Management of Blunt Hepatic Trauma

An Essay

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GENERAL SURGERY

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الطرق المختلفة لعلاج الإصابات الغير نافذة للنسيج الكبدى

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توطئة للحصول على درجة الماجستير فى

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مدرس الجراحة العامة

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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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El-Sayed Hamouda

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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
Ca^{2+}:	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
HCO_3^{-}:	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
Mg^{2+}:	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.

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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

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 hemodymically 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

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 heir 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.