

# Evaluation of Pattern of Injuries in Patients Having Blunt Abdominal Trauma Admitted to Emergency Department: A Prospective Study

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## ABSTRACT

**Background:** Blunt abdominal trauma (BAT) resulting from a traffic accident, fall, assault, or occupational accident is common in the emergency room. Patients with blunt abdominal trauma are divided into two categories based on their vitals; hemodynamically stable patients and hemodynamically unstable patients. Hence; we planned the present study to pattern of injuries in patients having blunt abdominal trauma admitted to emergency department.

**Materials & Methods:** The present study included evaluation of pattern of injuries in patients having blunt abdominal trauma. A total of 40 patients with blunt abdominal trauma were included in the present study. On presentation, an assessment of the vital functions was done. Primary survey was focus on the ABC of resuscitation i.e. restoration of airway, breathing and circulation. All the parameters were recorded and type of treatment carried out was also noted. All the results were compiled and analyzed by SPSS software.

**Results:** A Most of the patients belonged to the age group of 21 to 40 years. Pain abdomen was the most common

presenting symptom observed in the present study followed by abdominal tenderness and abdominal distension.

**Conclusion:** Abdominal pain and tenderness are the most common clinical findings in patients with BAT.

**Key words:** Abdominal, Blunt, Trauma.

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## INTRODUCTION

Blunt abdominal trauma (BAT) resulting from a traffic accident, fall, assault, or occupational accident is common in the emergency room. The prevalence of intra-abdominal injury after BAT has been reported to high at 12-15%.<sup>1,2</sup> There is of a difficulty in arriving at a correct diagnosis in patients with blunt abdominal trauma, particularly with equivocal physical signs and hence performing urgent laparotomy. Accurate diagnosis and avoidance of needless surgery are an important goal of evaluation in these cases. Most avoidable deaths result from failure to resuscitate and operate on surgically correctable injuries.<sup>3-5</sup> The spleen and liver are the most commonly injured organs as a result of blunt trauma. Clinical examination alone is inadequate because patients may have altered mental status and distracting injuries.<sup>6</sup>

Patients with blunt abdominal trauma are divided into two categories based on their vitals; hemodynamically stable patients and hemodynamically unstable patients. Hemodynamically unstable patients presenting with blunt abdominal trauma commonly require assessment with chest radiographs, FAST (Focussed assessment with Sonography in trauma) scanning and Pelvic X ray. Multidetector computed tomography (MDCT) with IV contrast may not be appropriate for patients who

are hemodynamically unstable following blunt abdominal trauma. MDCT with IV contrast is the imaging modality of choice for evaluating hemodynamically stable patients following blunt abdominal trauma.<sup>7-9</sup> Hence; we planned the present study to pattern of injuries in patients having blunt abdominal trauma admitted to emergency department.

## MATERIALS & METHODS

The present study was conducted in the emergency department of M.G. Hospital, Bhilwara, Rajasthan, and included evaluation of pattern of injuries in patients having blunt abdominal trauma. Ethical approval was obtained from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. A total of 40 patients with blunt abdominal trauma were included in the present study.

### Inclusion Criteria

- 1) Patients with blunt trauma abdomen.

### Exclusion Criteria

- 1) Patients with penetrating trauma abdomen.
- 2) Patients with orthopaedic injury.
- 3) Patients with head injury.

On presentation, an assessment of the vital functions was done. Primary survey was focus on the ABC of resuscitation i.e. restoration of airway, breathing and circulation. All the parameters were recorded and type of treatment carried out was also noted. All the results were compiled and analyzed by SPSS software. Univariate regression curve was used for assessment of level of significance.

**Table 1: Distribution of subjects according to age**

Age group (years)	Frequency	Percentage
<20	4	10
21-40	27	67.5
41- 60	8	20
>60	1	2.5
<b>Total</b>	<b>40</b>	<b>100</b>

**Table 2: Distribution of subjects according to gender**

Gender	Frequency	Percentage
<b>Male</b>	<b>35</b>	<b>87.5</b>
<b>Female</b>	<b>5</b>	<b>12.5</b>
<b>Total</b>	<b>40</b>	<b>100</b>

**Table 3: Distribution of subjects according to aetiology**

Aetiology	Frequency	Percentage
<b>Road traffic accident</b>	<b>30</b>	<b>75</b>
<b>Fall from height</b>	<b>8</b>	<b>20</b>
<b>Assault</b>	<b>2</b>	<b>5</b>
<b>Total</b>	<b>40</b>	<b>100</b>

**Table 4: Distribution of subjects according to clinical signs and symptoms**

Sign/ Symptom	Frequency	Percent
<b>Abdominal distension</b>	<b>30</b>	<b>75</b>
<b>Abdominal tenderness</b>	<b>38</b>	<b>95</b>
<b>Pain abdomen</b>	<b>40</b>	<b>100</b>
<b>Guarding</b>	<b>15</b>	<b>37.5</b>
<b>Hematemesis</b>	<b>5</b>	<b>12.5</b>
<b>Haematuria</b>	<b>8</b>	<b>20</b>
<b>Pallor</b>	<b>22</b>	<b>55</b>
<b>Other</b>	<b>10</b>	<b>2.5</b>

## RESULTS

A total of 40 patients were included in the present study. Most of the patients belonged to the age group of 21 to 40 years. 20 percent of the patients belonged to the age group of 41 to 60 years. Distribution of the subjects according to the gender showed that 87.5% of those affected were male as compared to 12.5% female which shows clear predilection for male population. In the frequency distribution of the aetiology, road traffic accident turned out to be the leading cause of occurrence of blunt trauma. Pain abdomen was the most common presenting symptom observed in the present study followed by abdominal tenderness and abdominal distension.

## DISCUSSION

In the present study, we observed that Pain abdomen was the most common presenting symptom observed in the present study followed by abdominal tenderness and abdominal distension. Karki OB determined the validity of CT scan as an accurate diagnostic tool and its role in management of patients with blunt abdominal trauma. Demographic data, mechanism of trauma, management and outcomes were studied. Organ injuries were graded using the Organ Injury Scale guidelines. Most of the patients in our study were in the age group of 21-40 years with an M: F ratio of 2.3:1. Road traffic accident (47.5%) was the most common mechanism of injury. Spleen (27.5%) was the commonest organ injured. CT scan was superior to FAST scan and had sensitivity of 97.3% specificity 75% positive predictive value 98.6%. FAST scan had sensitivity of 78.9%, specificity 50%, positive predictive value 96% with p- value of 0.0034. 81% of patients were conservatively managed. In conjunction with close clinical monitoring, CT scan is reliable in the evaluation and management of blunt abdominal trauma patients.<sup>10</sup> Doklestić K et al determined the options for surgical management of severe liver trauma as well as the outcome. In this retrospective study 70 polytraumatic patients with severe (American Association for the Surgery of Trauma [AAST] grade III-V) blunt liver injuries were operated on at the Clinic for Emergency Surgery. Mean age of patients was 48.26±16.80 years; 82.8% of patients were male. Road traffic accident was the leading cause of trauma, seen in 63 patients (90.0%). Primary repair was performed in 36 patients (51.4%), while damage control with perihepatic packing was done in 34 (48.6%). Complications related to the liver occurred in 14 patients (20.0%). Liver related mortality was 17.1%. Non-survivors had a significantly higher AAST grade (p=0.0001), higher aspartate aminotransferase level (p=0.01), lower hemoglobin level (p=0.0001), associated brain injury (p=0.0001), perioperative complications (p=0.001) and higher transfusion score (p=0.0001). The most common cause of mortality in the "early period" was uncontrolled bleeding, in the "late period" mortality was caused by sepsis and acute respiratory distress syndrome. Patients with high-grade liver trauma who present with hemorrhagic shock and associated severe injury should be managed operatively. Panchal HA et al studied the cases of abdominal trauma in context of: age/sex distribution, mode of injury (accidents, fall, assault etc.). The study of 50 cases of abdominal trauma, including blunt as well as penetrating trauma was conducted prospectively. In their study, the abdominal trauma was more common in age group 21-40 years (n = 30,60%) with male predominance (M:F: 7.3:1), blunt injury abdomen (n = 37, 74%) is more common than penetrating injury (n = 13, 26%) with RTA (n = 24, 48%) being the most common cause followed by fall (n = 16, 32%) and stab injury (n = 09, 18%), Abdominal pain (n = 49, 98%), tachycardia (n = 40, 80%) and abdominal distension (n = 25, 50%) are the most common clinical features in all abdominal trauma patients. In our study pattern of injury are: liver (n = 16, 32%), spleen (n = 15, 30%) and small bowel (n = 9, 24.32%). In polytrauma patients abdominal trauma is more commonly associated with thoracic injuries (n = 19, 38%) and orthopedic injuries (n = 7, 34%). The authors concluded that abdominal trauma can present differently and may injure organ depending upon pattern of injury and require clinical assessment, expedite investigations to set goal for prompt primary resuscitation and

timely definitive treatment.<sup>12</sup> Parreira JG et al assessed the severity and treatment of "occult" intra-abdominal injuries in blunt trauma victims. Retrospective analysis of charts and trauma register data of adult blunt trauma victims, admitted without abdominal pain or alterations in the abdominal physical examination, but were subsequently diagnosed with intra-abdominal injuries, in a period of 2 years. The severity was stratified according to RTS, AIS, OIS and ISS. The specific treatment for abdominal injuries and the complications related to them were assessed. Intra-abdominal injuries were diagnosed in 220 (3.8%) out of the 5785 blunt trauma victims and 76 (34.5%) met the inclusion criteria. The RTS and ISS median (lower quartile, upper quartile) were 7.84 (6.05, 7.84) and 25 (16, 34). Sixty seven percent had a GCS $\geq$ 13 on admission. Injuries were identified in the spleen (34), liver (33), kidneys (9), intestines (4), diaphragm (3), bladder (3) and iliac vessels (1). Abdominal injuries scored AIS $\geq$ 3 in 67% of patients. Twenty-one patients (28%) underwent laparotomy, 5 of which were nontherapeutic. The surgical procedures performed were splenectomy (8), suturing of the diaphragm (3), intestines (3), bladder (2), kidneys (1), enterectomy/anastomosis (1), ligation of the common iliac vein (1), and revascularization of the common iliac artery (1). Angiography and embolization of liver and/or spleen injuries were performed in 3 cases. Three patients developed abdominal complications, all of which were operatively treated. There were no deaths directly related to the abdominal injuries. Severe "occult" intra-abdominal injuries, requiring specific treatment, may be present in adult blunt trauma patients.<sup>13</sup>

## CONCLUSION

From the above results, the authors concluded that abdominal pain and tenderness are the most common clinical findings in patients with BAT. However; future studies are recommended for better exploration of this field of surgery.

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