

Blunt Thoracoabdominal Trauma with Multiple Injuries in a Motorcycle Accident: A Complex Case Report in the Emergency Room

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Abstract: This report describes the case of a 53-year-old male involved in a motorcycle collision in Itaboraí, RJ, in August 2024. The patient was admitted to the emergency room in hypovolemic shock and received fluid resuscitation with 1000 ml of Ringer's lactate, resulting in hemodynamic improvement. Initial tests showed a normal hematocrit of 38% and hemoglobin of 12 mg/dl; however, a second test revealed a hematocrit drop to 32%. Contrast-enhanced computed tomography (CT) revealed solid organ injuries, including a grade IV renal injury and a grade III splenic injury, as well as rib fractures and a small left-sided hemothorax. Due to the patient's hemodynamic stability and the absence of peritoneal irritation signs, non-operative management (NOM) was chosen, with admission to the intensive care unit (ICU) for close monitoring. This report discusses the importance of contrast-enhanced CT for accurate lesion diagnosis and ICU monitoring in NOM cases for complex injuries, highlighting the critical role of the trauma surgeon in patient management.

Keywords: Abdominal Trauma, Renal Injury, Splenic Injury, Non-Operative Management, Iodinated Contrast, Trauma Surgeon.

1. Introduction

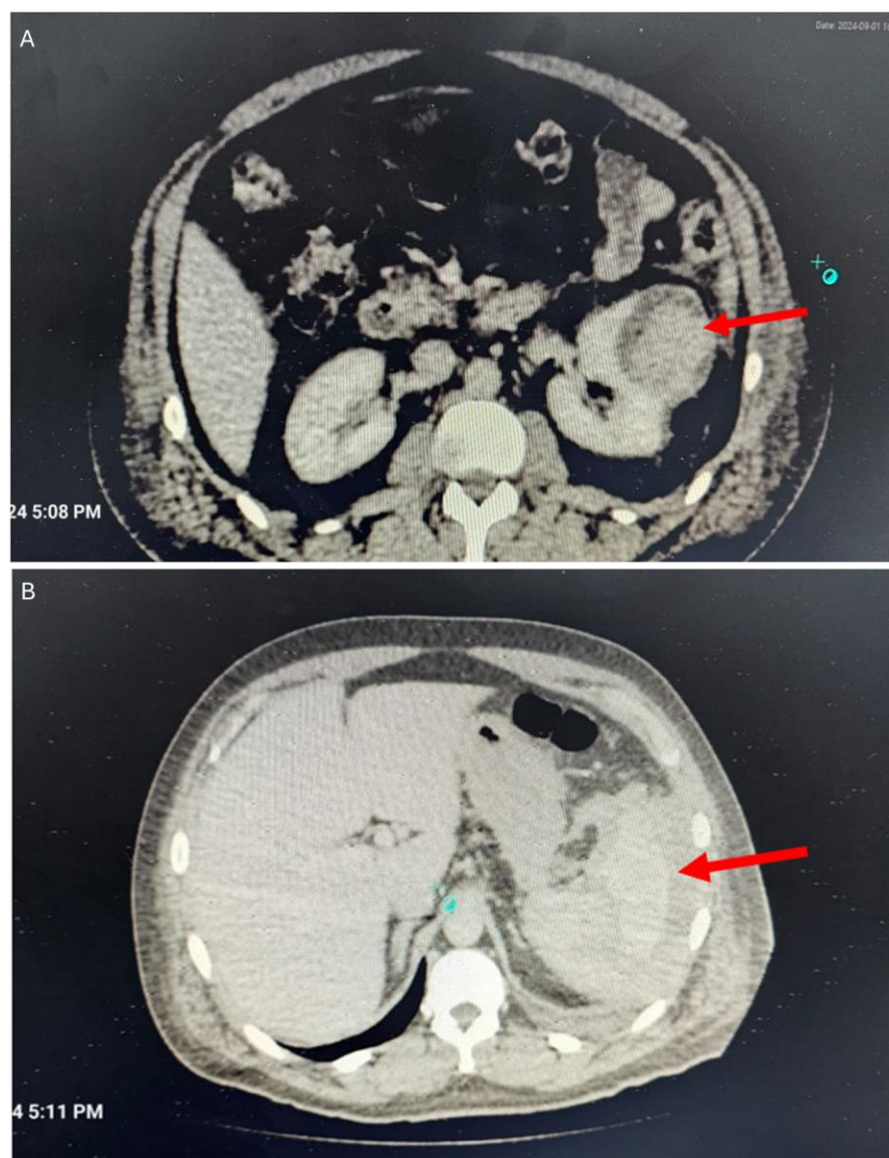
Abdominal trauma is often associated with solid organ injuries, such as those to the kidneys and spleen, particularly in high-energy accidents. It is estimated that renal injuries occur in approximately 3–5% of cases of blunt abdominal trauma, while splenic injuries are observed in about 25–30% [1, 2]. Initial management involves hemodynamic stabilization and imaging evaluation, with contrast-enhanced computed tomography (CT) being the diagnostic modality of choice [3].

Intravenous contrast is crucial for differentiating areas of active bleeding and identifying the severity of injuries, which is essential for therapeutic decisions between non-operative management (NOM) and surgical intervention [4]. Laboratory tests, such as hematocrit and hemoglobin levels, may not immediately reflect internal bleeding, as observed in this case, where the initial hematocrit of 38% dropped to 32% within the first 24 hours.

2. Case Report

A 53-year-old male patient, victim of a motorcycle collision in Itaboraí, RJ, was admitted to the emergency room with a blood pressure of 90/60 mmHg and a heart rate of 120 bpm. He received 1000 ml of Ringer's lactate, stabilizing his blood pressure to 110/70 mmHg and heart rate to 110 bpm. Physical examination revealed left-sided chest pain, abdominal tenderness on palpation, and chest crepitus. Urinary catheterization showed hematuria. Initial laboratory tests indicated a hematocrit of 38% and hemoglobin of 12 mg/dl. Contrast-enhanced CT revealed a grade IV renal injury (Figure 1A), a grade III splenic injury (Figure 1B), fractures of the 9th, 10th, and 11th left ribs, and a small hemothorax. During hospitalization, follow-up CT scans were performed on the second and seventh days due to a progressive hematocrit drop to 26% and hemoglobin to 9 mg/dl. Hemodynamic stability allowed for continued NOM, and the patient was discharged after 10 days.

Figure 1. **A.** Computed tomography image showing a grade IV renal injury. **B.** CT scan slice showing the splenic injury with free perisplenic blood and the splenic fracture line near the hilum.



3. Discussion

Non-operative management (NOM) is widely used for solid organ abdominal injuries in hemodynamically stable patients. Studies indicate that NOM is effective in over 80% of grade III or lower splenic injuries and approximately 70% of grade IV renal injuries, provided that patients are monitored in an appropriate hospital setting [5, 6]. In this case, contrast-enhanced CT was essential to confirm the absence of active bleeding and to enable conservative management. Intensive care unit (ICU) monitoring allowed for the early detection of complications, such as hypotension or delayed hemorrhage, ensuring timely interventions when necessary [7]. Contraindications to NOM include persistent hemodynamic instability and signs of peritonitis [8].

The presence of a trauma surgeon was pivotal, allowing for frequent clinical and radiological evaluations. This multidisciplinary approach and the rational use of CT were crucial to avoiding unnecessary laparotomy and ensuring a safe recovery [9].

4. Conclusion

This case highlights the importance of contrast-enhanced CT in the management of complex abdominal traumas and ICU monitoring for the success of NOM. The expertise of the trauma surgeon was essential in continuously adjusting the therapeutic plan, reducing the risk of complications, and ensuring a favorable outcome.

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Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Brenner DJ, Hall EJ. Computed tomography—an increasing source of radiation exposure. *N Engl J Med*. 2007;357(22):2277-84.
2. Moore EE, Shackford SR, Pachter HL, et al. Organ injury scaling: spleen, liver, and kidney. *J Trauma*. 1989;29(12):1664-6.
3. Coimbra R, Hoyt DB, Potenza B, et al. Nonoperative management reduces the overall mortality of severely injured blunt trauma patients: a multi-institutional study. *Am Surg*. 2000;66(9):858-62.
4. Stassen NA, Bhullar I, Cheng JD, et al. Nonoperative management of blunt splenic injury: an Eastern Association for the Surgery of Trauma practice management guideline. *J Trauma Acute Care Surg*. 2012;73(5 Suppl 4):S293-8.
5. Velmahos GC, Toutouzas KG, Radin R, et al. Nonoperative treatment of blunt injury to solid abdominal organs: a prospective study. *Arch Surg*. 2003;138(5):504-8.
6. Malhotra AK, Fabian TC, Croce MA, et al. Blunt hepatic and splenic trauma: does timing of operation affect outcome? *Surgery*. 2000;128(4):665-70.
7. Peitzman AB, Heil B, Rivera L, et al. Blunt splenic injury in adults: multi-institutional study of the Eastern Association for the Surgery of Trauma. *J Trauma*. 2000;49(2):177-87.
8. Dawson J, Walters M, Dixon T, et al. Systemic complications and multi-organ failure following reperfusion injury in acute limb ischemia. *J Clin Med*. 2021;10(4):912.
9. Hess CN, Huang Z, Patel MR, et al. Acute Limb Ischemia in Peripheral Artery Disease: Insights from the EUCLID Trial. *Circulation*. 2019;140(7):556-65.