



Available online at
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com/en



REVIEW

Management of blunt hepatic trauma



C. Letoublon*, A. Amariutei, N. Taton, L. Lacaze, J. Abba, O. Risse, C. Arvieux

Clinique Universitaire de Chirurgie Digestive et de l'Urgence, Université Grenoble Alpes, CHU de Grenoble, BP 217, 38043 Grenoble cedex, France

Available online 9 August 2016

KEYWORDS

Liver trauma;
Perihepatic packing;
Abdominal
compartment
syndrome

Summary For the last 20 years, nonoperative management (NOM) of blunt hepatic trauma (BHT) has been the initial policy whenever this is possible (80% of cases), i.e., in all cases where the hemodynamic status does not demand emergency laparotomy. NOM relies upon the coexistence of three highly effective treatment modalities: radiology with contrast-enhanced computerized tomography (CT) and hepatic arterial embolization, intensive care surveillance, and finally delayed surgery (DS). DS is not a failure of NOM management but rather an integral part of the surgical strategy. When imposed by hemodynamic instability, the immediate surgical option has seen its effectiveness transformed by development of the concept of abbreviated (damage control) laparotomy and wide application of the method of perihepatic packing (PHP). The effectiveness of these two conservative and cautious strategies for initial management is evidenced by current experience, but the management of secondary events that may arise with the most severe grades of injury must be both rapid and effective.

© 2016 Elsevier Masson SAS. All rights reserved.

Introduction

“Miss nothing and fix everything” has long been the dogma for emergency management of visceral trauma, which imposed obligatory emergency laparotomy for any hemoperitoneum. For blunt hepatic trauma (BHT), that attitude has been profoundly but gradually transformed beginning in the 1970's, moving toward avoidance of emergency laparotomy whenever possible. This approach has been supported by the contribution of contrast-enhanced CT [1–3]. This dogma was also upended by the concept of abbreviated laparotomy (damage control) where control of active liver bleeding is obtained by perihepatic packing (PHP); this practice has transformed the management of most severe BHT when hemodynamic instability imposes the

need for an emergency surgical response [4–6]. This concept relies on a better understanding of the pathophysiology of major uncontrolled bleeding. Mastery of the techniques of urgent arterial embolization by interventional radiologists has added an additional weapon to the armamentarium [7]. The concept of DS (even possibly by laparoscopy) also deserves its place in modern methods of treatment of BHT [8,9].

In practice, two effective therapeutic trios can be described, depending on whether the trauma victim requires urgent laparotomy or not.

Option 1 – nonoperative management and the first therapeutic trio: CT + intensive care surveillance + delayed surgery

This option can be applied to about 80% of patients with BHT [1–3]. To avoid immediate operation, the main requirement

* Corresponding author.

E-mail address: CLetoublon@chu-grenoble.fr (C. Letoublon).

is hemodynamic stability or a satisfactory response to initial resuscitation: once the patient is hemodynamically stabilized, contrast-enhanced CT is the next necessity. "The trauma patient who does not go directly to the operating room goes to CT."

CT and arterial embolization

CT with three-stage contrast injection including a late venous phase is part of a whole body CT. It allows definition of anatomic severity according to Mirvis, but particularly the detection of active vascular leakage [10]. This leak usually consists of blood: CT must define its size, from a small stable collection contained within a deep lesion to obvious ongoing extravasation bleeding freely into the abdominal cavity resulting in a large hemoperitoneum.

If active bleeding is detected, immediate embolization is indicated, but it is also essential to look for other sites of bleeding that also require treatment (kidney, spleen, pelvis). Hepatic arterial embolization should be as selective as possible to minimize the risk of gallbladder or parenchymal ischemia [11] and, if possible, should be performed with absorbable material. In rare cases, a major venous leak is detected: in this case, whether the bleeding is from a portal or suprahepatic vein, its hemodynamic consequences dictate the need for surgery since it is known that compression of the liver controls the majority of venous bleeding (Fig. 1).

Careful and specifically adapted surveillance

Following radiologic diagnosis and/or intervention, hemodynamic status may require surgical intervention if hemodynamic status deteriorates (e.g., uncontrolled venous leak) or an abdominal compartment syndrome (ACS) develops during the procedure. In most cases, NOM is the therapeutic choice and the intensity of surveillance depends on both the severity of the associated injuries and the Mirvis grade itself: the risk of secondary events is much higher for injuries Grade III or higher, or if embolization was required [12]. Kozar et al., in a study of 453 BHT treated nonoperatively, noted a global complication rate of 14%, while the rate was 52% for Grade V injuries [12].

Very careful monitoring is necessary because a number of events may occur, which, while not deserving the name of "complications", should trigger timely and effective responses. Patients should be monitored in a surgical environment or intensive care unit (ICU) depending on the severity of the hepatic injury and other associated multiple trauma: a grade III or higher liver injury, and/or a hemoperitoneum that is obvious on CT, and/or the need for embolization all require ICU surveillance. Search for hepatic injuries or other associated lesions that may not have been detected in patients who did not undergo initial laparotomy should be ongoing (Fig. 2).

Hepatic hemorrhage

For massive uncontrolled bleeding, emergency laparotomy is indicated. Otherwise, contrast-enhanced CT is performed, which is superior to initial arteriography. If a "blush" is detected, embolization of the involved arterial branch should be performed. Failure of embolization to arrest hemorrhage should lead to laparotomy. Sometimes the clinical picture is more "chronic", with a gradual fall of hemoglobin, while CT images do not reveal any bleeding site: transfusion, in such cases, may avoid recourse to

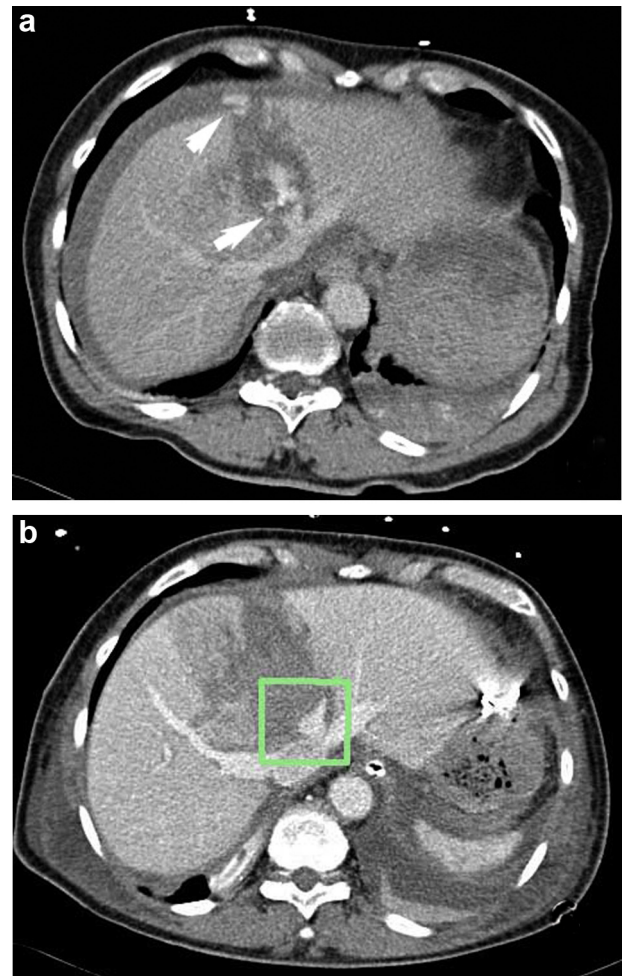


Figure 1. 60-year old female. Skiing accident. Computerized tomography (CT) on arrival (a): severe extravasation due to rupture of the middle hepatic vein with blush extending to the abdominal cavity (arrows). Patient developed shock in the radiology suite during CT scan, leading to urgent intervention with perihepatic packing. Repeat CT prior to removal of packing on day 5 (b) shows no active bleeding and the stump of the middle hepatic vein. Uncomplicated course thereafter.

surgical intervention or repeated arterial embolization in half the cases [13]. Subcapsular hematoma is rarely an indication for surgery, even when this reaches an impressive volume or is painful. But one must verify that the hematoma is not causing parenchymal ischemia by a sort of intrahepatic compartment syndrome [14,15] or by torsion of the suprahepatic veins: elevated transaminases are the best sign of this entity. In such cases, surgical intervention with decompression and hemostasis is required [14–17].

Bile peritonitis

Ongoing bile leakage into the peritoneum often becomes evident between day 2 and day 5, presenting as abdominal pain. The diagnosis is confirmed by ultrasound-guided paracentesis: positive diagnosis should lead to DS (described below) (Fig. 3).

Peritoneal inflammatory syndrome

This typically presents as progressive abdominal pain after an interval of one to six days, fever without obvious signs of infection, and elevated C-reactive protein (CRP). The presence of free peritoneal fluid, which can be of moderate

Download English Version:

<https://daneshyari.com/en/article/3315714>

Download Persian Version:

<https://daneshyari.com/article/3315714>

[Daneshyari.com](https://daneshyari.com)