

PRACTICE GUIDELINES: NON-OPERATIVE MANAGEMENT OF SPLENIC INJURIES

OBJECTIVES:

1. Define situations in which non-operative management of splenic injuries is safe and desirable.
2. Define a clinical pathway for the non-operative management of splenic injuries.

DEFINITIONS:

Spleen injury:

Grade I	Subcapsular hematoma, <10% surface area capsular tear, < 1 cm in depth
Grade II	Subcapsular hematoma, nonexpanding, 10-50% surface area Intraparenchymal hematoma, nonexpanding , <2 cm in diameter
Grade III	Capsular tear, active bleeding, 1-3 cm, does not involve trabecular vessel Subcapsular hematoma, >50% surface area or expanding Intraparenchymal hematoma, >2 cm expanding
Grade IV	Laceration >3 cm in depth or involving trabecular vessels Ruptured intraparenchymal hematoma with active bleeding
Grade V	Laceration involving segmental or hilar vessels producing major devascularization (>25% of spleen) Shattered spleen Hilar vascular injury that devascularizes spleen

GUIDELINES:

1. Indications: Non-operative management of splenic injury can be considered when all of the following conditions have been met:
 - a. Diagnosis of splenic injury on CT scan.
 - b. Hemodynamically normal patient that has not required or has responded quickly to the resuscitation.
 - c. Grade I-III splenic injury. Consider for Grade IV or V injury in children or adults if no significant hemoperitoneum is present.
 - d. No other major intra-abdominal injury.
 - e. Available for monitoring of abdominal exam and blood counts (ie., in a long operative procedure) except for short operative procedures.
 - f. No other major sources of blood loss.
 - g. No other premorbid illnesses that suggest the patient could not tolerate blood loss (e.g., severe ischemic heart disease).
 - h. Willingness to take blood transfusion (e.g., not a Jehovah's Witness).
 - i. Active bleeding (swirl sign) if successful embolization

In some cases, there will be active bleeding from the spleen as defined by a blush or swirl on the CT scan or a dropping hematocrit. Consideration should be given to angiography and embolization in these patients. If this option is taken, then consider the time of the embolization as the "start time" for the following protocol.

2. Protocol:
 - a. Admit all Grade II or higher splenic injuries to telemetry unit. Consider admitting all Grade IV or V splenic injuries to an ICU.
 - i. Monitor hourly vital signs.
 - ii. Bed rest.
 - iii. NPO.
 - iv. Draw serial hematocrit and hemoglobin every 6 hours until stable (within 2%) on two consecutive draws.
 - b. When hematocrit is stable and there have been no adverse hemodynamic events:
 - i. Transfer to regular floor or discontinue telemetry.
 - ii. Advance diet.
 - iii. Hematocrit and hemoglobin daily.
 - iv. Bed rest for number of days corresponding to the grade of the splenic injury (e.g., Grade III = 3 days of bed rest), then may ambulate in the hospital.
 - i. If stable and tolerating a diet, discharge 1 day after ambulation begins.
 - ii. ALL Patients receive a **SOLID ORGAN INJURY** Card
 - c. After discharge:
 - i. No school for a week.
 - ii. No physical education for approximately six weeks.
 - iii. No major contact sports (e.g., football) for approximately 3 months.
 - iv. Return to clinic in two weeks.
 - v. Instruct to return to ED if developing worsening left upper quadrant pain, dizziness, syncope or hypotension.
 - d. Failures (requires laparotomy):
 - i. Children: requires >40 ml/kg of blood transfusion to maintain hematocrit >26%.
 - ii. Adults: requires 2 units of blood to maintain hematocrit >26% in the absence of other injuries.
 - i. Any patient:
 - 1) New onset of diffuse peritoneal irritation suggestive of perforated viscus.
 - 2) Sudden hypotension unassociated with other bleeding sites.
 - iv. If splenectomy is required, administer vaccines on the next to last hospital day:
 - a) Pneumococcus vaccine (Pneumovax).
 - b) Meningococcus vaccine.
 - c) Hemophilus influenzae vaccine.