

PRACTICE GUIDELINES: RIGHT UPPER QUADRANT PENETRATING ABDOMINAL INJURIES

OBJECTIVES:

1. Define the type of right upper quadrant penetrating abdominal injury that might be amenable to non-operative management
2. Define diagnostic and therapeutic strategies for the non-operative management of RUQ penetrating injuries.
3. Define pitfalls and complications of this management plan

DEFINITION:

Right Upper Quadrant Penetrating Abdominal Injury – a penetrating injury in the right upper quadrant of the abdomen in which the trajectory of the penetration appears to have involved the liver as the only injured abdominal organ. Any possibility of other organ injury excludes the use of this protocol.

TRAUMA GUIDELINES:

1. For all penetrating injuries of the abdomen, follow ATLS guidelines.
 - a. Two large bore IV lines. One must be above the diaphragm.
 - b. Two liters of lactated Ringers.
2. Patient must have relatively normal hemodynamics. If there is any drop in blood pressure or abnormal tachycardia or acidosis associated with a penetrating injury in the RUQ, then patient must go for laparotomy.
3. Determine if this fits criteria for non-operative management
 - a. Hemodynamically stable.
 - b. Stab wound or low velocity gunshot wound (.22 or .25 caliber).
 - c. Entry and exit (if present) wounds suggest a trajectory that traverses the liver as the only abdominal organ injured.
 - d. Entry wound and x-ray showing the bullet suggest that the liver is the only abdominal organ injured.
 - e. No other associated injuries or morbidity that would preclude non-operative management.
 - f. Associated hemopneumothorax is OK as long as hemothorax is small (<500 ml).
4. Place chest tube if required. Use large (36 Fr) chest tube.
5. Obtain CT of the abdomen with oral and IV contrast.
6. Determine trajectory of the bullet or knife into or through liver. Consider non-operative management if:
 - a. The liver is the only injured abdominal organ.
 - b. The amount of blood around the liver and in the abdomen is minimal to moderate.
 - c. There is no active swirl sign suggesting active bleeding. (See protocol on managing swirl sign. Consider angiography and embolization.)
 - d. Go for laparotomy unless all of the above conditions are fulfilled.

7. If non-operative approach is used:
 - a. Admit to ICU
 - b. NPO. Serial abdominal exams
 - d. Serial hematocrits every six hours until stable within 2%, then every 24 hours
 - e. Bedrest for three days.
 - f. Liver function studies on day 2 after injury.
8. If hemodynamically stable with unchanging hematocrit after 24-48 hours:
 - a. Transfer to surgical floor.
 - b. Advance diet
 - c. Mobilize on fourth day.
 - d. Repeat CT 48 hours after injury.
 - i. If there is minimal increase in fluid and bilirubin is normal, continue management and discharge when eating, having bowel movements, and afebrile.
 - ii. If there is increase in fluid and bilirubin is elevated
 - a) Obtain radionuclide biliary imaging or MRCP
 - b) If there is a bile leak, then
 - (i) Percutaneous drainage of biloma
 - (ii) ERCP with stents.
9. Pitfalls:
 - a. Biloma as above
 - b. Diaphragmatic hernia – should not be a problem since the liver protects the diaphragm.
 - c. Hemobilia
 - d. Major ductal injury that will result in persistent biliary fistula.