VANDERBILT UNIVERSITY MEDICAL CENTER
DIVISION OF TRAUMA AND SURGICAL CRITICAL CARE

Penetrating Abdominal Trauma

Purpose: To propose algorithm for diagnosis and management of penetrating abdominal trauma.

1. Diagnosis and management varies according to anatomic region
    a. Thoracoabdominal
        i. Possible thoracic, diaphragm, abdominal injury
    b. Back/Flanks
        i. Retroperitoneum
        ii. Colon
    c. Anterior abdomen
    d. Right upper quadrant
        i. Possible isolated hepatic injury
    e. Pelvis
        i. Consider extra-peritoneal rectal injury
2. ***Trajectory and mechanism are primary determinants of injury pattern***
    a. Plain films may be useful for determining ballistic projectile trajectory
        i. chest, abdomen, and pelvis plain films should be considered standard
    b. questionable utility in stab wound
    c. CT scan can be useful in selected cases
    d. almost impossible to design one universal algorithm
3. Diagnostic modalities: All have pros and cons, must weigh risk vs benefit
    a. Local wound exploration
        i. Useful for exclusion of anterior fascial penetration
        ii. Posterior fascial penetration determination inaccurate/unreliable
    b. Diagnostic peritoneal lavage
        i. absolute criteria for positive examination in penetrating trauma is controversial
        ii. may be useful dependent on resource availability
    c. Laparoscopy
        i. Useful for identification of peritoneal invasion
        ii. Requires general anesthesia
        iii. Unreliable for visceral exploration in penetrating injury
        iv. Cost?
    d. Serial examination
        i. Requires suitable geography (e.g. observation unit) with serial *examiner*
        ii. Unreliable in obese, altered mental status, shock, distracting injury
    e. Plain films
        i. Useful for trajectory determination
        ii. less useful in stab wounds than projectile related injuries
    f. Ultrasonography
        i. can detect free fluid but nonspecific for site of injury
        ii. unreliable for retroperitoneal injury
        iii. usefulness lies in positive predictive value
    g. CT scan

i. require significant time commitment
ii. unsafe in hemodynamically unstable patient
iii. higher velocity = greater utility; lower velocity = lower utility
iv. scout exam is useful for rapid trajectory determination

h. Laparotomy
    i. because of associated morbidity, goal is to minimize unnecessary/non-therapeutic laparotomy
    ii. gold standard examination, therapeutic modality

i. Angiography
    i. useful only in specific circumstances
        1. penetrating solid organ injury such as kidney, spleen, or liver