

Management of Blunt Hepatic Trauma

An Essay

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Summary and Conclusion

The liver is the organ most commonly injured after abdominal trauma. The internal architecture of the liver is composed of series of segment combined to form sector separated by scissurae containing the hepatic veins, Together or separately they constitute the visible lobes.

The right liver and the left liver are respectively drained by the right and the left hepatic ducts whereas the dorsal lobe (caudate lobe) is drained by several ducts joining both the right and left hepatic ducts. The intra-hepatic ducts are tributaries of the corresponding hepatic ducts which form part of the major portal triads which penetrate the liver invaginating Glisson's capsule at the hilus.

The liver is the center of metabolic homeostasis and serves as the regulatory site for energy metabolism by coordinating the uptake, processing, and distribution of nutrients and their subsequent energy products. The liver also synthesizes a large number of proteins, enzymes, and vitamins that participate in a tremendously broad range of bodily

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Contents

Chapter	Page
I. Introduction.....	1
II. Aim of the work.....	4
III. Review Of Literature.....	
* Anatomic and physiologic considerations of the liver.....	5
* Etiology and mechanisms of blunt hepatic trauma.....	31
* Presentation of patients with blunt hepatic trauma.....	43
* Diagnostic approaches to patients with blunt hepatic trauma.	52
* Treatment of patients with blunt hepatic trauma.....	88
IV. Summary and Conclusion.....	146
V. References.....	153
VI. Arabic Summary.....	1

List of Abbreviations

Abbreviations

AAST:	American Association for Surgery of Trauma
ACS:	American Collage of Surgeons
AFP:	Alpha Feto-Protein
ATP:	Adenosine Tri-Phosphate
ATVs:	All Terrain Vehicles.
AVM:	Arterio-Venous Malformation
Ca²⁺:	Calcium ion
cAMP:	Cyclic Adenosine Mono-Phosphate
cDNA:	Complementary Deoxyribonucleic Acid
Cl⁻:	Chloride ion
CT:	Computed Axial Tomography
DCL:	Damage Control Laparotomy
DNA:	Deoxyribonucleic Acid
DPL:	Diagnostic Peritoneal Lavage
EAST:	Eastern Association for the Surgery of Trauma
ECG:	Electrocardiography
ERCP:	Endoscopic Retrograde Cholangio-Pancreatography
FAST:	Focused Abdominal Sonography for Trauma
HCO₃⁻:	Bicarbonate ion
IBW:	Ideal Body Weight
ICU:	Intensive Care Unite
IL-1:	Interleukin-1
IL-10:	Interleukin-10
IL-4:	Interleukin-4
IL-6:	Interleukin-6
K⁺:	Potassium ion
Mg²⁺:	Magnesium ion
MODS:	Multisystem Organ Dysfunction Syndrome
mOsm:	Milli-Osmol
Mph:	Mile Per Hour
MVAs:	Motor Vehicle Accidents
MVCs:	Motor Vehicle crashes
Na⁺:	Sodium ion
OM:	Operative Management

NOM: None Operative Management
OM: Operative Management
PTBD: Percutaneous Transhepatic Biliary Drainage
RBCs: Red Blood Cells
RCTs: Randomized Controlled Trials
TAE: Transarterial Embolization
TNF: Tumor Necrosis Factor
WBCs: White Blood Cells.

List of Figures

Figure	Title	Page
Fig. 1	Lobar anatomy of liver	6
Fig. 2	The functional anatomy in this schematic represents the division by the three hepatic veins that lie within the liver scissurae like fingers of the hands. Each receives a portal pedicle	8
Fig. 3	Posterior view of the liver, showing organs that produce impressions on the inferior surface of the liver	10
Fig. 4	The liver sectors and segmental structure of the liver	13
Fig. 5	Diagram showing the extra-hepatic bile duct anatomy	15
Fig. 6	Ultrasonogram show free fluid in the Morrison Pouch with blunt abdominal trauma	58
Fig. 7	CT scan of patient with blunt abdominal trauma shows hepatic laceration	66
Fig. 8	View of the linea alba and anterior abdominal fascia following a midline infraumbilical incision for an open or semi-open approach to DPL	76
Fig. 9	While grasping and elevating the anterior abdominal fascia, an 18-gauge needle is inserted at a 45° angle toward the pelvis. Two "pops" are felt as the needle traverses the fascia and peritoneum	77
Fig. 10	Following guidewire placement through the needle, a dilator is passed through the fascia prior to placing the peritoneal catheter	78
Fig. 11	Aspiration of 10 ml of gross blood is diagnostic	79
Fig. 12	After fluid is instilled, the bag is placed onto the floor to allow the intraabdominal fluid to return. 30% of the original amount of instilled fluid is required for an adequate sample	80
Fig. 13	Diagnostic algorithm to patients with blunt hepatic trauma	86
Fig. 14	Manual compression of a severe liver injury over laparotomy pads as resuscitation is taking place	117
Fig. 15	The Pringle maneuver being accomplished with an atraumatic vascular clamp	118

List of Figures *(Continued)*

Figure	Title	Page
Fig. 16	Insertion of peri-hepatic packs over a steri-Drape prevents adherence of the packs to the hepatic suture lines or raw surfaces	120
Fig. 17	Direct Suturing of the liver	121
Fig. 18	Lacerated blood vessels and bile ducts have been ligated, and devitalized tissue has been debrided. The omentum has been mobilized from the stomach and transverse colon on a pedicle of gastroepiploic vessels	124
Fig. 19	The omentum has been inserted into the liver injury and held in place by several interrupted liver sutures. Closed suction drainage anteriorly and posteriorly is accomplished with a pair of Jackson-Pratt drains	125
Fig. 20	Right lobe mesh hepatorrhaphy after affixing edges A and B, the inferior edge of C1 and C2 are attached to each other. Redundant mesh is trimmed off to provide a compressive effect. A gap exists between the anterior and posterior edges (A and B)	126
Fig. 21	Algorithm for management of patients with blunt hepatic trauma	130
Fig. 22	Algorithm for the intra-operative management of complex hepatic injuries	131
Fig. 23	CT scan of a patient developed large biloma and abscess after non-operative management	134
Fig. 24	A. Post-operative angiogram demonstrates a fistula between the hepatic artery and the portal vein (arteriportal fistula). B. Fistula between the hepatic artery and portal vein embolized with stainless steel coils	136

Fig. 25

A. CT scan of a patient sustaining injury to the epigastrium revealed grade III hepatic injury. Nonoperative management was initiated, but on postobservational day three, the patient began to exhibit signs of sepsis with a rising bilirubin. B. The patient underwent rescanning and percutaneous drainage of the hematoma. Bile and purulent material were aspirated. C. Contrast injection into the hematoma revealed communication with a branch of the left hepatic duct, with visualization of the entire biliary tree. A pigtail percutaneous catheter was left in place for external drainage. After two weeks, a repeat study failed to show any communication to the biliary tree. An endoscopic retrograde cholangio-pancreato-graphy likewise failed to reveal any extravasation. The percutaneous catheter was then removed without incident

139

List of Tables

Table	Title	Page
Table 1	Liver Injury Scale	42
Table 2	Advantages and Disadvantages of US	61
Table 3	Estimation of volume of hemoperitoneum based on eight intraperitoneal spaces	67
Table 4	Summary points in investigations for suspected liver trauma	87
Table 5	Initial evaluation and management of critically ill or injured patients	89
Table 6	Criteria for non operative management in liver trauma patients	106
Table 7	The stages of damage control surgery Stage	112
Table 8	Indications for damage control surgery	113

Introduction

The liver is the most frequent injured intra-abdominal organ despite of its protective location and may associated with injury of other intra-abdominal organs which increases the risk of complications and death (*Badger et al., 2009*). The overall mortality rate of hepatic injury trauma patients is 10% (*Smaniotto et al., 2009*).

Clinical evaluation of the abdomen, especially in the polytrauma patient, still plays an important role. The classic look, listen and feel sequence is still valid, especially when time is of the essence in a hemodynamically unstable patient. Asymmetry, striae, seatbelt signs, swelling, distention and hematoma can point to abdominal wall injury, but also serious Intra-abdominal injury and should raise the index of suspicion for the treatment team (*Leenen, 2009*).

Hemorrhagic shock due to uncontrollable bleeding of vessels and parenchyma is the main cause of death within the first 36 hours after injury, while later, septic complications due*to abscess formation in areas of necrotic liver parenchyma and

Introduction

disruption of bile ducts represent the main reasons for complications (*Benckert et al., 2010*).

Abdominal ultrasound is an expedient tool for the primary assessment of poly-traumatized patients to rule out high grade intra-abdominal injuries. However, the low overall diagnostic sensitivity of FAST may lead to underestimated injury patterns and delayed complications may occur. CT might be an alternative in these cases, thereafter; careful examination of the abdomen with CT is the best route and gives the highest diagnostic yield for intra-abdominal injuries (*Leenen, 2009*).

Diagnostic peritoneal lavage (DPL) has 98.5% accuracy. It will detect hemo-peritoneum reliably and when applied exclusively, 25% of laparotomies were non-therapeutic (*Peitzman et al., 2009*).

Non-operative management (NOM) is the treatment of choice for hemodynamically stable patients with spleen or liver trauma, (*van der Vlies et al., 2010*).

The decision to implement immediate surgical intervention is based on clinical finding. Exploratory

Introduction

laparotomy is performed on patients who had evidence of massive bleeding on presentation, persistent hypotension despite active resuscitation, a transfusion requirements of more than half their blood volume (*Peitzman et al., 2009*).

The damage control laparotomy is an advancement in the management of massively injured trauma patients. Massive liver injuries, pelvic trauma and some retroperitoneal injuries are some of the indications for this approach (*Karamarkovic et al., 2010*).

Aim Of The Work

The aim of this work is to put a spot light on management of blunt hepatic trauma including diagnosis and different modalities of treatment.