

## Case Report

# Perfect Collaboration between Different Specialists in Major Complicated Liver Surgery: A Case Report

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## Abstract

**Background:** Traumatic injuries account for 12% of all diseases. According to WHO and CDC data, road accidents cause 1 million deaths per year and approximately 40 million permanent injuries.

**Case information:** A 20-year-old man is hospitalized for street trauma and develops liver trauma with haemoperitoneum and other systemic complications, the resolution of which will involve several specialists.

**Conclusion:** Reducing mortality from trauma is a challenge that continues to involve doctors and health system. This clinical case demonstrates that the right timing and adequate organization among specialists is a fundamental element for the correct resolution of clinical problems.

**Keywords:** Case report; Liver surgery; Surgery of trauma; Interventional radiology; Intensive care

## Abbreviations

ATLS: Advanced Trauma Life Support; ICU: Intensive Care Unit; VILI: Ventilator-Induced Lung Injury; PEEP: Positive End Expiratory Pressure; CRRT: Continuous Renal Replacement Therapy; CVVHDF: Continuous Veno-venous HemoFiltration

## Introduction

In modern health services, the ability to offer multidisciplinary care is believed to be a crucial factor in decreasing mortality and morbidity: this is even more visible in the management of acute complications: we report a patient who underwent major liver surgery after trauma and in whom complications were successfully managed with a perfect collaboration between different specialist.

## Case Presentation

A 20-year-old man was hospitalized due to car accident; after being stabilized according to ATLS [1], he was diagnosed with hemoperitoneum caused by liver trauma and referral to the trauma surgeon led to indication of urgent liver surgery (Figure 1). Severe arterial bleeding associated with severe hypotension and

haemorrhagic shock developed during the surgical procedure. Circulation was immediately supported with crystalloids, blood transfusions and vasoactive drugs (noradrenaline). Despite this cardiovascular support, haemodynamic was unstable and therefore surgical team decided for a liver packing and for transferring the patient into Vascular and Interventional Radiology Unit, where right hepatic artery embolization was carried out. The patient was then admitted to ICU; two days later the same team performed de-packing and right hepatectomy. In ICU the patient had a severe multiple organ failure, including respiratory, renal and cardiac failure [2]. Respiratory failure was managed with protective ventilation to avoid VILI (Low tidal volume, individualized PEEP titration based on best compliance) Cardiac failure was managed with invasive arterial and central venous pressure monitoring in association with cardiac output and haemodynamic parameters; infusion of catecholamines was tailored based on this monitoring. Acute Kidney Injury was managed with CRRT - CVVHDF. Continuous monitoring with point of care techniques such as Rotem allowed early diagnosis and correction of coagulopathy. Three days after the beginning of intensive care treatments we observed a regression of organ failure with significant improvements of haemodynamic parameters and reduction of catecholamines and ventilation support. Five days later, patient was transferred in Surgical Unit and then discharged home after 24 days.

## Discussion

The results of this report suggest that the perfect collaboration between different medical specialists was fundamental in resolving and managing major complicated liver surgery. Major liver surgery is often complicated by multiple organ failure. Patient's critical condition represents a predictive factor in the development of postoperative multiple organ failure. Enhanced resuscitation, anaesthesia and intensive care have contributed to a significant reduction in mortality rates from liver surgery [3]. Optimum results are obtained with a specialist team that includes an experienced liver surgeon,

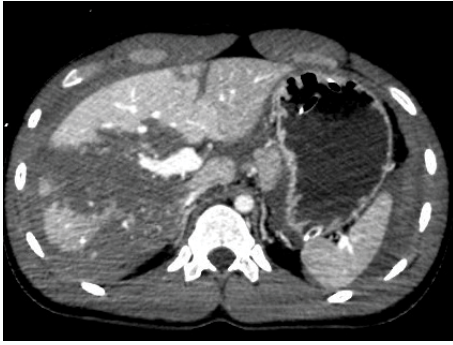
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**Figure 1:** Abdomen computed tomography CT scan: severe hepatic trauma.

anaesthetist/intensivist, endoscopist and interventional hepatobiliary radiologist with expertise in managing postoperative complications.

### Conclusion

Major liver surgery is often complicated by multiple organ failure. Patient's critical condition represents a predictive factor in the development of postoperative multiple organ failure. The results of this report suggest that the perfect collaboration between different medical specialists was fundamental in resolving and managing major complicated liver surgery.

### Declaration

#### Ethics approval and consent to participate

The AORN A.Cardarelli ethics committee approved this case report.

#### Consent for publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

#### Availability of data and material

The clinical datasets of this care report are available from the corresponding author on reasonable request.

#### Authors' contributions

All authors were involved in the clinical management of the case. FI coordinated and collected the data and wrote the manuscript. FI was a major contributor in writing the manuscript. FG has provided for the data acquisition.

MP has designed the work. VB has analyzed and interpreted the patient data. CC has analyzed and interpreted the patient data. GL has provided for the data acquisition. IB has contributed to therapeutic choices. CS has contributed to therapeutic choices. FM has contributed to therapeutic choices. RE has revised the manuscript. All authors read and approved the final manuscript.

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