

# A Study of Blunt Trauma Abdomen - Evaluation, Management & Outcome

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**Abstract:** *Abdominal trauma is one of the leading causes of morbidity and mortality in all age groups worldwide. Identifying serious intra - abdominal pathology due to trauma can be a challenge to the surgeon. Blunt trauma abdomen is a major cause of morbidity and mortality in young more in male. Road traffic accident is the major agent. Spleen is most commonly injured organ. Most common associated injuries are chest injuries. There is a paradigm shift in the management of blunt trauma abdomen from operative to non - operative mode. Mortality is more in cases of multiple viscera injury, associated injuries & patients presenting with shock.*

**Keywords:** Blunt trauma abdomen, road traffic accidents, splenic injury, liver injury, bowel injury, pneumoperitoneum

## 1. Introduction

Modern world has seen a great improvement in man's lifestyle. The technological advancement in automobile industry has greatly contributed to the development of the world, but it is a field where first priority is given to speed than safety. In persons less than 30 years, trauma is responsible for more deaths than all other illnesses put together. Motor vehicle accidents are the commonest causes of blunt abdominal trauma<sup>2</sup>. It is estimated that by the year 2020, injuries from traffic accidents will be the third most common cause of disability throughout the world and the second most common cause in the developing nations<sup>1</sup>. The characteristic injury patterns and multisystem injuries are found in most of the cases.

Abdominal trauma is the leading causes of morbidity and mortality in all age groups worldwide<sup>4</sup>. Many injuries may not be identified during the initial assessment and treatment period. Often abdominal trauma is associated with injuries that may divert the physician's attention from potentially life - threatening intra - abdominal pathology<sup>4</sup>. In alert and conscious patient, clinical examination is the method of choice to rule out significant abdominal injury. However, signs of peritonitis may take hours to become clinically evident, being an important downside of this approach. If the patient is intubated, unconscious or suffers from impaired neurological function, clinical examination has little value and the decision for surgical intervention or conservative management based solely on clinical findings becomes unreliable<sup>6, 7</sup>. Seat belt marks, which seems to be associated with hollow organ injury (if free fluid without solid organ injury is found) increase the likelihood of a significant abdominal injury 2 - to 4 - fold<sup>8</sup>.

Though sonography and conventional radiography remain well - established techniques, CT scanning of the abdomen and pelvis is the investigation of choice for evaluation of the hemodynamically stable patient with blunt or penetrating trauma.

## 2. Aims and Objectives

To study aetiology of such injuries and evaluate the patients based on clinical presentation, investigations and radiological investigations and to study management options for blunt trauma abdomen & its outcome.

## 3. Materials and Methods

Proposed study is a hospital based prospective study centred in R. N. T. Medical College and associated M. B. govt. hospital, Udaipur. Patients admitted in the Department of General Surgery, for blunt trauma abdomen from January 2018 onwards were selected for the study.

### Parameters to Be Studied:

- 1) Detailed history
- 2) Type of injury
- 3) Cause of injury
- 4) Site of injury over the abdomen
- 5) Injury to admission interval was noted.
- 6) Thorough clinical examination in all patients.
- 7) Routine blood and urine examinations
- 8) X - ray erect abdomen, ultrasonography (USG) of the abdomen, X - Ray chest, spine, pelvis, intravenous pyelogram, computed tomography (CT) scan as required.
- 9) Line of treatment whether conservative or operative.

### Inclusion Criteria:

- 1) Patients with blunt injury abdomen
- 2) Age more than 18 years and less than 75 years

### Exclusion Criteria:

- 1) Moribund patients
- 2) Age less than 18 years and more than 75 years
- 3) Life threatening injuries other than abdomen injury
- 4) Penetrating abdominal trauma
- 5) Pregnant women
- 6) Patients who did not have reliable history or physical exam (Such as GCS less than 15, alcohol intoxication)

history taking and physical exam, impaired verbal patients).

#### Study Technique:

All consenting patients with blunt injury abdomen were examined, subjected to investigations and finally evaluated using the following parameters:

- 1) Abdominal pain
- 2) Pulse rate
- 3) Systolic blood pressure
- 4) Peritonitis
- 5) Free fluid abdomen
- 6) Imaging
- 7) Serum creatinine
- 8) White blood cell count
- 9) Liver enzymes (ALT/AST)

#### 4. Observation and Results

In this series, the commonest age group affected was 21 - 30 years comprising 15 (30%), followed by 31 - 40 years age group comprising 10 (20%) patients. majority of cases i. e. 31 were males (62%), females accounting for only about 19 (2%) of cases. The commonest mode of injury was road traffic accident responsible for 26 (52%) of blunt abdominal trauma cases, while fall from height and assault accounted for 10 (20%) cases each. Associated extra abdominal injuries were found in 29 cases. The commonest extra - abdominal injuries were chest injuries including rib fractures in 9 (31.03%) out of 29 patients, followed by upper and lower limb fractures, pelvic fractures in 7 (24.13%) patients. Soft tissue injuries present in 5 (10%) cases. Head injury was present in 3 (10.34%) patients. 5 (10%) cases presented with multiple associated injuries. Most common presenting sign was abdominal tenderness present in 48 (96%) patients most common presenting symptom was abdominal pain present in 46 (92%) patients. A total of 32 patients underwent ultrasound examination, out of which 19 (59.37%) patients had solid organ injuries. Most common injured solid organ was spleen in 9 (28.12%) cases followed by liver in 8 (25%) cases. 13 (40.62%) patients had free fluid in abdominal cavity, 2 (6.25%) patients had dilated bowel loops. Out of 50 patients 27 underwent CT scan out of which 24 patients (88.89%) had solid organ injuries. Most common was splenic injury found in 14 (51.85%) patients followed by liver injury in 7 patients (25.92%). Hemoperitoneum was present in 7 (25.92%) patients. Pneumothorax was present in 6 (22.22%) patients. In the present series, Spleen was most common organ injured (32%), followed by Liver in 28% of cases. Small bowel was injured in 7 (14%) cases, jejunum was the most commonly affected part of small bowel in 6 (12%) cases. Kidney was injured in 4 (8%) cases and bladder in 4 (8%) cases. 3 (6%) cases had pancreatic injury. Large bowel injured in 2 (4%) cases and stomach injured in 1 (2%) cases. 30 patients with pneumoperitoneum or hemoperitoneum with hemodynamic instability underwent exploratory laparotomy. 20 patients were selected for non-operative management because they had no signs of peritonitis or they had hemoperitoneum without

hemodynamic instability. Out of 10 (20%) cases who presented with shock at the time of initial presentation 6 patients could not survive leading to 60% mortality as compared to 2 patients (5%) in hemodynamically stable patients. Single visceral organ injury was present in 39 (78%) cases out of which 3 (7.69%) patients had mortality. 8 (16%) patients presented with multiple organ injuries out of which 5 (62.5%) patients could not survive. Associated injuries when present with blunt trauma abdomen result in higher mortality. Mortality in associated injuries was highest in cases of head injury 2 out of 3 (66%) followed by 28.57% in long bone fractures and 22.22% in cases of associated thoracic injuries.

#### 5. Conclusion

Blunt trauma abdomen is a major cause of morbidity and mortality in young and economically productive age - group, with a male preponderance. Road traffic accident is the major causative agent followed by fall from height and assault. Spleen is most commonly injured organ followed by liver and small intestine. Most common associated injuries are chest injuries followed by orthopaedic injuries. Diagnosis is mainly based on clinical examination followed by radiological examination like plain skiagram of chest and abdomen, USG abdomen, CT abdomen and their co - relation. Conservative management is safe and effective in a hemodynamically stable patient with no signs of peritonitis. Mortality was more when more than one factor was involved e. g. in cases of multiple viscera injury in abdomen, associated chest and bony injuries, and patients presenting with hemodynamic instability at time of admission. The overall prognosis of these patients depends on early and accurate diagnosis and prompt management.

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