

A study of incidence and outcome of blunt abdominal trauma at tertiary health care center

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Abstract

Introduction: Throughout the centuries, splenic worth has vacillated from the lofty pedestals of an essential organ life to the lowly depths of a vestigial organ without merit. -C.E.LUCAS, 1989.^{17TH} **Aims and Objectives:** To Study Incidence and Outcome of Blunt abdominal trauma at tertiary health care center. **Material and Method:** This cross-sectional, clinical study was carried out on patients with blunt abdominal trauma and were admitted to Rajarshi Chhatrapati Shahu Maharaj Medical Collage and Chhatrapati Pramila Raje Hospital, Kolhapur. Data was collected from 150 cases but for study 100. The collected data were analyzed and mean. Percentages and proportions were calculated by using SPSS version 17. **Results:** In the present study, maximum number of cases were in 11-20 age group (28%) followed 31-40 age group (22%). Average age was 25.1 years. Range was from 3 to 60 years. In the present study. 78(78%) patients were males and 22(22%) were females. Male to female ratio was 3.4:1. Most common cause of blunt injuries was road traffic accidents 62(62%) cases. Second common cause was fall from height, 26(26%) cases. Other cause was hit by blunt objects and assaults. Most common symptom was pain abdomen (98%). Next common symptom was vomiting 32 (32%) cases followed by distension of abdomen 20(20%). 6(6%) cases had urinary retention and 4(4%) had hematuria. 98 (98%) patient presented with tenderness at the time of admission. Next most common sign was local or generalized guarding 48 (48%) cases. Followed by shifting dullness which was present in 30(30%) of cases. 24 (24%) cases were in shock at admission and bowel sounds were absent or sluggish in 20 (20%) cases. Septicemia was the most common cause of death (6 cases). Two patients died of ARDS and another two of sudden cardiac arrest. **Conclusion:** It can be concluded from our study that average age was 25.1 years, male to female ratio was 3.4:1, most common cause of blunt injuries was road traffic accidents and most common symptom was pain abdomen followed by vomiting and distension of abdomen. Most common sign was local or generalized guarding shifting dullness. Septicemia was the most common cause of death followed by ARDS.

Keywords: Blunt abdominal trauma, Septicemia, ARDS.

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INTRODUCTION

Throughout the centuries, splenic worth has vacillated from the lofty pedestals of an essential organ life to the lowly depths of a vestigial organ without merit.-

C.E.LUCAS, 1989.^{17TH}. World population explosion is giving rise to a competitive struggle for Existence and has caused a steady increase in the incidence of grave physical injuries. In some way it is probably the penalty we pay for our achievement of civilization and modern living. Trauma or injury has been defined as damage to the body cause by an exchange with environmental energy that is beyond the body's resilience. In the ages of 1 to 44 years trauma is the leading cause of death and is the third most common cause of death regardless of age.¹ Trauma deaths occur at a traditionally recognized time points after injury. Approximately one half of trauma deaths occur within seconds or minute after injury.² The second mortality peak occurs within an hour of injury and accounts for approximately 30% of deaths. Most of these deaths can be averted by treating during the "golden

hour". Trauma system with acute patient care have the greatest impact on this group of injured patients.³ The key individual in the development of a system of trauma care is the general surgeon. The general surgeon is the best suited and most widely trained person capable of participating in and supervising all aspects of trauma care.⁴ The abdomen is frequently injured after both blunt and penetrating trauma. Approximately 25% of all trauma victims will require an abdominal exploration.⁴ The frequency with which reports appear in literature on abdominal trauma is an indication of its increasing incidence and shows that it represents a real diagnostic and therapeutic challenge. Since high speed surface travel is becoming more universally available it is certainly that abdominal trauma will continue to comprise an important fraction of the major injuries which the surgeon is called to attend. The commonest cause is a blunt trauma due to motor vehicle accident. Wherein solid organs are more commonly damaged. Unlike in penetrating trauma. Blunt trauma. Which it deceleration or compression forces, fractures the capsule and parenchyma of solid organs such as spleen and liver that are relatively incompressible. The resulting low-pressure bleed with associated minimal blood loss if diagnosed and quantified. These injuries may not require operative intervention. Blunt abdominal trauma generally leads to higher mortality rates than penetrating wounds and presents greater problems in diagnosis. No surgeon can sleep conscientiously having on his hand a case of undiagnosed blunt trauma to the abdomen. The abdomen is Pandora's Box, Fortunately, with few exceptions it is not necessary to determine which intra-abdominal organs are injured, only whether an exploratory laparotomy is necessary. Physical examination of abdomen is unreliable in making this determination.⁵ It is of great importance to endeavor to obtain a history of the mechanism of injury.⁶ Injuries to the left side, which involvement of spleen are more common as is rupture of the duodenum (closed loop to seat belt) in occupants of left hand seat of a car, whereas liver injuries are more common in right sided occupants.⁷ Closed injuries are most often due to direct violence when. For instance, the rim of the steering wheel is driven into the abdomen in a head on vehicle collision or a crush injury of chest drives a rib into the liver or spleen. Indirect violence, as occurs in deceleration after a fall from a height can tear heavy organs such as liver, spleen or kidney and a fracture of the pelvic ring can be complicated by injury to the bladder or urethra. Some 50-60% of closed injuries are due to road accidents and most victims are occupants of the vehicle, but 15% are on a motor Cycle or pedal cycle and 15% are pedestrians. Other cause are falls, accidents at work or in the home, assaults and seat-belt

injuries.⁸ The use of lap-shoulder seat belts by the drivers and front-seat passengers of motor vehicles has reduced the risk of death in a collision by 43%. However, the pressure exerted by the belt at the moment of impact on the chest and abdomen can be great. If the belt is loose or the subject is sitting awkwardly, the lap belt can exert pressure not on the iliac crests as intended but on any part of the alimentary tract lying between the abdominal wall and the lumbar spine. As a consequence, perforation of the small bowel and tears of the mesentery are particularly likely to occur, occasionally the colon is involved.⁸ Children secured in the backseat of car involved in high velocity deceleration accidents, who are restrained by lap belt, risk lumbar spine and visceral injuries. Bicycle handlebar injuries are particularly associated with pancreatic and duodenal damage.

Table 1: Blunt abdominal and pelvic injury patterns

Direct impact injuries	Associated regional injuries
Lower right rib fracture	Liver disruption
Lower left rib fracture	Splenic disruption
Mid epigastric contusion	Duodenal perforation, pancreatic injury
Lumbar transverse process fracture	Renal injury
Pelvic fracture	Bladder injury, urethral injury

MATERIAL AND METHOD

This cross-sectional, clinical study was carried out on patients with blunt abdominal trauma and were admitted to Rajarshi Chhatrapati Shahu Maharaj Medical College and Chhatrapati Pramila Raje Hospital, Kolhapur. Data was collected from 150 cases but for study 100 cases were selected by simple random sampling who fulfilled inclusion and exclusion criteria. Patients admitted with history of blunt trauma to the abdomen and subsequently diagnosed as having abdominal visceral injuries or intraperitoneal collections shown by investigations and unconscious patients with guarding /rigidity or distension of abdomen. Both adults and children with blunt abdominal trauma were included in the study. While the Patients associated with severe head and chest injuries which needed immediate neurosurgical or cardi thoracic intervention. Patients with pregnancy and associated obstetric injury. Patient with associated severe orthopedic injuries needing immediate orthopedic interventions were excluded from the study. Careful history was taken from selected patients who then underwent general and systemic examination. Patients were evaluated in the self-designed examination proforma. The relevant investigation was done to achieve the correct diagnosis. The operative findings were noted. The follow up was done with regard to complications. In cases managed conservatively. The manner of management and

complication were noted. The cause of death was noted in cases of death. Statistical analysis: The collected data were analyzed and mean. Percentages and proportions were calculated by using SPSS version 17.

RESULTS:

Table 1: Distribution of study subjects according to age

Age	No. of cases	(%)
1-10	18	18
11-20	28	28
21-30	20	20
31-40	22	22
41-50	08	08
51-60	04	04
Total	100	100

(Mean age 25.1 years, Range 3-60 years)

In the present study, maximum number of cases were in 11-20 age group (28%) followed 31-40 age group (22%). Average age was 25.1 years. Range was from 3 to 60 years.

Table 2: Distribution of study subjects according to sex

Gender	No. of cases	(%)
Male	78	78
Female	22	22
Total	100	100

(M: F Ratio 3.4:1)

In the present study. 78(78%) patients were males and 22(22%) were females. Male to female ratio was 3.4:1.

Table 3: Distribution of study subjects according to etiology of injuries

Nature of injury	No. of cases	(%)
Road traffic accidents	62	62
Fall from height	26	26
Hit by blunt object	04	04
Assault	08	08
Total	100	100

In this study, most common cause of blunt injuries was road traffic accidents 62(62%) cases. Second common cause was fall from height, 26(26%) cases. Other cause was hit by blunt objects and assaults.

Table 4: Distribution of study subjects according to symptoms

Symptoms	No. of cases	%
Pain abdomen	98	98
Vomiting	32	32
Distension	20	20
Urinary retention	06	06
Hematuria	04	04
unconscious	02	02

In the present study most common symptom was pain abdomen (98%). Next common symptom was vomiting 32 (32%) cases followed by distension of abdomen 20

(20%). 6 (6%) cases had urinary retention and 4 (4%) had hematuria.

Table 5: Distribution of study subjects according to signs

Signs	No. of cases	(%)
Tenderness	98	98
Guarding	48	48
Shifting dullness	30	30
B.S.Absent/sluggish	20	20
Shock	24	24

In the present study 98 (98%) patient presented with tenderness at the time of admission. Next most common sign was local or generalized guarding 48 (48%) cases. Followed by shifting dullness which was present in 30(30%) of cases. 24 (24%) cases were in shock at admission and sounds were absent or sluggish in 20 (20%) cases.

Table 6: Distribution of study subjects according Outcome (causes of death (n=10))

Outcome	No. of cases
Recovered	90 (90%)
Death	10(10%)
Cause of death	-
Sudden cardiac arrest	02
Septicemia	06
ARDS	02
Total	10(10%)

In this study septicemia was the most common cause of death of (6 cases). Two patients died of ARDS and another two of sudden cardiac arrest.

DISCUSSION

Abdominal trauma is one of the most common injuries among injuries caused mainly due to road traffic accidents. The rapid increase in motor vehicles and its aftermath has caused rapid increase in the number of victims to blunt abdominal trauma (BAT). Motor vehicle accidents account for 75%–80% of BAT.⁹ Blunt injury of abdomen is also a result of fall from height, assault with blunt objects, sports injuries, industrial mishaps, bomb blasts, and fall from riding bicycle. BAT is usually not obvious. Hence, often missed, unless, repeatedly looked for. Due to the inadequate treatment of the abdominal injuries, most of the cases are fatal. The knowledge in the management of BAT is progressively increasing due to the inpatient data gathered from different parts of the world. In spite of the best techniques and advances in diagnostic and supportive care, the morbidity and mortality remains atlarge. The reason of this could be due to the interval between trauma and hospitalization, delay in diagnosis, inadequate or lack of appropriate surgical treatment, postoperative complications, and associated trauma especially to spine, head, thorax, and extremities.¹⁰When BAT is complicated by “internal

injury,” the liver and spleen are the most frequently involved, followed by the small intestine. In rare cases, this injury has been attributed to medical techniques such as the Heimlich Maneuver.¹¹ University Teaching Hospital, Jos, Nigeria a total of 8,970 trauma victims with a mean age of 28.5 years. ¹²In the present study. 78(78%) patients were males and 22(22%) were females. Male to female ratio was 3.4:1. The female was mostly victim of domestic violence. According to national and international data, blunt abdominal trauma is more common in men. The male-to-female ratio is 60:40. ¹³In this study, most common cause of blunt injuries was road traffic accidents 62 (62%) cases. Second common cause was fall from height, 26 (26%) cases. Other cause was hit by blunt objects and assaults. Similar to R. S. Raikwar¹⁴ In the present study most common symptom was pain abdomen (98%). Next common symptom was vomiting 32 (32%) cases followed by distension of abdomen 20 (20%). 6 (6%) cases had urinary retention and 4 (4%) had hematuria. In the present study 98 (98%) patient presented with tenderness at the time of admission. Next most common sign was local or generalized guarding 48 (48%) cases. Followed by shifting dullness which was present in 30(30%) of cases. 24 (24%) cases were in shock at admission and sounds were absent or sluggish in 20 (20%) cases. Similar to R. S. Raikwar¹⁴ In this study septicemia was the most common cause of death of (6 cases). Two patients died of ARDS and another two of sudden cardiac arrest this was similar to R. S. Raikwar¹⁴

CONCLUSION

It can be concluded from our study that average age was 25.1 years, male to female ratio was 3.4:1, most common cause of blunt injuries was road traffic accidents and most common symptom was pain abdomen followed by vomiting and distension of abdomen. Most common sign was local or generalized guarding shifting dullness. Septicemia was the most common cause of death followed by ARDS.

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