

# Evaluation of Patterns of Abdominal Injury in Patients Admitted to Emergency Department Due to Trauma: A Hospital Based Study

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## ABSTRACT

**Background:** Trauma is still the most frequent cause of death in the first four decades of life, and it remains a major public health problem in every country, regardless of the level of socioeconomic development. Unlike penetrating abdominal trauma, where management is largely determined clinically, the diagnosis of blunt abdominal injury by clinical examination is unreliable, particularly in patients with a decreased level of consciousness. Hence; we planned the present study to assess and evaluate Patterns of Abdominal Injury in Patients due to Trauma.

**Materials & Methods:** The present study included evaluation of pattern of abdominal injuries occurring in patients due to trauma. Study group comprised of a total of 50 patients with blunt abdominal trauma. Type of operative procedures performed in all the patients was recorded. All the results were analyzed by SPSS software.

**Results:** In the present study, we analyzed a total of 50 patients with blunt abdominal trauma. Road accident was the most common cause of blunt abdominal trauma seen in 80 percent of the patients. The most commonly used operative

procedure was perforation repair and hepatorrhaphy followed by mesentery repair.

**Conclusion:** Road traffic accident are the most common cause of blunt abdominal trauma, with perforation repair and hepatorrhaphy being the most commonly performed operative procedure in those patients.

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

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## INTRODUCTION

"Trauma has been defined as damage to the body caused by an exchange with environmental energy that is beyond the body's resilience. Trauma is still the most frequent cause of death in the first four decades of life, and it remains a major public health problem in every country, regardless of the level of socioeconomic development.<sup>1,2</sup> The nature of injuries sustained due to trauma is well understood, however, the causality of injury is less well understood. Abdominal trauma can be either blunt or penetrating type. Blunt trauma is more common in areas with heavy traffic while penetrating injuries, resulting from gunshot and stab wounds, or rarely from road side accidents, are common in military and violence prone areas.<sup>3,4</sup> Blunt abdominal trauma is defined as any traumatic lesion of blunt nature to intra-abdominal organs e.g. spleen, liver, kidneys, pancreas, mesentery, and hollow viscus e.g. gastrointestinal tract, biliary system, urinary bladder, major vessels of retroperitoneum.<sup>5-7</sup> Unlike penetrating abdominal trauma, where management is largely determined clinically, the diagnosis of blunt abdominal injury by clinical examination is unreliable, particularly in patients with a decreased level of consciousness.<sup>8,9</sup> Hence; we planned the present study to assess and evaluate Patterns of Abdominal Injury due to Trauma.

## MATERIALS & METHODS

The present study was planned in the emergency department of RBM Hospital, Bharatpur, Rajasthan, and included evaluation of pattern of abdominal injuries occurring in patients due to trauma. We obtained ethical clearance from the ethical committee of the institution and written consent was obtained from the patients/guardians of the patients after explaining in detail the entire research protocol.

Study group comprised of a total of 50 patients with blunt abdominal trauma. Only patients with abdominal trauma were included in the present study.

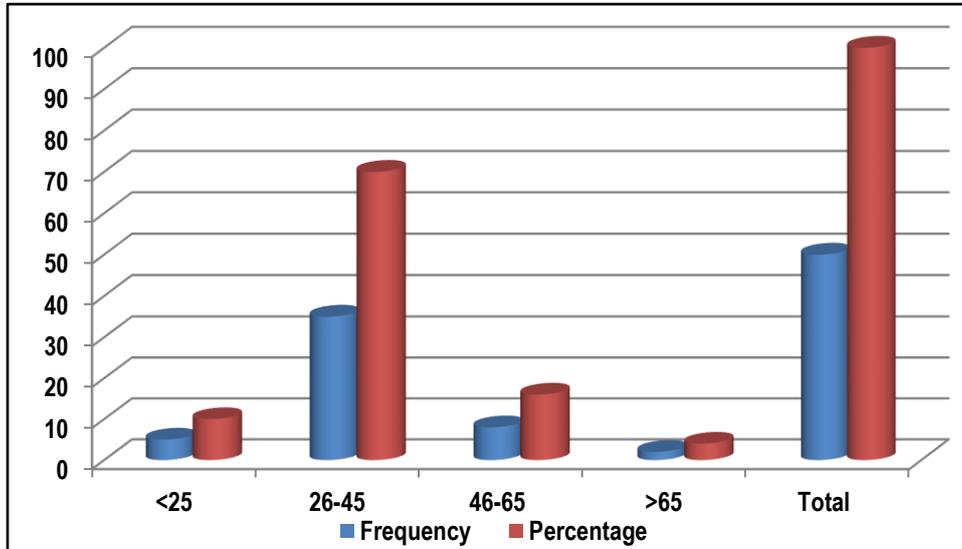
Simultaneously recording detailed history including demographic profile, mode of presentation, time of presentation, clinical profile and haematological investigations like Hb, BT,CT, TLC, DLC, RBS, Blood Urea, serum creatinine, serum electrolytes, serum amylase was done. Secondary survey included a detailed assessment of the overall condition of the patient and identification of the life threatening injuries. Type of operative procedures performed in all the patients was recorded. All the results were analyzed by SPSSs software. Regression curves were used for assessment of level of significance.

**RESULTS**

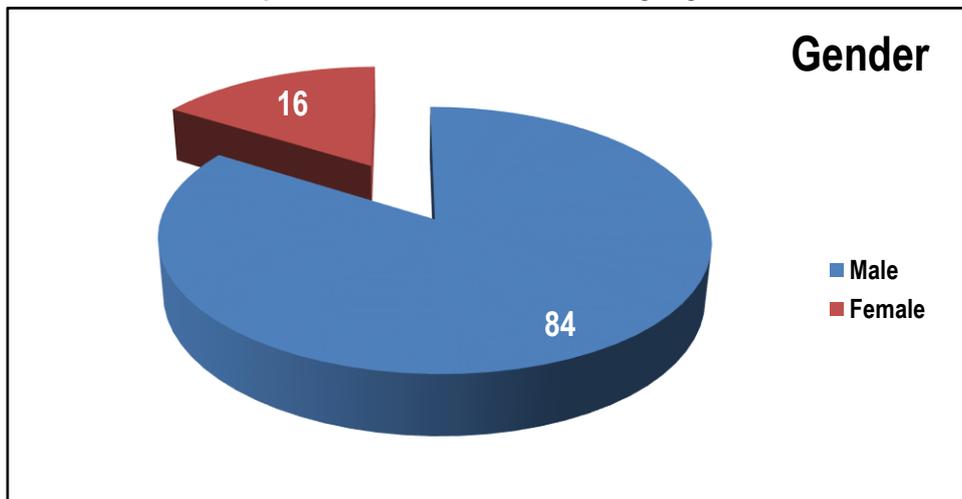
In the present study, we analyzed a total of 50 patients with blunt abdominal trauma. Majority of the patients belonged to the age group of 26 to 45 years (70 percent). 16 percent and 10 percent subjects belonged to the age group of 46 to 65 years and less than 25 years respectively. Among 50 patients, 84 percent of the

patients were males while remaining were females. Road accident was the most common cause of blunt abdominal trauma seen in 80 percent of the patients. The most commonly used operative procedure was perforation repair and hepatorrhaphy followed by mesentery repair.

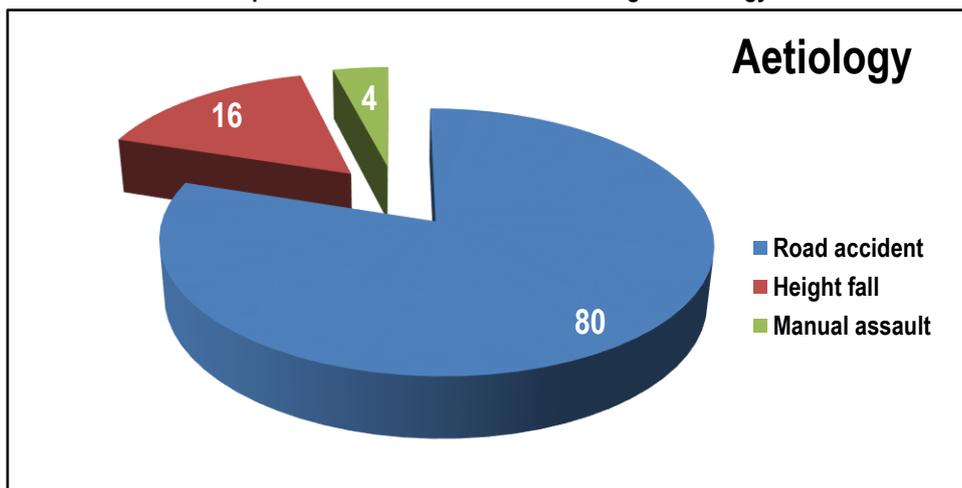
**Graph 1: Patient's distribution according to age**



**Graph 2: Patient's distribution according to gender**



**Graph 3: Patient's distribution according to aetiology**



**Table 1: Distribution of subjects according to operative procedure performed**

Operative finding	Frequency	Percentage
Perforation repair	3	6
Splenectomy	1	2
Resection Anastomosis	2	4
Nephrectomy	1	2
Mesentery repair	2	4
Hepatorrhaphy	3	6
Splenorrhaphy	1	2

## DISCUSSION

In the present study, we observed that most commonly used operative procedure was perforation repair and hepatorrhaphy followed by mesentery repair. Mehta N et al evaluated 71 cases of BAT with stress on early diagnosis and management, increase use of non-operative management, and time of presentation of patients. Demographic data, mechanism of trauma, management and outcomes were studied. Most of the patients in our study were in the age group of 21-30 years with an M:F ratio of 3.7:1. Motor vehicle accident (53%) was the most common mechanism of injury. Spleen (53%) was the commonest organ injured and the most common surgery performed was splenectomy (30%). Most common extra abdominal injury was rib fracture in 20%. Mortality rate was 4%. Wound sepsis (13%) was the commonest complication. Initial resuscitation measures, thorough clinical examination and correct diagnosis forms the most vital part of management. 70% of splenic, liver and renal injuries can be managed conservatively whereas hollow organs need laparotomy in most of the cases. The time of presentation of patients has a lot to do with outcome. Early diagnosis and prompt treatment can save many lives.<sup>10</sup>

Lin BC et al assessed the clinical experience and outcome of damage control laparotomy with perihepatic packing in the management of blunt major liver injuries. Of the 58 patients, 20 (35%) were classified as AAST-OIS grade III, 24 (41%) as grade IV, and 14 (24%) as grade V. At laparotomy, depending on the severity of injuries, all 58 patients underwent various liver-related procedures and perihepatic packing. The more frequent liver-related procedures included debridement hepatectomy (n=21), hepatorrhaphy (n=19), selective hepatic artery ligation (n=11) and 7 patients required post-laparotomy hepatic transarterial embolization. Of the 58 patients, 28 survived and 30 died with a 52% mortality rate. Of the 30 deaths, uncontrolled liver bleeding in 24-h caused 25 deaths and delayed sepsis caused residual 5 deaths. The mortality rate versus OIS was grade III: 30% (6/20), grade IV: 54% (13/24), and grade V: 79% (11/14), respectively. On univariate analysis, the significant predictors of mortality were OIS grade (p=0.019), prolonged initial prothrombin time (PT) (p=0.004), active partial thromboplastin time (APTT) (p<0.0001) and decreased platelet count (p=0.005). The mortality rate of surgical blunt major liver injuries remains high even with perihepatic packing.<sup>11</sup>

Jones EL et al determined the amount of time required for an intra-abdominal injury to become clinically apparent after blunt abdominal trauma via physical examination or commonly followed clinical values. Of 3,574 blunt trauma patients admitted to the

hospital, 285 (8%) experienced intra-abdominal injuries. The mean (SD) age was 36 (17) years, the majority were male (194 patients, 68%) and the mean (SD) Injury Severity Score (ISS) was 21 (14). The mean (SD) time from admission to diagnosis via computed tomography or surgery was 74 (55) minutes. Eighty patients (28%) required either surgery (78 patients, 17%) or radiographic embolization (2 patients, 0.7%) for their injury. All patients who required intervention demonstrated a sign or symptom of their intra-abdominal injury within 60 minutes of arrival, although two patients were intervened upon in a delayed fashion. All patients with a blunt intra-abdominal injury manifested a clinical sign or symptom of their intra-abdominal injury, resulting in their diagnosis within 8 hours 25 minutes of arrival to the hospital. All diagnosed intra-abdominal injuries from blunt trauma manifested clinical signs or symptoms that could prompt imaging or intervention, leading to their diagnosis within 8 hours 25 minutes of arrival to the hospital.<sup>12</sup>

Iqbal Y et al determined the validity of assessment with sonography for trauma (FAST) scans in the evaluation of BAT in comparison to Computed tomogram/Exploratory laparotomy (CT/FLAP). The validity of FAST scan in comparison to CT/ELAP was documented. Their study included 100 patients with suspected blunt abdominal trauma. The mean age was  $31.52 \pm 16.79$  years with 88% males. Road traffic accidents accounted for 80% cases and 20% were due to fall. Seventy percent were hemodynamically stable and 30% were unstable. Hemodynamically unstable patients had significantly more positive FAST scans and more positive CTIELAP (p < 0.05). Of the total, 52% had positive CTIELAP and 54% had positive FAST scan. Majority (28%) had splenic injury. A positive scan had a statistically significant probability of a confirmed blunt abdominal trauma on CT/ELAP; p = 0.00, OR = 8.095, 95% CI = 3.3-19.8. FAST scan had a sensitivity, specificity, positive predictive value and negative predictive value of 76.92%, 70.83%, 74.07% and 73.9% respectively. FAST scan had lesser accuracy as compared to previously published local and international data. More work is required before it can be routinely utilized to triage the blunt abdominal trauma patients to laparotomy.<sup>13</sup>

## CONCLUSION

From the above results, the authors concluded that road traffic accident are the most common cause of blunt abdominal trauma, with perforation repair and hepatorrhaphy being the most commonly performed operative procedure in those patients. However, future studies are directed.

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