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Blunt Liver Trauma Practice Management Guideline

1. Process/Procedure Description

To develop and provide a systematic approach for the care of patients who have suffered blunt hepatic trauma.

2. Who Should Read This Process/Procedure?

3. Process/Procedure

Step:	Process Instructions/Description:
A.	Introduction to the care of blunt hepatic trauma:
	1. Immediate Surgical Indications Surgical management of blunt grade V hepatic trauma with retrohepatic venacava (RHVC) injury (figures 1&2 on page 4) usually requires emergent operative exploration with an aggressive surgical exposure such as total hepatic isolation. Penetrating liver injuries associated with injury to other intraabdominal organs also require emergent exploration. Isolated right sided penetrating thoracoabdominal injuries may be treated non-operatively with only a chest tube and/or interventional radiology if imaging reveals no likelihood of hollow viscus injury. The liver will typically buttress holes in the diaphragm obviating any need for surgical repair on the right side.
	2. Interventional Radiology and Delayed Hemorrhage Excluding the possibilities mentioned above, most of hepatic trauma is usually managed non-operatively (~85% in most series) or minimally invasively with angioembolization which is the focus of this guideline. Unlike the spleen, the liver

	infrequently develops pseudoaneurysms (extraluminal contrast enhancement totally surrounded by liver parenchyma) in lower grade injuries and follow-up imaging is not necessary for grade I – III injuries unless the H/H drops without other explanation. When delayed bleeding occurs, it can present as hemobilia. In this circumstance, a CT scan may or may not show a blush (abnormal intravenous contrast enhancement) and is usually not associated with an increased hepatic hematoma. Work up for hemobilia can include an EGD to identify blood coming from the ampula of Vater if the patient presents with blood per rectum or hematemesis. In this case the EGD will allow exclusion of other sources of upper GI bleeding such as gastritis or a peptic ulcer etc. In some cases, it may be prudent to proceed directly to IR for definitive diagnosis and treatment if the patient appears to be actively bleeding with signs of shock. Treatment is individualized and requires point of care decisions and direct communication with consultants such as IR, GI and the trauma attending. Unlike splenic trauma that would go emergently to surgery, liver injury patients with active extravasation of contrast (intravenous contrast pooling freely into the abdominal cavity) or contained hepatic blush can be taken emergently to IR with active blood product administration if there is no other concomitant sources of bleeding. Most series demonstrate reduced blood transfusions if patients can be transported urgently (< 30 minutes) to IR for angioembolization of hepatic arterial bleeds. Abdominal distension may be significant in this scenario and patients need to be monitored for abdominal compartment syndrome.
	3. Biloma While the risk of bile leak can at least in theory occur with any with any liver injury, the risk increases with increasing severity. If any liver injury patient develops an unexplained fever, leukocytosis, abdominal distension, jaundice or an ileus, they may require workup for a biloma which may require a CT and a HIDA scan.
B.	Guidelines: The following guidelines should be used for blunt trauma patients:
	1. All trauma patients who meet criteria for level I & II activations should undergo a FAST examination, unless it is an isolated trauma that does not include the chest or abdomen. 2. Level III trauma patients should be considered for a FAST examination. 3. The FAST examination should be performed by the Emergency Medicine attending or by an Emergency Medicine resident who has completed his/her ultrasound rotation. a. The Surgical Critical Fellow should perform the FAST exam when they are covering traumas either under the supervision of the trauma attending or the ED faculty. 4. The FAST examination must be interpreted by the operating surgical team if basing emergency surgery on the examination. 5. If the patient is hypotensive with a positive FAST, consideration should be to take the patient to the operating room for emergency surgical intervention. 6. If the patient is stable with a positive FAST, CT scan should be done on an

	expedited basis with presence of the trauma chief or trauma attending in the CT scanner with the patient. 7. If the patient is stable with a negative FAST, standard work-up should proceed. 8. If the patient is unstable with a negative or equivocal FAST, consideration should be given to DPL if inadequate windows were obtained and there were no findings on chest or pelvic radiograph that would explain the patient's condition. 9. The results of all FAST exam for blunt Level I & II traumas will be correlated with CT scan or operative findings.

References:

Rozycki G, Shackford S (1996). "Ultrasound, what every trauma surgeon should know". J Trauma. 40 (1): 1–4. doi:10.1097/00005373-199601000-00001. PMID 8576968

Scalea T, Rodriguez A, Chiu W, Brenneman F, Fallon W, Kato K, McKenney M, Nerlich M, Ochsner M, Yoshii H (1999). "Focused Assessment with Sonography for Trauma (FAST): results from an international consensus conference". Journal of Trauma. 46 (3): 466–72. doi:10.1097/00005373-199903000-00022. PMID 10088853.

American College of Emergency Physicians: Ultrasound in Trauma - The FAST Exam.
<http://www.ACEP.org/ksonoguide/FAST.html>

Attachments

[Blunt Liver Attachmentment.pdf](#)

Approval Signatures

Step Description	Approver	Date
COO	John Winks: Executive Vice President-COO	02/2025
Trauma Services Committee Approval	Stephanie Spain: Trauma Prgm Mgr Adult	01/2025
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Applicability

Erlanger Health - Baroness

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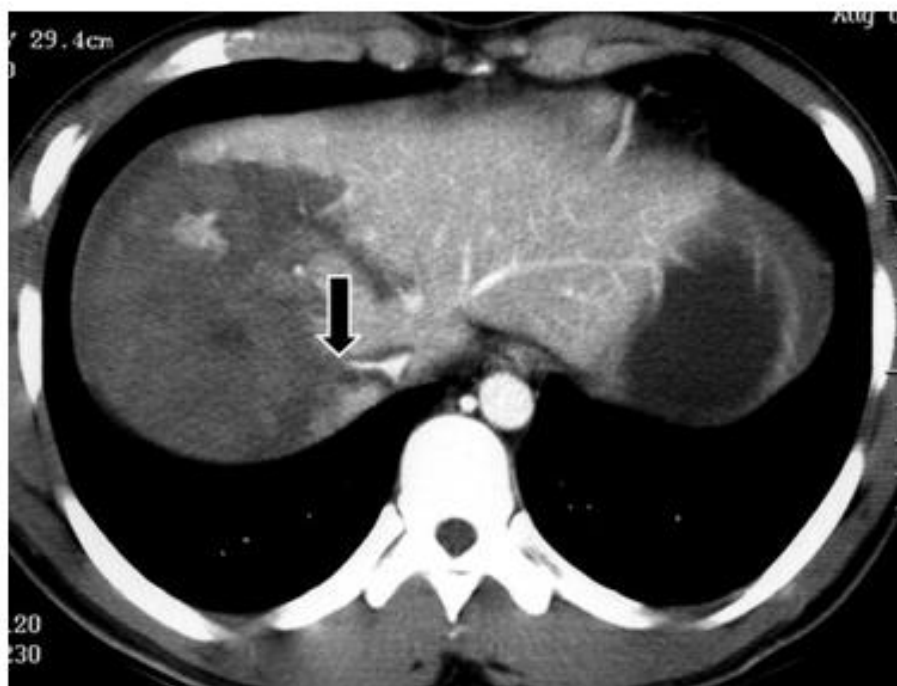


Figure 1. Grade V hepatic injury with laceration extending into Right hepatic vein (black arrow)

Radiographics. 2005; Vol 25, No. 1.

<https://doi/10.1148/rg.251045079>

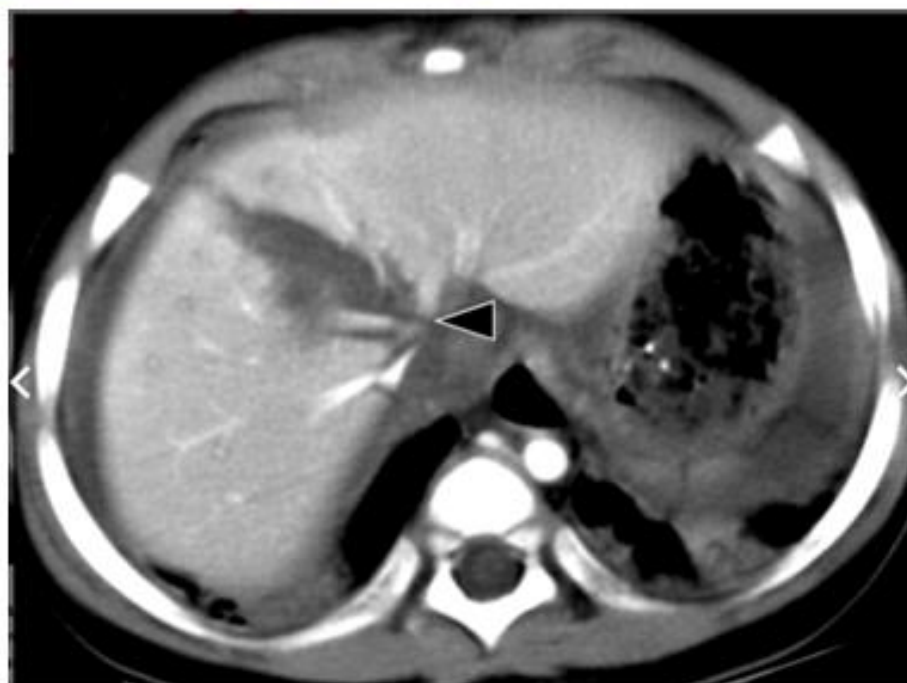


Figure 2. Grade V hepatic injury with laceration extending into left hepatic Vein. Arrow marks point of transection of the left hepatic vein.

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