

UAMS MEDICAL CENTER
ACS SERVICES MANUAL

SUBJECT: Blunt Solid Organ Injury Management Guideline
REVIEWED/UPDATED: 12/18, 8/23

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EFFECTIVE: 9/1/2023

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APPROVAL: 9/1/2023

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

DEFINITIONS:

SPLEEN INJURIES:

- Grade I Subcapsular hematoma, <10% surface area
 Parenchymal laceration < 1 cm in depth
 Capsular tear
- Grade II Subcapsular hematoma, 10-50% surface area
 Intraparenchymal hematoma <5 cm in diameter
 Parenchymal laceration 1-3 cm in depth
- Grade III Subcapsular hematoma, >50% surface area or expanding
 Ruptured subcapsular or intraparenchymal hematoma \geq 5 cm
 Parenchymal laceration >3 cm in depth
- Grade IV Any injury in the presence of a splenic vascular injury or active bleeding confined within splenic capsule
 Parenchymal laceration involving segmental or hilar vessels producing >25% devascularization
- Grade V Any injury in the presence of a splenic vascular injury with active bleeding extended beyond the spleen into the peritoneum
 Shattered spleen

LIVER INJURIES:

- Grade I Subcapsular hematoma <10% surface area
 Parenchymal laceration <1 cm in depth
- Grade II Subcapsular hematoma 10-50% surface area
 Intraparenchymal hematoma <10 cm in diameter
 Parenchymal laceration 1-3 cm in depth and \leq 10 cm length
- Grade III Subcapsular hematoma >50% surface area or expanding
 Ruptured subcapsular or parenchymal hematoma
 Intraparenchymal hematoma >10 cm
 Parenchymal laceration >3 cm in depth
 Any injury in the presence of a liver vascular injury or active bleeding contained within liver parenchyma
- Grade IV Parenchymal disruption involving 25-75% of a hepatic lobe
 Active bleeding extending beyond the liver parenchyma into the peritoneum
- Grade V Parenchymal disruption involving >75% of hepatic lobe
 Juxtahepatic venous injuries to include retrohepatic vena cava and/or central major hepatic veins

RENAL INJURIES:

- Grade I Subcapsular hematoma and/or parenchymal contusion without laceration
- Grade II Perirenal hematoma confined to Gerota's fascia
 Parenchymal laceration \leq 1 cm in depth without urinary extravasation
- Grade III Parenchymal laceration >1 cm in depth without collecting system rupture or urinary extravasation
 Any injury in the presence of a kidney vascular injury or active bleeding contained within Gerota fascia

These guidelines were prepared by the UAMS ACS Division. 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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Grade IV	Parenchymal laceration extending into urinary collecting system with urinary extravasation Renal pelvis laceration and/or complete ureteropelvic disruption Segmental renal vein or artery injury Active bleeding beyond Gerota fascia into the retroperitoneum or peritoneum Segmental or complete kidney infarction(s) due to vessel thrombosis without active bleeding
Grade V	Main renal artery or vein laceration or avulsion of hilum Devascularized kidney with active bleeding Shattered kidney with loss of identifiable parenchymal renal anatomy

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 1-4 injury
 - 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 Grade 4-5 injury should be evaluated for urgent/emergent angiogram with embolization within 1 hour of presentation.
- C. Admit all Grade 4-5 injuries to the SICU for close hemodynamic monitoring.
- D. Consider repeat CTA in 48-72 hours from injury to evaluate for a pseudoaneurysm.
- E. UAMS Trauma Registry data indicates patients >60 are at high risk for failed non-operative management.
- F. **Immunizations:** Please refer to the “Post-Splenectomy Vaccines” Guideline for proper management.
- G. **Thromboprophylaxis:** Please refer to the “Venous Thromboembolism Prophylaxis (DVT/PE)” Guideline for management.

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. Admit all Grade 4 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

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- C. Bile Leaks
 - 1. If <300ml/day at time of diagnosis, then observe or manage with percutaneous drainage alone for up to 14 days.
 - 2. If >300ml/day at time of diagnosis, then proceed with ERCP and sphincterotomy or if the above treatment fails to resolve the leak in 14 days.
- D. Consider repeat CTA in 48-72 hours from injury to evaluate for a pseudoaneurysm.
- E. **Thromboprophylaxis:** Please refer to the “Venous Thromboembolism Prophylaxis (DVT/PE)” Guideline for management.

3. Renal Injuries

- A. Non-operative management of kidney injuries can be considered when all the following conditions have been met:
 - 1. No other indication for exploration
 - 2. Any grade in a hemodynamically stable patient
- B. Consider admitting all grade 4 or higher kidney injuries to the ICU

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