death.

Pitfalls

Excessive or repeated testing of pelvic stability can be detrimental.

Urinary Catheter

- Monitors urinary output
- Diagnostic
- Decompresses bladder before DPL
- Pelvic fracture patients are at high risk of bladder and urethral injury.
- Hematuria is diagnostic of injury.



Urethral Injury

A posterior urethral injury usually occurs in patients with multisystem injuries and pelvic fractures.

In contrast, an anterior urethral injury results from a straddle impact and can be an isolated injury.

Gastric Tube

- Relieves distention
- Decompresses stomach before DPL



Basilar skull / facial fractures can induce vomiting / aspiration

Blood and Urine Tests

- No mandatory blood tests before urgent laparotomy
- Hemodynamically abnormal
 - Type and crossmatch
 - Coagulation studies
- Pregnancy testing
- Alcohol or other drug testing
- · Hematuria (gross versus microscopic)

X-ray Studies

Blunt Trauma: AP chest and AP pelvis

 Penetrating Trauma: AP chest and abdomen with markers (if hemodynamically

normal)



Contrast Studies

- Abdominal CT
- Cystogram





Diagnostic Studies - Blunt Trauma

| ■ TABLE 5-2 Comparison of DPL, Fast, and CT in Blunt Abdominal Trauma | | | |
|---|--|--|---|
| | DPL | FAST | CT SCAN |
| Advantages | Early diagnosisPerformed rapidly98% sensitiveDetects bowel injuryTransport: No | Early diagnosis Noninvasive Performed rapidly Repeatable 86%–97% accurate Transport: No | Most specific for injury Sensitive: 92%–98% accurate |
| Disadvantages | InvasiveSpecificity: LowMisses injuries to diaphragm and retroperitoneum | Operator-dependent Bowel gas and subcutaneous air distortion Misses diaphragm, bowel, and pancreatic injuries | Cost and time Misses diaphragm, bowel, and some pancreatic injuries Transport: Required |
| Indications | Unstable blunt trauma Penetrating trauma | Unstable blunt trauma | Stable blunt trauma Penetrating back/flank trauma |

Diagnostic Studies - Penetrating Trauma

Hemodynamically Normal Patients

Lower chest wounds

Serial exams, thoracoscopy, laparoscopy, or CT scan

Anterior abdominal stab wounds

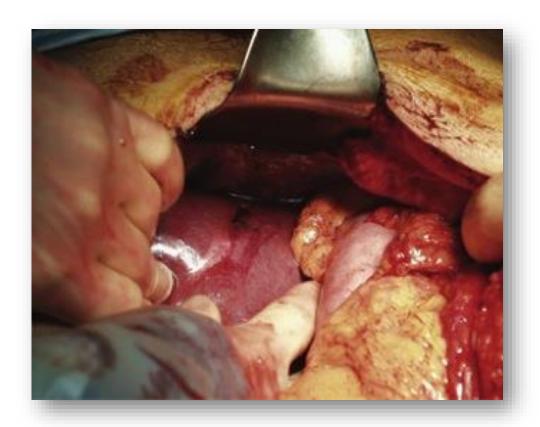
Wound exploration, DPL, or serial exams

Back and flank stab wounds

Serial exams, triple-contrast CT scan

Laparotomy

Which patients warrant a laparotomy?



Laparotomy

Which patients warrant a laparotomy?

Indications for Laparotomy – Blunt Trauma

- Hemodynamically abnormal with suspected abdominal injury
- Free air
- Diaphragmatic rupture
- Peritonitis
- Positive FAST, DPL, or CT

Laparotomy

Which patients warrant a laparotomy?

Indications for Laparotomy – Penetrating Trauma

- Hemodynamically abnormal
- Free air
- Peritonitis
- Positive DPL or CT
- Evisceration

Early operation is usually the best strategy for GSW

- Significant force
- Associated injuries
- Pelvic bleeding
 - Venous / arterial



Assessment of Pelvic Fractures

- Inspection
 - Limb-length discrepancy, external rotation
 - Open or closed
- Palpation or pelvic ring, stability
- Rectal / GU / vaginal exam
 - Open or closed? Palpate prostate

Management of Pelvic Fractures

- AB, as usual
- C: Control hemorrhage
 - Wrap / Binder
 - Rule out abdominal hemorrhage
 - Angiography, fixation
 - Pelvic packing





Hemodynamically Abnormal Patients

