

**UAMS MEDICAL CENTER
TRAUMA SERVICES MANUAL**

SUBJECT: Management of Liver and Spleen Injuries Clinical Management Guideline

REVIEWED: 12/2018 Revised 05/15/2020

PAGE: 1 of 4

RECOMMENDATION(S): Dr. Ron Robertson

APPROVAL: 07/01/2015

CONCURRENCE(S): Trauma Faculty

EFFECTIVE: 07/01/2015

PURPOSE: To determine when non-operative management of liver and spleen injuries are indicated

DEFINITIONS:

SPLEEN INJURIES:

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

LIVER INJURIES:

- | | |
|-----------|---|
| Grade I | Hematoma: Subcapsular, <10% surface area
Laceration: Capsular tear, <1 cm parenchymal depth |
| Grade II | Hematoma: Subcapsular, 10-50% surface area
Laceration: Intraparenchymal, <10 cm in diameter
Capsular tear, 1-3 cm parenchymal depth, <10 cm length |
| Grade III | Hematoma: Subcapsular, >50% surface area or expanding
Laceration: Ruptured subcapsular or parenchymal hematoma
Intraparenchymal hematoma >10 cm or expanding >3 cm parenchymal depth |
| Grade IV | Laceration: Parenchymal disruption involving 25-75% of hepatic lobe or 1-3 Couinaud's segments within a single lobe |
| Grade V | Laceration: Parenchymal disruption involving >75% of hepatic lobe or
Vascular: >3 Couinaud's segments within single lobe, Vascular: Juxtahepatic venous injuries; i.e., retrohepatic vena cava/central major hepatic veins, and Hepatic avulsion |

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CRITERIA:

1. Splenic Injuries

A. Non-operative management of splenic injuries can be considered when all of the following conditions have been met:

1. Diagnosis of injury on CT scan/FAST
2. Hemodynamic stability
3. Grade 1-3 injury-Consider for Grade 4 or 5 if no significant hemoperitoneum is present
4. No other major intra-abdominal injury
5. No other major sources of blood loss
6. Available for monitoring except for short operative procedures
7. No other pre-morbid illnesses that suggest the patient could not tolerate blood loss (e.g., severe ischemic heart disease)
8. Willingness to receive blood transfusion
9. Consider intervention for those with mod-severe TBI to avoid hypotension

B. All patients with hyperdense blush on CT should be evaluated for urgent/emergent angiogram with embolization.

C. UAMS Trauma Registry data indicates patients >60 are at high risk for failed non-operative management

D. **Immunizations:** Please refer to the “Post-Splenectomy Vaccines” Guideline for proper management

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2. Liver Injuries

- A. Non-Operative management of liver injuries can be considered when all of the following conditions have been met:
 - 1. Liver injury diagnosed on CT scan with normalizing vital signs, Grade I to IV
 - 2. Injury not into hilum
 - 3. Rim of blood fairly localized around the liver

- B. Consider admitting all Grade 4 or 5 spleen injuries to the SICU and all Grade 3 or higher liver lacerations to the ICU
 - 1. Monitor hourly vital signs
 - 2. Bedrest
 - 3. NPO
 - 4. Serial Hgb/Hct q 6 hours until stable

- C. All patients with hyperdense blush on CT should be evaluated for urgent/emergent angiogram with embolization.

References:

1. Shatz DV, Romero-Steiner S, Elie CM, et al. Antibody responses in postsplenectomy trauma patients receiving the 23-valent pneumococcal polysaccharide vaccine at 14 versus 28 days postoperatively. *J Trauma* 2002; 53(6): 1037-42.
2. Shatz DV. Vaccination practices among North American trauma surgeons in Splenectomy after trauma. *J Trauma* 2002; 53: 950-956.
3. Taylor MD, Genuit T, Napolitano LM. Overwhelming postsplenectomy sepsis and trauma: Time to consider revaccination? *J Trauma* 2005; 59: 1482-1485
4. Shatz DV, Schinsky M, Pais L, et al. Immune responses of splenectomized trauma patients to the 23-valent pneumococcal polysaccharide vaccine at 1 versus 7 versus 14 days after Splenectomy (RCT). *J Trauma* 1998; 44: 760-765.
5. Epidemiology and prevention of vaccine-preventable diseases. The Pink Book, 13th ed. Chapters 14 and 17, US Department of Health and Human Services Center for Disease Control and Prevention; April 2015.

These guidelines were prepared by the UAMS Trauma Service. They are intended to serve only as a guideline based on current review of the medical literature and practice. They are neither policies nor protocols. Their use is at the discretion of the managing physician

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6. Practice Management Guideline/Eastern Association for the Surgery of Trauma