

BLUNT LIVER TRAUMA

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Liver is the second most frequently injured organ in blunt trauma patients. In our institution, liver trauma represents 32% of all significant visceral injuries found at CT in this population. The percentage of blunt liver trauma patients who were treated conservatively did progressively increase from about 20% in 1980 to 80% in 1990. This shift from surgery to non-operative management was partly due to the improvement of the imaging techniques and to the new concepts in the angiographic management of intra-hepatic vascular injuries. The development of non-surgical interventional techniques to treat the complications of liver trauma (i.e. CT-guided drainage, angiographic embolization, percutaneous balloon dilatation of a biliary duct stenosis) have fostered this trend toward non-operative management. The percentage of successful non-operative management will be increased if the radiologist could help the surgeon to identify patients at risk of bleeding, to select them for angiographic embolization.

The characterization of blunt liver trauma is performed using a CT-based grading system, adopted from the American Association for the Surgery of Trauma (AAST) and adapted for CT by SE Mirvis in 1989. This 5-grades classification reflects the extent of parenchymal liver damage, but cannot reliably predict the probable clinical outcome of attempted nonsurgical management. Arterial contrast media extravasation has been reported as an helpful sign for improving the success of non-surgical management, because it allows arterial embolization to be performed before the patient become hemodynamically unstable. A survey conducted at the Maryland Shock-Trauma Center suggested that an algorithm based on CT criteria, including the CT-grade of hepatic injuries (using the AAST injury severity scale classification), the presence of a contrast blush on the arterial phase and the involvement of a major hepatic vein, could help select high risk patients to angiographic procedure. Patients with grade I through III liver injury, without hepatic vein involvement at CT and without arterial blush of contrast, do not require hepatic angiography. Conversely, patients of any grade with arterial blush of contrast or patients without blush but of grade IV and V, should require angiography.

Angiographic embolization of arterial blush is not only used to improve the success of non-operative management but also as a precious adjunct to surgery to help stop hemorrhage in extended fracture of the liver.

The main delayed complications of liver trauma consist in superinfection, abscess, bile leak, biloma and arterio-venous fistula. A remote post-traumatic biliary duct stenosis is a rare finding. These complications are generally encountered in high grade injuries. CT is considered the first intention examination tool for the screening of complications. Abscess and intra-peritoneal bile leaks are most often treated by percutaneous drainage; resolution of a bile duct tear is usually a long term process. Scintigraphy and, more recently, MRI can be used to confirm and localize a bile leak.

References

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