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Conservative Multisystem Trauma Management in a Patient with Severe Dilated Cardiomyopathy: A Case Report

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ABSTRACT

Background: Multisystem trauma in elderly patients with significant cardiac dysfunction presents a complex and high-risk management challenge. In hemodynamically stable individuals, the physiological stress imposed by general anesthesia and emergency laparotomy—including potential cardiovascular decompensation—may outweigh the anticipated benefits of operative intervention. Consequently, careful patient selection is essential. Contemporary evidence supports a selective non-operative management (NOM) approach for retroperitoneal and mesenteric hematomas in stable patients, particularly in the absence of radiological evidence of active bleeding. This strategy relies on close clinical monitoring, serial imaging when indicated, and prompt intervention should signs of deterioration arise.

Case Presentation: We report the case of a 63-year-old male with a background of ischemic heart disease and dilated cardiomyopathy (ejection fraction 25%), conferring a moderate-to-high anesthetic risk, who sustained blunt abdominal and maxillofacial trauma following a motorbike collision with a wild animal. On presentation, he was hemodynamically stable but exhibited active bleeding into the oral cavity with impending airway compromise, necessitating an emergency tracheostomy.

Contrast-enhanced imaging revealed a large left anterior pararenal (Zone II) retroperitoneal hematoma measuring approximately 8 cm, associated with moderate hemoperitoneum and subtle colonic mural thickening, in the absence of pneumoperitoneum or contrast extravasation.

In view of his hemodynamic stability and significant comorbid status, a decision was made to pursue non-operative management, comprising close clinical observation with serial abdominal examinations and laboratory monitoring. The patient demonstrated a favourable clinical course and recovered without the need for surgical intervention.

Conclusion: This case illustrates that in high-risk cardiac patients, careful adherence to hemodynamic parameters and imaging findings can permit safe non-operative management of significant blunt abdominal trauma while minimizing anesthetic risk.

INTRODUCTION

The management of blunt abdominal trauma has evolved significantly with advances in imaging where FAST scan screens the patients while CECT gives specific information helping patient selection for conservative treatment. Retroperitoneal management decisions depend on hemodynamic status and imaging characteristics, particularly the presence or absence of active arterial extravasation [1].

For clinical and operative decision-making in trauma, retroperitoneal injuries are classified into zones. Zone 1 represents the central retroperitoneum extending from the diaphragm to the aortic bifurcation. Zone 2 encompasses the lateral retroperitoneal regions, including the kidneys, perinephric tissues, renal vasculature, and portions of the colon. Zone 3 lies below the aortic bifurcation and includes the iliac vessels as well as segments of the sigmoid colon and rectum.

Zone 2 injuries, which involve the perirenal and anterior pararenal compartments, are frequently amenable to observation in stable patients without contrast blush [2].

Similarly, blunt colon and mesocolon injuries that demonstrate mural thickening or mesenteric hematoma without peritonitis or pneumoperitoneum may be managed non-operatively in carefully selected cases [3]. Although isolated mesenteric hematomas are uncommon, successful conservative treatment has been described in stable patients [4].

In parallel, airway management in mandibular trauma requires vigilance. Especially when the mandibular fracture is bilateral causing tongue to fall down leading to upper airway obstruction. While isolated mandibular fractures rarely cause immediate airway obstruction like bilateral fractures, bleeding and soft tissue swelling can precipitate compromise, necessitating timely airway control [3].

This report presents the successful conservative management of multisystem trauma in a patient with severe cardiac dysfunction, emphasizing risk stratification and individualized decision-making.

CASE PRESENTATION

A 63-year-old male with known ischemic heart disease and dilated cardiomyopathy (left ventricular ejection fraction 25%) presented following a motorcycle collision with a wild animal. His medical history included partial left bundle branch block, poor R-wave progression, and regular use of aspirin, bisoprolol, and atorvastatin. Preoperative cardiology assessment categorized him as moderate-to-severe anesthetic risk.

On arrival, his blood pressure of 110/80 mmHg and pulse rate of 100 beats per minute. His initial Glasgow Coma Scale (GCS) score was 9/15 (E2V2M5). A unilateral mandibular fracture was identified, and bleeding into the oral cavity posed a risk of airway compromise. Given the threatened airway and high anesthetic risk, a tracheostomy was performed under local anesthesia. Subsequent neurological assessment showed improvement in GCS to 10+T. Two non-contrast CT brain scans demonstrated only mild cerebral edema without any surgical lesion.

The abdominal examination revealed mild generalised tenderness without significant peritonism. Focused assessment with sonography in trauma (FAST) revealed mild to moderate hemoperitoneum, with maximal pelvic fluid depth of 51 mm, and a small left renal subcapsular hematoma. Contrast-enhanced CT of the abdomen and pelvis demonstrated a large left anterior pararenal retroperitoneal hematoma measuring 8 cm in maximum dimension, moderate hemoperitoneum, and subtle mural thickening of the adjacent descending and sigmoid colon without pneumoperitoneum or active arterial extravasation. No demonstrable vascular injury or solid organ laceration was identified.

Computerized tomography showing sagittal section **(Figure 1)** and coronal section **(Figure 2)** with retroperitoneal haemorrhage and hemoperitoneum.

Figure 1

Figure 2

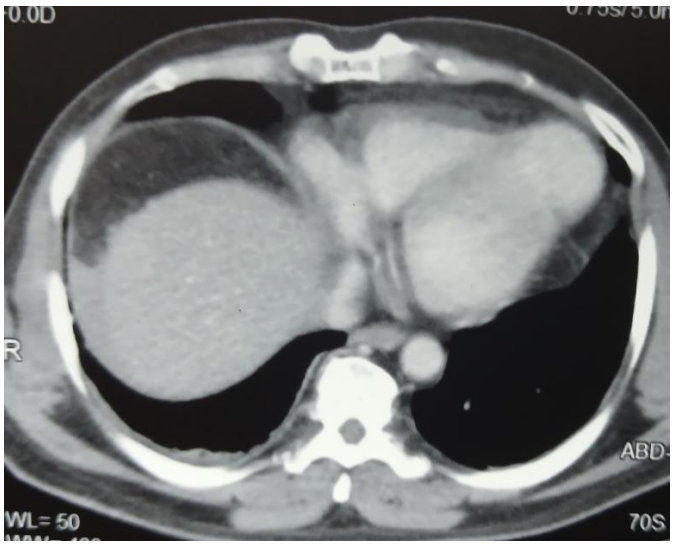

Figure 3: Computered tomography showing horizontal section

Laboratory evaluation showed a hemoglobin level of 12 g/dL with hematocrit 44% on admission, decreasing gradually to 10 g/dL with hematocrit 30% over 24 hours without hemodynamic instability. Admission arterial lactate was 1.3 mmol/L.

Given sustained hemodynamic stability, absence of significant peritonitis, and absence of radiological evidence of active bleeding, a non-operative management strategy was adopted with close clinical and laboratory monitoring. The patient remained stable throughout observation and did not require abdominal surgical intervention. The patient was discharged after 8 days of admission.

DISCUSSION

This case demonstrates three critical management principles:

1. Selective Airway Control in Facial Trauma

Mandibular fractures are well recognized to pose a significant risk to airway patency, primarily due to hemorrhage, soft tissue edema, and potential displacement of fracture segments, all of which may contribute to progressive airway compromise [3]. In the present case, the presence of ongoing intraoral bleeding further heightened the risk of obstruction and aspiration, necessitating prompt and definitive airway management.

Given the patient's markedly reduced cardiac reserve secondary to dilated cardiomyopathy (ejection fraction 25%) and underlying ischemic heart disease, a carefully planned, staged tracheostomy was undertaken. This approach allowed for the secure establishment of a definitive airway while minimizing the physiological stress associated with emergent endotracheal intubation under general anesthesia, which could have precipitated hemodynamic instability in this high-risk individual.

The tracheostomy not only ensured adequate ventilation and airway protection but also facilitated effective clearance of secretions and blood from the oral cavity. This intervention contributed to a progressive improvement in the patient's overall clinical status, as evidenced by a notable enhancement in the Glasgow Coma Scale (GCS) score following the procedure, likely reflecting improved oxygenation and reduced airway compromise.

2. Non-Operative Management of Zone 2 Retroperitoneal Hematoma

Retroperitoneal injuries are commonly classified according to anatomical zones to guide management decisions. Zone II injuries, involving the perirenal and lateral retroperitoneal compartments, are most frequently associated with renal and colonic trauma. In hemodynamically stable patients, the management of Zone II hematomas is largely determined by radiological findings, particularly the presence or absence of active bleeding.

Current evidence supports a selective non-operative approach in stable patients with Zone II hematomas when there is no radiological evidence of ongoing hemorrhage, such as contrast extravasation ("contrast blush") on contrast-enhanced computed tomography (Smith et al., 2023). In such cases, the hematoma is often self-limiting, and surgical exploration may not only be unnecessary but could also increase morbidity by disrupting tamponade.

In the present case, the absence of contrast extravasation on imaging, together with maintained hemodynamic stability, were pivotal factors in favoring conservative management. Additional supportive findings, including the lack of pneumoperitoneum and only subtle colonic mural thickening without clear signs of perforation, further reinforced this decision. Accordingly, the patient was managed with close clinical observation, serial abdominal examinations, and regular laboratory monitoring, allowing early detection of any deterioration while avoiding the risks associated with operative intervention.

3. Conservative Approach to Mesocolic and Colonic Contusions

Blunt injuries to the colon and mesocolon present a diagnostic and therapeutic challenge, particularly when imaging findings are subtle. Radiological features such as bowel wall (mural) thickening or mesenteric hematoma, in the absence of pneumoperitoneum or contrast extravasation, are increasingly recognized as indeterminate rather than definitive indicators of bowel perforation or ischemia. Contemporary evidence suggests that these findings, when occurring in hemodynamically stable patients without clinical signs of peritonitis, do not in themselves mandate immediate surgical exploration.

Although isolated mesenteric hematomas are relatively uncommon, they are often self-limiting and may be managed conservatively in appropriately selected patients. Careful patient selection is essential, and successful non-operative management relies on close clinical surveillance, including serial abdominal examinations, monitoring of vital parameters, and repeated laboratory assessments to detect evolving ischemia or delayed perforation [4]. In some cases, interval imaging may also be warranted to assess progression or resolution.

In the present patient, the presence of moderate hemoperitoneum was considered in the broader clinical context. Importantly, there were no accompanying features suggestive of ongoing intra-abdominal catastrophe: the abdomen remained soft and non-tender without signs of peritoneal irritation, and the patient maintained stable hemodynamic parameters. In the absence of radiological evidence of active bleeding or hollow viscus perforation, moderate hemoperitoneum alone was not regarded as an absolute indication for laparotomy. Consequently, a decision was made to proceed with vigilant non-operative management, balancing the risks of missed injury against the significant perioperative risk posed by the patient's comorbid condition.

CONCLUSION

In hemodynamically stable trauma patients with severe cardiac dysfunction, management should balance operative risks against the potential for non-operative success. Significant retroperitoneal and mesocolic hematomas can be managed conservatively when imaging shows no active bleeding and there are no signs of perforation or ischemia. This approach requires close clinical monitoring, including serial examinations and laboratory assessment, to detect early deterioration.

Selective airway management is equally important, particularly in the presence of maxillofacial trauma. Early, carefully planned interventions—such as tracheostomy—can secure the airway while minimizing cardiovascular stress.

Favorable outcomes in such high-risk patients depend on a coordinated multidisciplinary approach, enabling tailored decision-making and timely intervention when required.

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