

A Study of Cases of Blunt Abdominal Trauma: A Prospective Study

Abrar Ahmed Aazam^{1*}, Vivin Thomas Varghese², Sonal Vaishnav³, BL Bairwa⁴

¹Assistant Professor, Department of General Surgery, GMC Chittorgarh.

²Associate Professor, Department of General Surgery, SUTMC. Trivandrum, Kerala.

³Junior Specialist, District Hospital, Chittorgarh.

⁴Consultant, MP Birla Hospital, Chittorgarh

Received: 12-03-2023 / Revised: 17-04-2023 / Accepted: 05-05-2023

Corresponding author: Dr. Abrar Ahmed Aazam

Conflict of interest: Nil

Abstract

Commonest cause of blunt abdominal trauma was found to be Road Traffic Accident. Commonest age group is in between second, third and fourth decade, with male preponderance. In all age groups, males are affected more than females. Most of the patients were admitted within first six hours of injury. In my study, liver is the most commonly involved organ followed by spleen. In this study, USG remains the most suitable investigation in our setup, while CT scan plays a significant role in polytrauma with multiple organ injuries. Out of 100 cases, 72 patients managed conservatively, and 28 required the operative intervention. There are complications associated with the operative mode of treatment; most commonly being wound infection. Highest incidence of operative intervention was found among the patients of road traffic accident. Two patients having liver injury, expired. They were managed conservatively.

Keywords: Blunt Abdominal Trauma, Road Traffic Accident, Organ Injuries.

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Abdominal trauma is one of the most common causes among injuries caused mainly due to road traffic accidents. The rapid increase in motor vehicles and its aftermath has caused rapid increase in number of victims to blunt abdominal trauma. Motor vehicle accidents account for 75 to 80 % of blunt abdominal trauma. 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.[1]

Blunt abdominal trauma 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 blunt abdominal trauma is progressively increasing due to the in-patient 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 at large. The reason for this could be due to the interval between trauma and hospitalization, delay in diagnosis, inadequate and lack of appropriate surgical treatment, post-operative complications

and associated trauma especially to spine, head, thorax and extremities.[2]

In view of increasing number of vehicles and consequently road traffic accidents, this dissertation has been chosen to study the cases of blunt abdominal trauma with reference to the patients presenting at Smt. SCL General Hospital, affiliated with Smt. N.H.L. Medical college.

Aim of the study the incidence and pattern of closed abdominal injury in hospitalized trauma victims. Establish relationship and comparison between conservative and operative treatment and outcome. And to evaluate common complications of blunt abdominal trauma.

Material and Method

Source of data:

This is a prospective study of blunt abdominal injuries during the period from May 2009 to October 2012 in Smt SCL General Hospital attached to N.H.L. Medical College. Number of cases included in this studies 100.

Method of collection of Data:

- After initial resuscitation of the trauma victims, a careful history was taken to document any associated medical problem.
- Documentation of patients, which included identification, history, clinical findings, diagnostic test, operative findings, operative procedures, complications during the stay in the hospital and during subsequent follow-up period, were all recorded on a proforma specially prepared.
- Demographic data collected included the age, sex, occupation and nature and time of accident leading to the injury.
- Routine blood and urine tests, radiological investigations were carried out in all the patients.
- After initial resuscitation and achieving hemodynamic stability, all patients were subjected to careful

examination, depending on the clinical findings; decision was taken for further investigations such as four-quadrant aspiration, diagnostic peritoneal lavage, x ray abdomen and ultrasound.

- The decision for operative or non-operative management depended on the outcome of the clinical examination and results of diagnostic tests.
- Patients selected for non-operative or conservative management were placed on strict bed rest, were subjected to serial clinical examination which included hourly pulse rate, blood pressure, respiratory rate and repeated examination of abdomen and other systems.
- Appropriate diagnostic tests especially ultrasound of abdomen was repeated as and when required.
- Post operative follow up was done to note for complications.

Inclusion criteria:

- All patients, who have blunt abdominal injury and hospitalized for the same.

Exclusion criteria:

- All patients who have blunt abdominal injury but not hospitalized.
- Patient having associated penetrating injuries.

Ethical Clearance by Institutional ethical Committee

Results

Seventy two cases are managed conservatively and operative treatment required in 28 cases, out of 100 cases studied. In 72 patient managed conservatively, 2 cases expired. And in 28 cases which are operatively managed, operative treatment is successful in all cases. All patients were followed up on the OPD bases after discharge. Follow up was carried out for minimum period of 2 month. All of the patients did well in follow up.

Table 1: Organs involved in Blunt abdominal trauma.

Organ	No. of Cases	Percentage
Liver	14	30.43%
Spleen	08	17.39%
Urinary bladder	06	13.04%
Small bowel	04	08.69%
Mesentery	05	10.86%
Large bowel	02	04.34%
Common bile duct	02	04.34%
Urethra	01	02.17%
Kidney	02	04.34%
Pancreas	01	02.17%
Inferior vena cava	01	02.17%
Total	46	

Liver remains the most commonly injured organ, followed by spleen and urinary bladder.

Table 2: Multiple organ injury involved in Blunt abdominal trauma.

Organs involved	Numbers of cases
Liver , common bile duct	02
Liver, small intestine	01
Mesentery, small intestine	02
Mesentery, large intestine	01
Bladder, urethra	01
Kidney, liver , inferior vena cava	01
Bladder, rectum	01
Kidney, liver	01

In this study there are two cases for liver and common bile duct injury and two cases for Mesentery and small intestine. Liver is the most common organ injured in the multiple organ injury. In total 5 cases it is involved in injury.

In this study, most common organ injured and operative intervention required for it is liver followed by spleen.

In this study, we find that more than half the cases of closed abdominal trauma patients were associated with some other injuries, means polytrauma, among which extremities injury and injury to chest were most common and most of the time they were combined. Others injury include bruise or abrasion at back, flank, face, gluteal region and abdomen.

Conservatively treated patients could initiate their daily routine activities earlier and were able to join their jobs earlier.

While operated patients need to be kept for more days for postoperative management and monitoring.

USG remains the most suitable investigation in our setup, while CT scan plays a significant role in blunt trauma patients especially, in polytrauma with multiple organ and bowel injuries. Out of 100 cases, ultrasound was done in all 100 cases, and CT scan was done only in 5 cases.

Early access to hospital improves chances of patient being kept conservative, as patient can be resuscitated and treated early. In this study, most of patients are hospitalized within 6 hours after injury.

In this study, most common complication in conservatively managed patients is pneumonia. And in operatively managed patients, wound infection is most common complication. And two patients were

expired, who were managed conservatively, having liver contusion and laceration.

Males are more vulnerable because they are exposed to outdoor hazards of road traffic, industrial and sports accidents. There is no significant difference between males and females in modality of treatment.

Highest incidence of injury was noted in age group 21-30 because they are exposed to outdoor work and the increased incidence of vehicular accident in this age group.

Most common mean of blunt abdominal injury in this study is road traffic accidents, followed

by beaten by blunt object. Around 50% of cases were of road traffic accidents.

Discussion

In this study, most common mode of injury is road traffic accident, followed by the assaulted injury. In this present study 50% cases of Road traffic accidents and other studies Davis et al [3] and Khanna et al [4] (1992-97) shows 70% and 57%. In this present study 9% cases fall down from height and other studies Davis et al [3] and Khanna [4] et al (1992-97) shows 06% and 15%. present study shows 41% assaulted injuries other studies Davis et al [3] and Khanna et al [4] (1992-97) shows 17% and 33%.

In both studies males are more prone to injury. In present study 74% males are involved and in DAVIS et al [3], 70% males are affected.

In both the studies, most common age group affected is between 21 to 30 years of age. In present study, less affected age group is between 61-70 years of age. And in DAVIS et al [3], less affected age group is between 01 to 10 years of age.

In present study, operative management was done in 28% cases, rest all patients were managed conservatively. In DAVIS

et al [3], 77% of patients were managed operatively, rest were managed conservatively. In KHANNA ET AL [4] (1992-97), 58 % of patients were managed operatively, rest were managed conservatively.

In present study, extremities injuries are more than other injuries followed by chest injuries. In DAVIS ET AL [3], chest injuries are most common followed by fractures. In KHANNA ET AL [4], most common injuries are chest injury followed by fractures.

In the present study, most common injured organ is liver, followed by spleen. In CUSHERI [5], most commonly involved organ is spleen, followed by liver. In COX ET AL [6], spleen is most common injured organ followed by liver. In DAVIS ET AL [3], most common injured organ is spleen, followed by liver. In KHANNA ET AL [4], most common injured organ in small bowel followed by mesentery. In all these studies most commonly injured organ are spleen and liver. [7-11]

Conclusion

Vehicular accidents remain the most common cause of blunt abdominal trauma, liver and spleen are the most common organ to be injured, males in 2nd, 3rd and 4th decade of life are more prone. Since spleen is an important organ for immunity, splenic injuries should be usually managed conservatively in younger patients.

Not all the patients having blunt abdominal trauma with evidence of intra-abdominal injury requires operative intervention, they can be also managed conservatively. Repeated and careful examination is required when patients are treated conservatively.

In case of doubt operative intervention should be done as diagnostic as well as therapeutic measure. Clinical criteria, along with high index of suspicion for specific organ injury, are more important than laboratory and radiological investigation for better outcome of patient.

Conservatively treated patients could resume their routine activities earlier, while operated patients needed to be kept for more days for post-operative management and monitoring. Detailed history, careful and repeated examinations reveal the injury to gastrointestinal tract in most of cases. Radiology is helpful in diagnosis of the injury, but negative radiology does not rule out gastrointestinal injury.

The best way of reducing the morbidity and mortality from blunt abdominal trauma is prevention. Efforts on controlling traffic, making people conscious about the traffic rules, better facilities of working and more safety will lessen the incidence of accident. Facility of emergency ward definitely helps in the initial phase of the treatment and reduce the morbidity and mortality.

Well trained and co-ordinated team of trauma specialist Surgeons, Radiologists, Orthopedics, Anaesthetists in trauma centers can reduce the morbidity and mortality of patients. There is an acute need of Trauma center, which is well equipped with all modern facilities in tertiary care center.

References

1. Bailey and Love's Short Practice of Surgery, 25th edition, 2008.
2. Sabiston's Text book of surgery, 18th edition, 2008
3. Davis JJ, Cohn I Jr, Nance FC. Diagnosis and Management of blunt abdominal trauma. *Ann. Surg.* Jun 1976; 183 (6): 672-8.
4. R. Khanna, S Khanna, PSingh, Puneet and A K Khanna; Spectrum of blunt abdominal trauma in Varansi; *Quart J, March & June*; 35: 1& 2: 25-28.
5. Cusher A, Giles G. R., Moosa A. R: *Essential Surgical Practice*; Butterworth International Ed. 1998; 263-304.
6. Cox, Everard F; Blunt abdominal trauma: A 5 year Analysis of 870 patients requiring Celiotomy; *Ann, Surg*; April 1984; 199: 467-474.
7. Ali J. Adam R, Butter AK et al: Trauma outcome improves following the Advance Trauma Life Support programme in a developing country. *J. Trauma.* 1993;34: 890-8.
8. Bouillon B, Kanz KG Lactner CK et al: The importance of Advanced Trauma life Support in emergency room. *Unfallchurg.* 2004; 107: 844-50.
9. Fischbadi FT, Dunning MB III eds (2004). *Manual of laboratory and Diagnostic tests*, 7th ed. Philadelphia: Lipincott Williams and Wilkins.
10. Joe Jack Davis, Isidore Cohn, Francis C. Nance; *Diagnosis and management of Blunt abdominal trauma.* *Ann, Surg,* June 1976;183: 6: 672-678.
11. Chakdoufi S., & Guerboub, P. A. Kyste De La Neurohypophyse: À Propos D'un Cas. *Journal of Medical Research and Health Sciences*, 2023; 6(3): 2484–2489.