

## Blunt Trauma Abdomen- Spectrum of Injuries and their Management in a Peripheral Hospital

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### Abstract

Blunt trauma abdomen can present in a very subtle way with missed internal injuries unless specifically looked for. Solid organ injuries, mesentery and hollow viscus are the commonly injured. The management can be surgical or non-operative depending upon the severity and hemodynamic stability of the patient. The three cases are an example of the varied presentation of blunt abdominal trauma and its management.

### Keywords

Blunt trauma abdomen; Abdominal injuries; Clinical suspicion

### Introduction

Motor vehicle accidents are responsible for 75 to 80 % of blunt abdominal trauma along with falls [1]. Unlike penetrating abdominal trauma, blunt trauma abdomen is not obvious and likely to be missed unless specifically looked for. The management of blunt abdominal trauma is progressively increasing due to

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advances in diagnostics, despite this the morbidity and mortality remains at large [2]. Due to the inadequate treatment of the abdominal injuries, most of the cases are fatal [2,3]. Here we present 3 cases of blunt trauma abdomen spectrum managed at a peripheral hospital with no CT scan facilities which brings out the role of clinical suspicion, repeated evaluation, and team work.

### Case 1

49-year male, presented with history of fall from bicycle while returning from work. He was given first aid and referred to our Centre for further management. On enquiry, patient gave history of fall from bicycle following which he developed pain all over the abdomen and distension. He gave no history of vomiting/ bladder complaints/ any other injuries. Clinical examination revealed tachycardia with normal blood pressure. As per protocol, after securing IV access and ensuring hemodynamic stability, he underwent Ultrasound of Abdomen which revealed hemoperitoneum. Chest X-Ray and X-Ray abdomen were within normal limits. In view of Sonological and X-Ray findings and hemodynamic stability, he was shifted for CECT Abdomen (done outside as the Centre did not have a CT scan facility). CECT abdomen revealed hemoperitoneum with mesentery as the probable source. The patient was taken up for Emergency Exploratory laparotomy which revealed a tear in the mesentery [Figure 1] and approximately 1 L hemoperitoneum [Figure 2]. The mesenteric tear was repaired with absorbable sutures and abdomen closed over drain after thorough lavage. The post op period was uneventful and the patient was discharged on Postoperative day 11 after suture removal. He was reviewed after 1 month and remained asymptomatic.



**Figure 1:** Mesenteric tear.

### Case 2

46-year male, no known comorbidities, presented to the A & E department with complaints of retention of urine since morning. He was a security guard by profession and gave history of falling off his bed. On clinical examination, he was hemodynamically stable with suprapubic dullness to percussion and no bony injury. He was managed with catheterization and advised surgical consultation on OPD basis. The catheterization was smooth. He, however, had hematuria post catheterization which resolved with

bladder wash. The patient reported to A & E again in the evening with suprapubic discomfort. Clinical examination revealed lower abdominal guarding and tenderness. Per urethral catheter was in situ with no gross hematuria. Ultrasound revealed no significant findings. Chest X-Ray done in view of diffuse tenderness and guarding showed gas under diaphragm [Figure 3]. Based on clinical and radiological findings, exploratory laparotomy with provisional diagnosis of hollow viscus perforation was offered.



**Figure 3:** Chest X-ray showing gas under diaphragm.

CT scan was not done in view of gas under diaphragm. Per operatively, on opening the abdomen, there was no sign of any hollow viscus perforation. A thorough search of the intestines revealed no perforation or contamination. An examination of the pelvis keeping in mind a diverticular perforation revealed bulb of Foley's catheter peeping through a 10 cm vertical rent in the urinary bladder [Figure 4].

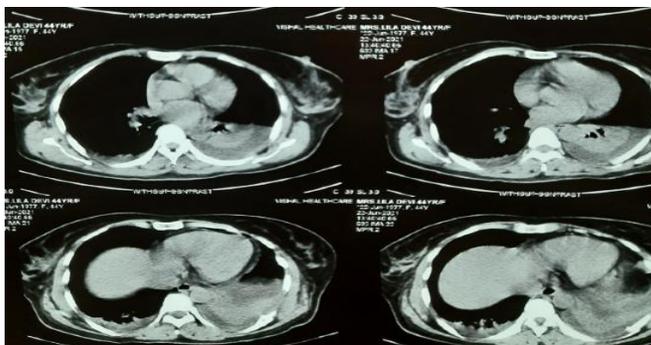


**Figure 4:** Rent in the bladder.

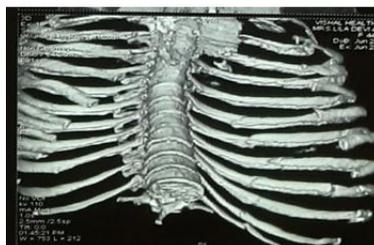


**Figure 5:** Two-layer repair.

The rent, extending from dome of the bladder downwards was repaired in two layers with absorbable suture [Figure 5]. The post operative period was uneventful and the patient made a full recovery. The Perurethral catheter was removed on day 20. IVU study done after 1 month revealed no leak.



**Figure 6:** Abdomen with splenic injury GD.



**Figure 7:** Flail chest left.

An Ultrasound study revealed splenic injury Gd II with mild hemoperitoneum. Laboratory investigations revealed Hemoglobin of 7.6 gm%. In view of haemodynamic stability, the patient was managed conservatively with blood transfusion, antibiotics, and intravenous fluid with close monitoring in ICU setting. CECT abdomen done after 72 hours revealed Gd II Splenic injury with no ongoing bleed and multiple left rib fractures [Figure 6,7]. The patient was started on oral diet on day 2 and ambulated on day 9. She made full recovery and was discharged on day 16.

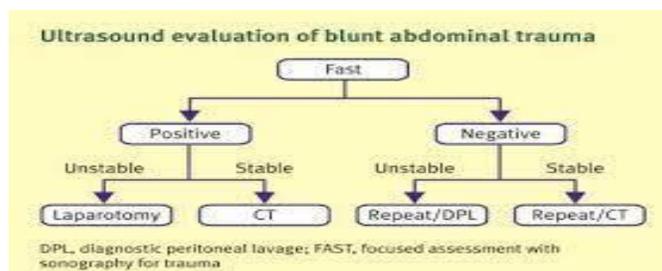
## Discussion

The abdomen is known as the Pandora's box. It is divided into 4 quadrants and 9 regions [3]. The young and the productive age group people are the usual victims of blunt abdominal trauma. The most common injured viscera are spleen followed by small bowel and liver [5].

The main mechanisms of injury in blunt trauma abdomen are

- 1) Direct impact: Liver, Spleen, Bowel, Kidneys
- 2) Shear force: Mesentery, Pancreas

The Ultrasound is the first investigation of choice in such cases and Focused Abdominal Sonography for Trauma (FAST) is mandatory for all abdominal trauma cases [3].



**Figure 8:** Algorithm For diagnosis is blunt trauma abdomen.

The management of blunt trauma abdomen is much dependent on the organ affected, velocity of impact and associated injuries. Solid organ injury like liver, spleen, kidney can be managed conservatively depending upon the severity of injury, hemodynamic stability, and availability of critical care and facility for reassessment. The spleen accounts for nearly 30% of Blunt abdominal trauma injuries followed by mesenteric tear [5]. The overall mortality was 20% for patients with blunt splenic trauma. When the spleen was the only abdominal organ injured, the mortality dropped to 3% [4]. The liver is the second common solid organ injured with kidney and bladder injuries being accompanied by pelvic fractures, being close behind. All Blunt abdominal trauma injuries has very high morbidity and mortality despite improved diagnostic and management techniques. Non Operative Management for blunt abdominal trauma was found to be highly successful and safe [6]. CT scan has become an important adjunct to the physical examination when evaluating hemodynamically stable patients with blunt trauma with equivocal findings [5].

## Conclusion

Blunt trauma abdomen with its varied presentation continues to challenge Emergency room physicians and surgeons alike. A thorough clinical examination and relevant investigations with repeated follow-ups are required for successful management of Blunt abdominal trauma. Close monitoring and timely surgical management is the key to avoid mortality.

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