



## Complications of blunt liver trauma in polytraumatized patient; case report

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### ABSTRACT

**Aim:** Authors want to describe complications of liver rupture in polytraumatized patient injured in a car accident.

**Case report:** Male patient, 22 years old, was admitted to the emergency department with clinical signs of hypovolemic shock and right hip fracture. Conventional radiograms depicted multifragmentar fracture of the right acetabulum with femoral head luxation while blood tests revealed anaemia.

CT assay showed stellate laceration of the liver parenchyma close to falciform ligament, right acetabulum and right femoral head fracture. During the first operation, liver laceration was treated with haemostatic material. Right acetabulum fracture was treated with osteosynthesis after haemodynamic stabilisation of the patient.

Early recovery got complicated by massive production of free intraperitoneal fluid. Intrahepatal bile duct lesion was suspected. ERCP depicted rupture of VII liver segment bile duct and stenosis of the right main bile duct. Endobiliary stent was placed and intraabdominal bile leak and production of free intraperitoneal fluid decreased.

Three days after bile duct intervention, patient developed high temperature and colicky abdominal pain. During relaparotomy, multifocal intraabdominal abscesses were found.

Postoperative recovery was prolonged by the development of the pleural effusion on the basis of the left hemithorax.

The patient was discharged from hospital on 79th day after trauma.

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### 1. Introduction

The liver is the most frequently injured abdominal organ in blunt trauma. Incidence of liver trauma associated with other solid organ, bowel, mesenteric and diaphragmatic injury has been reported to be 15–20%. Blunt liver trauma is associated with splenic injury in 45–60% of patients. Rib fractures are associated with injury to the right superior aspect of the liver in 33% of patients, and duodenal and pancreatic injuries are more closely associated with hepatic left lobe trauma in less than 1% [1,3]. Gallbladder injury is uncommon, occurring in 2–8% patients with blunt liver trauma [1]. Isolated liver injury occurs in less than 50% of patients. Woong Yoon et al. reported mortality rate attributable to blunt liver injury from 4.1% to 11.7% [2].

Regarding complications of open surgery, high incidence of complications and high mortality rate, nowadays non-operative management in combination with interventional methods is pre-

ferred in treatment of stable patients with blunt abdominal trauma in over 86% of patients [17]. However, patients who are haemodynamically unstable, despite fluid resuscitation, and who have signs of peritonitis or a finding that is suggestive of hollow viscus injury, should undergo emergency laparotomy [5,12].

CT is the method of choice for the evaluation of blunt liver trauma in haemodynamically stable patients and during follow up for the assessment of delayed complications [7,8]. Thus it is mandatory to be familiar with liver injury grading system, established by American Association for the Surgery of Trauma [2].

We present a case of polytraumatized patient with blunt abdominal trauma who developed complications of unrecognized intrahepatal bile duct injury. Intrahepatal bile duct rupture was treated with interventional method but patients haemodynamical instability, in the time of the arrival, and development of late complications demanded open abdominal surgery to be performed also.

### 2. Case report

A 21-year old, male patient, involved in motor vehicle accident was admitted to our emergency department. Patient was complaining about diffuse abdominal pain, had upper abdominal tenderness,

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**Fig. 1.** Axial, contrast-enhanced CT scans demonstrates multiple linear and branching low-attenuation areas in the right hepatic lobe that represent lacerations. Lacerated area extends to the porta hepatis. This type of laceration is commonly associated with biliary system injury. Haemoperitoneum.

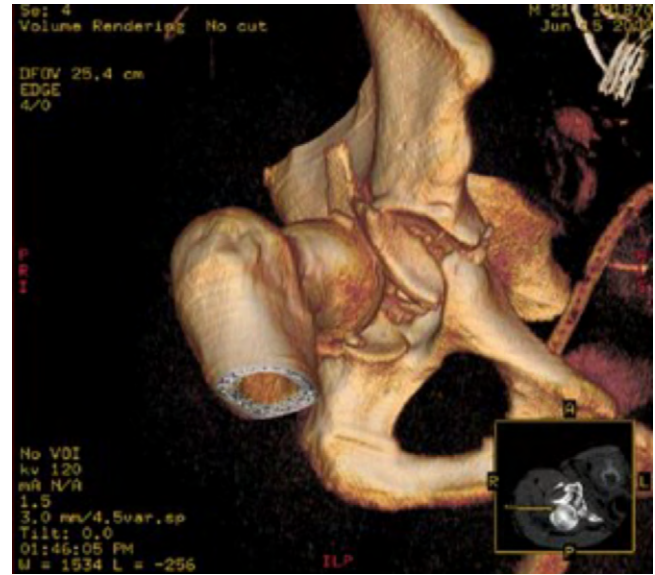
signs of blood loss and signs of right hip fracture. Laboratory tests confirmed falling haematocrit level. Associated injuries, depicted on conventional radiograms, were multifragmentar fracture of the right acetabulum with femoral head luxation and rib fractures.

Urgent ultrasonography (US) examination and computed tomography (CT) assay were performed. Axial, contrast-enhanced CT scans demonstrated irregular, branching low-attenuation area of deep parenchymal laceration in the segments IVA, and small part of VIII segment of the liver, area surrounded with left and intermediate portal vein branch, extending from lateral contour of the right lobe to the porta hepatis. There were no signs of arterial bleeding and portal branches were intact. Interintestinal, perihepatic, in the Morissons pouch (hepatorenal space), perisplenic and paracolic free fluid was found, density 43 HU, pertaining to haemoperitoneum. Periportal low attenuation was noted (Figs. 1 and 2). Associated extraabdominal injuries were VII and VIII right rib fractures.

The patient remained hypotensive despite aggressive fluid resuscitation and was promptly taken to the operating room. Hepatic bleeding was controlled with hepatorrhaphy using haemostic material and closed suction drainage.



**Fig. 2.** Periportal low attenuation. Contrast-enhanced CT scan shows low-attenuation areas around the portal vein and its branches. Distention of the inferior vena cava (IVC) indicates rapid fluid replacement.



**Fig. 3.** Volume rendering CT reformat of the right hip showing multifragmentar fracture of the right acetabulum with cranial and posterior luxation of the femoral head. Bony fragments placed intraarticularly making manual reposition impossible.

After haemodynamic stabilisation of the patient, CT of the right hip was performed, showing Hill-Sachs lesion of the femoral head with multifragmentar fracture of the right acetabulum (Fig. 3). Five days after the first laparotomy, osteosynthesis of the right hip was performed.

Postinjury day 4, patient was still complaining of the pain in the epigastrium. Control CT was performed. Axial, contrast-enhanced CT scans demonstrated earlier verified area of liver parenchyma laceration with decreasing density pertaining to resolving parenchymal haematoma in segments IVA and VIII (Fig. 4). Pleural effusion with both sides lung parenchyma, IX and X segments, atelectasis, were found. CT scans also showed, hypotonic gallbladder, with hyperdense lumen, density 115 HU to 130 HU, probably as a result of impaired kidney function and biliar excretion of contrast medium (Fig. 5). Decrease in amount of free fluid perihepataly and in Morissons pouch, in comparison with earlier



**Fig. 4.** Axial, contrast-enhanced CT scan demonstrates area of liver parenchyma laceration with decreasing density pertaining to resolving parenchymal haematoma. Decrease in intraperitoneal free fluid production. Linear artefacts caused by right hip orthosis.

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