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Deaconess REGIONAL TRAUMA CENTER

Penetrating Abdominal Trauma

Purpose: To define appropriate diagnostic tests and therapeutic interventions for the diagnosis of penetrating abdominal wounds. Specifically, these guidelines will help determine the presence of an intra-abdominal injury that will require exploratory laparotomy.

Definitions:

A. Penetrating abdominal injury: any penetrating injury that could have entered the peritoneal cavity or Retroperitoneum inflicting damage on the abdominal contents. In general, the entry wounds for an abdominal injury may extend from the fourth intercostal space to the perineum.

B. Anterior penetrating abdominal injury: an entry wound on the anterior abdomen or chest that could have penetrated into the peritoneal cavity.

C. Thoracoabdominal penetrating abdominal injury: an entry wound below the fourth intercostal space and above the costal margin. These are wounds that could have initially entered the chest and then penetrated the diaphragm to enter the abdomen.

D. Posterior or flank penetrating abdominal injury: an entry wound posterior to the posterior axillary line. Wounds in this area are most likely to be in the Retroperitoneum. Additionally, the large mass of flank and back muscle will make the diagnosis of organ injury more difficult and the possibility of organ injury less frequent.

Guidelines:

A. Assess and resuscitate per ATLS protocol

B. Assess the abdomen looking for entry wounds, bleeding, and peritoneal findings
   a. Chest injuries can be associated with penetrating abdominal injuries; therefore, be sure signs and symptoms are clearly understood

C. Perform immediate laparotomy for
   a. Herniated abdominal contents
   b. Massive bleeding from wound
   c. Peritoneal signs consistent with hollow viscous injury

d. Signs of hemodynamic instability with positive FAST exam

D. For stab wounds not meeting emergent criterion above
    a. If the stab wound in anterior
        i. Determine if the wound enters the peritoneal cavity by visually exploring the wound
            1. This can be done by infiltrating local anesthesia, then prepping and draping the wound
            2. The wound is extended if necessary to allow a visual inspection of the wound to determine its depth
            3. The liberal use of retractors and assistants will facilitate wound exploration
        ii. If the wound does not penetrate the anterior fascia, then the wound can be debrided, irrigated and closed
            1. The patient may be discharged if no other injuries exist
        iii. If the wound does not penetrate the anterior fascia, then surgical exploration is indicated, either laparoscopy, laparotomy, or a combination
            1. If surgery is not elected, admission with serial abdominal exams and low threshold for surgery is required
    b. If the wound is thoracoabdominal
        i. Obtain chest x-ray with wound markers to determine the presence of chest injury and to determine the relationship of the entry wound to the diaphragm
        ii. FAST for evaluation of the pericardium and to determine presence of intraabdominal fluid
            1. If FAST is positive in pericardium and abdomen, surgery for pericardial window with abdominal exploration via laparoscopy, laparotomy, or combination is indicated
            2. If FAST of pericardium is negative, but positive on abdomen, surgery for abdominal exploration via laparoscopy, laparotomy, or combination is indicated
            3. If no pericardial or abdominal fluid present on FAST, admission for serial abdominal exams versus surgical exploration
    c. If the wound is posterior or flank
        i. Insert Foley catheter to determine the presence of hematuria
        ii. Obtain a CT scan to determine injury to retroperitoneal organs
        iii. Ensure if bullet tract crosses urinary system that the ureters are visible on CT scan with delayed imaging, or ureters are viewed in surgery, or with retrograde studies in surgery with contrast to determine ureter injury
    d. For pelvic wounds that may have traversed the rectum
        i. Perform anoscopy and sigmoidoscopy to determine the presence of a mucosal defect
        ii. Consider diversion, drainage and rectal washout if injury is found

E. For all patients taken to surgery for exploratory laparotomy
    a. Make sure the patient is typed and cross-matched for blood and that it is immediately available
    b. Consider massive transfusion protocol (MTP)
    c. Tranexamic acid
        i. If onset <3 hours
    d. Administer prophylactic antibiotics for bowel flora

References:

- Advanced Trauma Life Support, American College of Surgeons, 10th Edition