



## BLUNT TRAUMA ABDOMEN: CLINICAL EVALUATION AND MANAGEMENT AT OUR TERTIARY CARE CENTRE

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**ABSTRACT** **Background:** Blunt trauma abdomen can result from deceleration, crushing or external compression mechanism. Blunt trauma to the abdomen needs to be carefully evaluated to increase the chances of patient survival. Focused assessment with sonography for trauma or FAST has emerged as a useful tool in the evaluation of blunt injury abdomen. Unavailability or unaffordability of diagnostic modalities mandate opening the abdomen for diagnosis rather than waiting. **Objectives:** To study the pattern of blunt trauma abdomen and also to study the role of ultrasonography (FAST) CT scan in blunt trauma abdomen. **Materials and methods:** A hospital based retrospective study of 50 cases of blunt abdominal trauma patients presenting to Dr Ulhas Patil College and Hospital, Jalgaon from December 2020 to January 2022 was done. **Results:** 26% patients were from 21-30 years. Majority of the patients had hypotension i.e. 70%. Mode of injury was RTA in 66% cases, fall from height in 22% and assault in 12% cases. liver was the most commonly involved organ i.e. 34% cases followed by hollow viscus mesenteric injury spleen in 30%, spleen in 28% and kidney and pancreas in 4% each. **Conclusion:** CECT showed that liver was the most commonly involved organ i.e. 34% cases followed by hollow viscus mesenteric injury spleen in 30%, spleen in 28% and kidney and pancreas in 4% each. Higher prevalence was seen in 21-40 years age group.

### KEYWORDS :

#### INTRODUCTION

Trauma has been called the neglected disease of modern society, despite its close companionship with man. Trauma is the leading cause of death and disability in developing countries and the most common cause of death under 45 years of age.<sup>1</sup> World over injury is the 7<sup>th</sup> cause of mortality and abdomen is the third most common injured organ. Abdominal injuries require surgery in about 25% of cases. 85% of abdominal traumas are of blunt character.<sup>2</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.

Amongst the many causes of blunt abdominal trauma, common modes are Road traffic accidents, Warfare injuries, Battering, Fall from Heights, Sports accidents, Martial arts, Athletics, Mountaineering etc. Road traffic accident is the most common cause of blunt trauma abdomen. Blunt trauma abdomen can result from deceleration, crushing or external compression mechanism.<sup>3,4</sup> Blunt trauma to the abdomen needs to be carefully evaluated to increase the chances of patient survival. Swift use of diagnostic modalities and vigorous therapy to attend immediate life-threatening problems should be administered. Focused assessment with sonography for trauma or FAST has emerged as a useful tool in the evaluation of blunt injury abdomen. Unavailability or unaffordability of diagnostic modalities mandate opening the abdomen for diagnosis rather than waiting.<sup>5</sup>

Initial resuscitation along with focused assessment with sonography in trauma (FAST) and computed tomography (CT) abdomen are very beneficial to detect those patients with minimal and clinically undetectable signs of abdominal injury and are the part of recent management guidelines. Approach to trauma should be systemic and prioritized. About 10% of patients have persistent hypovolemic shock as a result of continuous blood loss in spite of aggressive fluid resuscitation and require an urgent laparotomy. Damage control laparotomy is a life-saving procedure for such patients with life-threatening injuries and to control hemorrhage and sepsis. On the other spectrum, there has been increasing trend towards non operative management (NOM) of blunt trauma amounting to 80% of the cases with failure rates of 2-3%.<sup>6</sup> NOM is a standard protocol for hemodynamically stable solid organ injuries.

#### Objectives

1. To study the pattern of blunt trauma abdomen.
2. To study the role of ultrasonography (FAST) CT scan in blunt trauma abdomen.

3. To study its conservative and operative management.

#### MATERIALS AND METHODS

**Source of Data:** All the blunt trauma abdomen patients presenting to Dr Ulhas Patil Medical College and Hospital, Jalgaon.

#### Inclusion criteria-

- All patients with blunt trauma abdomen.
- Patients of all age groups

#### Exclusion criteria-

- Penetrating abdominal injury
- Associated Severe head injury
- All death on arrival.

**Sample size -** 50 patients

**Duration of study -** December 2020 to January 2022

#### Methods Of Data Collection

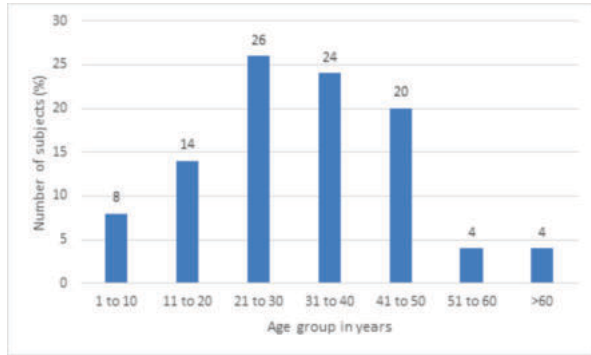
A hospital based retrospective study of 50 cases of blunt abdominal trauma patients presenting to Dr Ulhas Patil College and Hospital, Jalgaon from December 2020 to January 2022 was done. After primary resuscitation of trauma patients, detailed history was obtained from patient and patient relatives, thorough clinical examination, blood investigations, simultaneous Focused assessment sonography for trauma, CT abdomen was done to confirm the diagnosis. CECT abdomen was done in almost all cases. And further categorized into operative and conservative management. Patients selected for conservative management were given strict head flat position and bed rest, intravenous fluids, analgesics, triple antibiotics, were subjected to serial vitals monitoring including hourly pulse rate, blood pressure, respiratory rate and abdominal girth charting, repeated bedside sonography as an when required, progress of patients was closely monitored in the intensive care unit. Patients who did not respond to conservative management and were hemodynamically unstable and continued to deteriorate despite adequate resuscitation or who had evidence of bowel involvement were taken for immediate laparotomy. Inferences were made for various variables like age, sex, mode of injury, clinical presentation, operative findings, associated injuries, complications and mortality.

#### Focused Assessment For Sonography In Trauma

It is done to assess patient with potential thoracoabdominal injuries. Test sequentially surveys for the presence or absence of blood in the

pericardial sac and dependent abdominal regions including RUQ, LUQ and pelvis.

**RESULTS**



**Figure 1:** Distribution according to age group

Age wise distribution of trauma abdomen showed that 26% patients were from 21-30 years age group followed by 24% from 31-34 years, 20% from 41-50 years, 14% from 11-20 years, 8% from 1-10 years and 4% each from 51-60 and above 60 years age

**Table 1: Distribution According To Clinical Presentation**

Clinical presentation	Number	Percent
Pain in abdomen	30	60.0
Abdominal distention	8	16.0
Skin Bruising	30	60.0
Hypotension	35	70.0
Vomiting	20	40.0
Guarding & rigidity	16	32.0

Distribution according to clinical presentation showed that majority of the patients had hypotension i.e. 70% followed by pain in abdomen in 60%, skin bruising in 60%, vomiting in 40% and guarding and rigidity in 32%.

**Table 2: Distribution According To Mode Of Injury**

Mode of injury	Number	Percent
Road traffic accident	33	66.0
Fall from height	11	22.0
Assault	6	12.0
Total	50	100.0

Mode of injury was RTA in 66% cases, fall from height in 22% and assault in 12% cases.

**Table 3: Distribution According To Associated Injury Shown In CECT**

Associated injuries	Number	Percent
Chest trauma	10	20.0
Long bone fracture	8	16.0
Head trauma	4	8.0
Pelvic Fracture	2	4.0

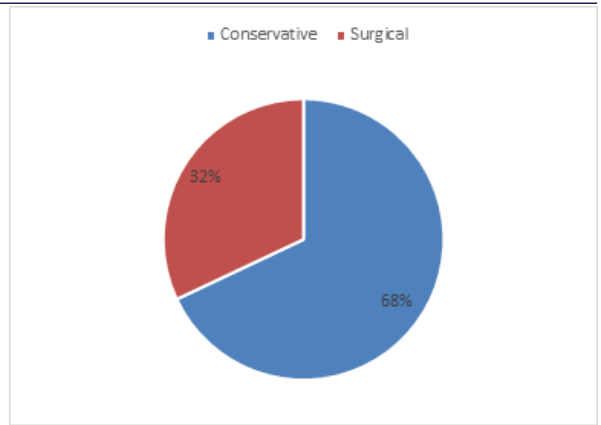
Distribution according to associated injury shown in CECT were chest trauma in 20%, long bone fracture in 16%, head trauma in 8% and pelvic fracture in 4% cases.

**Table 4: Distribution According To CECT Findings Of Organ Involvement**

Organ involvement	Number	Percent
Liver	17	34.0
Spleen	14	28.0
Hollow viscus mesenteric injury	15	30.0
Kidney	2	4.0
Pancreas	2	4.0
Total	50	100.0

Distribution according to CECT findings of organ involvement showed that liver was the most commonly involved organ i.e. 34% cases followed by hollow viscus mesenteric injury spleen in 30%, spleen in 28% and kidney and pancreas in 4% each.

68% of the patients were managed conservatively and 32% with surgical methods



**Figure 2:** Pie diagram showing management strategy for blunt trauma abdomen

**DISCUSSION**

In our study, age wise distribution of trauma abdomen showed that 26% patients were from 21-30 years age group followed by 24% from 31-34 years, 20% from 41-50 years, 14% from 11-20 years, 8% from 1-10 years and 4% each from 51-60 and above 60 years age. The mean age of the study population was 37.2 ± 11.3 years. (Figure 1)

Chandar Agrawal et al<sup>7</sup> included a total of 50 blunt trauma abdomen patients in their study and about one third of patients were 20-30 years (34%) followed by 31-40 (26%), >40 (24%) and <20 (16%) years. The mean age of patients was 34.20 ± 15.48 years.

Anarase and Anarase et al<sup>8</sup> found that of the 260 patients of blunt trauma abdomen, the most common age group was 21-40 years. In the study by Umare et al<sup>9</sup> the most cases of blunt abdominal trauma were between the age group of 11-40 years (76%). Rahman and Das et al<sup>10</sup> found that the commonest age group was 21 to 30 years comprised about 39% of BAT patients. The average age was 30.82 years. Arumugam S. et al<sup>11</sup> studied 34 patients of BAT. 29.4% of patients were in the age group of >20-30 years with the mean age 35.29 ± 15.84 years. In our study, distribution according to clinical presentation showed that majority of the patients had hypotension i.e. 70% followed by pain in abdomen in 60%, skin bruising in 60%, vomiting in 40% and guarding and rigidity in 32%.

In our study, mode of injury was RTA in 66% cases, fall from height in 22% and assault in 12% cases. Chandar Agrawal et al<sup>7</sup> reported that about half of the patients sustained RTA (48%) followed by assault (30%) and self-fall (22%) in the present study. Anarase and Anarase et al<sup>8</sup> also found that road traffic accidents were the predominant cause of trauma. In the study by Rahman and Das et al<sup>10</sup> the most common cause of BAT was found to be road traffic accidents (67%) which was slightly higher than the present study.

Arumugam et al<sup>11</sup> showed that road traffic accidents (61%) were the most frequent mechanism of injury followed by fall from height (25%) and fall of heavy object (7%).

In our study, distribution according to associated injury shown in CECT were chest trauma in 20%, long bone fracture in 16%, head trauma in 8% and pelvic fracture in 4% cases.

In our study, distribution according to CECT findings of organ involvement showed that liver was the most commonly involved organ i.e. 34% cases followed by hollow viscus mesenteric injury spleen in 30%, spleen in 28% and kidney and pancreas in 4% each.

Chandar Agrawal et al<sup>7</sup> reported that spleen was the most commonly injured organ on USG finding (44%). Liver was the second most common organ injured on USG finding (36%). Liver was the most commonly injured organ in CT findings (40%). Spleen was the second most commonly injured organ on CT findings (36%). Anarase S, Anarase et al<sup>8</sup> found that spleen and liver were the most commonly injured organs, 37.69% and 25% respectively.

In our study, 68% of the patients were managed conservatively and 32% with surgical methods. Chandar Agrawal et al<sup>7</sup> reported that conservative management was done in more than half of patients

(64%). Umare et al<sup>9</sup> showed that 58% patients of BAT were managed conservatively while operative interventions were required in 42% patients.

#### CONCLUSION:

- CECT showed that liver was the most commonly involved organ i.e. 34% cases followed by hollow viscus mesenteric injury spleen in 30%, spleen in 28% and kidney and pancreas in 4% each.
- CECT showed associated injury were chest trauma in 20%, long bone fracture in 16%, head trauma in 8% and pelvic fracture in 4% cases.
- Higher prevalence was seen in 21-40 years age group.

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