

## ORIGINAL RESEARCH

### **Retrospective Analysis of Blunt Abdominal Injuries in Forensic Autopsies at a Tertiary Care Centre**

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#### **ABSTRACT**

**Introduction:** Blunt injury in the abdomen is seen more commonly because of rapid industrialization and increased number of vehicles ultimately leading to more number of accidents. According to the World Health Organisation by the year 2020, trauma will inadvertently become the first or second leading aetiology of death that happens over all ages. Therefore, the present retrospective study was carried out to evaluate the cases of blunt abdominal trauma from the records of forensic autopsies.

**Materials and Methodology:** A total of 90 autopsy cases were taken and 75 samples were included after scrutinising the records. A complete data was particularly obtained from the department records. There were some inclusion criteria that were followed in this study procedure that include those patients with history of blunt trauma abdomen due to road traffic accidents, accidental falls, and trauma by blunt objects and assault, above 14 years of age and both sexes. Those patients who did not fulfil the above inclusion criteria were relatively excluded from the study. Mechanism of death and pattern of organ involvement was also recorded. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

**Results:** In the present study, a total of 75 patients were analysed. Mean age of the patients of the present study was 29.7 years. Majority of the patients belonged to the age group of less than 30 years. 36 percent of the patients belonged to the age group of 30 to 50 years. Table – 2 tabulates the various organ involvement wherein liver, intestine and spleen were the most predominant organs involved in the blunt abdominal trauma. In the present study, the most common mechanism of death was haemorrhage followed by shock and infection.

**Conclusion:** To conclude, the most common cause of Blunt Trauma Abdomen was reportedly road traffic accident which has been followed by fall from height and assault.

**Keywords:** Blunt Injury, Abdominal Injury, Liver, Intestinal Injury.

## INTRODUCTION

Injury is reported to be the 7th cause of mortality and abdomen is the third most frequently injured organ across the globe. Various abdominal injuries might require surgery in 25% cases. 85% of abdominal trauma happened to be blunt in its characteristics.<sup>1</sup> The cases of blunt abdominal trauma occurs due to the result of an impact associated in affecting the abdominal cavity, without any dissolution in the continuity of the abdominal wall.<sup>2</sup> The spleen and liver are the most commonly injured organs as a result of blunt trauma involving the abdomen. This happens to be due to more traffic density in urban areas which makes it more vulnerable for road traffic accidents worldwide. According to the World Health Organisation by the year 2020, trauma will inadvertently become the first or second leading aetiology of death that happens over all ages.<sup>3</sup>

Traditionally, abdominal trauma has been classified as either blunt or penetrating. Penetrating abdominal trauma could usually be diagnosed relatively easy and reliable when compared to blunt abdominal trauma which often missed because of clinical signs are less obvious. Blunt abdominal injuries usually frequent in rural areas while penetrating ones are more common in urban settings. Penetrating abdominal trauma is often super classified into stab wounds and gunshot wounds which might require different methods of treatment.<sup>4,5</sup> Blunt abdominal injury is relatively a potent cause of morbidity and mortality which involves expedient diagnosis and treatment of intra-abdominal injuries are essential on order to prevent morbidity and death. In this point of recent technology, the rate of road accidents has greatly increased due to relatively high-speed engines associated in automobiles nowadays. The reason of these injuries is due to the evolution of mass production of automobiles which could lead to the creation of various explosive compounds that are capable of producing suffice compression forces which could possibly results in the highest impact on human body leading to severe bleeding from the major organs.<sup>6</sup>

The other reasons might include assaults, industrial accidents and reportedly falls from height. Mortality rates are observably quite higher among patients reported with blunt abdominal trauma than in those with penetrating type of wound since there is a lack of early diagnostic facilities and optimal management. Relatively, it happens to be dangerous since it is difficult to evaluate pathologies observed in poly-trauma victims.<sup>7</sup> Initial resuscitation along with assessment with sonography in trauma (FAST) and computed tomography (CT) abdomen are proved to be beneficial in order to detect those patients with minimal and clinically undetectable signs of abdominal injury and are reported to be the part of recent management guidelines.<sup>8</sup> Therefore the present retrospective study was carried out to evaluate the cases of blunt abdominal trauma from the records of forensic autopsies.

## MATERIALS AND METHODS

This study was adopted as a retrospective study wherein proper permission was obtained prior from the institutional ethical committee. The study commenced in the Department of Forensic Medicine, Jorhat Medical College, Jorhat, Assam (India) with the study samples that include those autopsies cases that had history of blunt abdominal trauma. Written consent was obtained after explaining the whole research protocol procedure. A total of 90 autopsy cases were taken and 75 samples were included after scrutinising the records. A complete data was particularly obtained from the department records. There were some inclusion criteria that were followed in this study procedure that include those patients with history of blunt trauma abdomen due to road traffic accidents, accidental falls, and trauma by blunt objects and assault, above 14 years of age and both sexes. Those patients who did not fulfil the above inclusion criteria were relatively excluded from the study. Mechanism of death and pattern of organ involvement was also recorded. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

## RESULTS

In the present study, a total of 75 patients were analysed. Mean age of the patients of the present study was 29.7 years. Majority of the patients belonged to the age group of less than 30 years. 36 percent of the patients belonged to the age group of 30 to 50 years. Considering the gender distribution, 58 percent of the patients of the present study were males while the remaining were females. Table – 2 tabulates the various organ involvement wherein liver, intestine and spleen were the most predominant organs involved in the blunt abdominal trauma. In the present study, the most common mechanism of death was haemorrhage followed by shock and infection.

**Table 1: Age and gender-wise distribution**

Variables	Number of patients	Percentage
<b>Age group (years)</b>		
Less than 30	30	40
30 to 50	27	36
More than 50	18	24
<b>Gender</b>		
Male	44	58
Females	31	42

**Table 2: Organ involvement**

Organ involved	Number	Percentage
<b>Stomach</b>	23	31
<b>Omentum</b>	19	25
<b>Intestine</b>	27	36
<b>Liver</b>	32	42
<b>Spleen</b>	22	30
<b>Kidneys</b>	12	16
<b>Bladder</b>	18	24
<b>Pancreas</b>	7	10

**Table 3: Mechanism of death**

Mechanism of death	Number	Percentage
<b>Shock</b>	29	39
<b>Haemorrhage</b>	31	41
<b>Infection</b>	15	20

## DISCUSSION

The incidence of cases that has been recorded due to blunt abdominal trauma depicted that the rapid development of cities and mega construction of new factories has invariably increased. Injuries that happen due to blunt abdominal trauma have a spectrum of wide variety. It can vaguely range from no organ injury to multi-organ injury. In few cases, there may be associated head or chest or any other injuries but in such circumstances it is relatively cumbersome to perform abdominal examination. Therefore, each poly-trauma patient has to

be thoroughly investigated in addition to vigilant clinical examination. In the present study, 58% cases were males and 42% were females and this increased incidence of trauma in male could possibly be attributed to their nature of work outside house, frequent travelling, more social activities and influence of indulging in alcohol occasionally. This finding is in concordance with studies conducted by *Kamawat JL, Panchal HA and Aziz A.*<sup>9,10,11</sup> In the present study, blunt abdominal trauma due to road traffic accidents were seen in 68% (most common), assault in 17%, fall down in 12%, hit by animals in 2% and by blunt object in 1%. The major concern for any attending surgeon is control of haemorrhage in blunt trauma but how it can be best done with safety and less morbidity depending on factors like grade, severity and site of injury. In a study done performed by *Bordoni PHC et al* revealed that the most commonly damaged organs in cases of penetrating AT necropsied was liver, followed by the intestines both in gunshot and stabbing cases. Although there are reported to be some regional variations also wherein intestines were more damaged than the liver in this trauma type.<sup>12</sup>

In the present study, a total of 75 patients were analysed. Mean age of the patients of the present study was 29.7 years. Majority of the patients belonged to the age group of less than 30 years. 36 percent of the patients belonged to the age group of 30 to 50 years. 58 percent of the patients of the present study were males while the remaining were females. Liver, intestine and spleen were the most common organs involved in the blunt abdominal trauma. *Brown MA et al* analysed the accuracy of screening abdominal ultrasonography (US) in patients with blunt abdominal trauma. Observations from 2,693 US examinations were evaluated and were positive in 145 of 172 patients with injuries (sensitivity, 84%) and 64 (89%) of 72 patients who ultimately underwent laparotomy with surgical repair of injuries. False-negative findings were retroperitoneal injury, bowel injury and intraperitoneal solid organ injury without hemoperitoneum. No such patients with false-negative findings died. Specificity of US was 96%, and overall accuracy was 96%. Positive predictive value was 61%, and negative predictive value was 99%. Abdominal US is useful in screening for injury in patients with blunt abdominal trauma, and its use represents a notable change in institutional practice.<sup>15</sup> Trauma or injury has been defined as damage to the body caused by an exchange with environmental energy that is beyond the body's resilience. It is the most common cause of death for all individuals between the ages of 1 and 44 years. Injury is the seventh leading cause of death, with 5.8 million deaths attributable to trauma globally.<sup>16</sup>

## CONCLUSION

To conclude, the most common cause of Blunt Trauma Abdomen was reportedly road traffic accident which has been followed by fall from height and assault. Strict adherence to traffic rules, better road infrastructure, following traffic rules sincerely with special focus on youth and active strata of population will surely help to minimize the incidence of blunt trauma.

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