

AN ANALYSIS OF VISCERAL INJURIES IN THE BLUNT ABDOMINAL TRAUMA- AN ANALYTICAL OBSERVATIONAL STUDY

General Surgery

Abdul Danish Sheikh

Junior Resident, Department of General Surgery, Shri.VNGMC, Yavatmal

Girish Jatkar

Professor, Department of General Surgery, Shri.VNGMC, Yavatmal

Vishal Yelke

Assistant Professor, Department of General Surgery, Shri.VNGMC, Yavatmal

Vinod Rathod*

Associate Professor, Department of General Surgery, Shri.VNGMC, Yavatmal
*Corresponding Author

ABSTRACT

TRAUMA is a preeminent cause of morbidity and mortality in modern world. Diagnosis of abdominal trauma may be missed as clinical signs may not be obvious that can even cost a life. Thorough clinical examination is essential along with necessary investigations that will help in the diagnosis and prompt management. **Aims and Objectives:** To Study the effect of time-interval between injury and intervention in the final outcome. To know the incidence of different visceral injuries in abdominal trauma. **Methods:** This study was conducted in the Shri.Vasantrao Naik GMC, Yavatmal for a period of 2 yrs and 6 months. Total 152 cases of Blunt trauma to abdomen were admitted. The study comprises of patients injured in blunt trauma to abdomen and were admitted and treated in the tertiary hospital. **Results:** Conservative management was done in 85 patients and surgical management is done in 67 cases with splenectomy done in 12 cases. Motor vehicle accident is commonest cause in abdominal trauma. **Conclusion:** Early analysis, proper and judicious use of investigating and imaging modalities along with in-depth clinical examination in patients with abdominal trauma, preeminently decrease the mortality and morbidity in society.

KEYWORDS

abdominal trauma, laparotomy, hepatosplenic injuries

INTRODUCTION

TRAUMA is a preeminent cause of morbidity and mortality in modern world. It can cause serious injuries to any major system or organ of the body. Most of the injuries manifest earlier, but blunt trauma to abdomen which can be silent at first may prove fatal later on. Diagnosis of abdominal trauma may be missed as clinical signs may not be obvious that can even cost a life.

Thorough clinical examination is essential along with necessary investigations that will help in the diagnosis and help us to start early treatment. Primary goal in trauma is to get *the right patient to right place at right time*.¹

Nowadays we have wide range of investigation modalities for timely diagnosis. An important deciding factor is the first clinician who see the patient apart from type and time of injury and intervention, as it affects the outcome. Deaths due to abdominal trauma are preventable. Early analysis, proper and judicious use of investigating and imaging modalities along with in-depth clinical examination in patients with abdominal trauma, preeminently decrease the mortality and morbidity in society.

In modern world of evidence based medicine (EBM), negative exploratory laparotomies should not be done and delicate findings should not be missed at the same time. A trauma laparotomy is the final step in the pathway to delineate intra-abdominal injury.²

The Advance Trauma Life Support (ATLS) course has standardized approach to the injured patient that is based on the concept of rapidly identifying and addressing life threatening conditions during the initial assessment of the patient.³

AIMS AND OBJECTIVES

- To Study the effect of time-interval between injury and intervention in the final outcome.
- To know the incidence of different visceral injuries in the blunt abdominal trauma.
- To find etiology, mode of presentation, age and sex distribution in the blunt abdominal trauma

METHODOLOGY

The study was conducted in the Shri.Vasantrao Naik Government Medical College, Yavatmal for a period of 2 yrs and 6 months with 152 cases of abdominal trauma were admitted. All these patients were admitted in casualty by the emergency medical officer and were attended by on duty general surgeon.

After the initial resuscitation, patients were examined for any signs with detailed history. Investigations are driven by the cardiovascular status of the patient.

Ultrasound of the abdomen with X-ray were done to make a proper diagnosis. Ultrasound (Extended F.A.S.T scan) was done in all the cases. CECT abdomen was done in the patients in whom the diagnosis was not clear, only if patient is haemodynamically stable. Intra-abdominal fluid on a CT scan without a solid organ injury should raise the index of suspicion for a hollow viscus injury.

All parameters were analyzed, namely age, sex, etiology of Blunt trauma to abdomen, symptoms, signs, prevalence of different organ injuries, latent period before presentation, investigations, operative procedures employed, complication, choice of treatment, duration of hospital stay and the final outcome and inferences were made.

RESULTS

Total 152 consecutive cases of Blunt trauma to abdomen that presented to this institute were analyzed on the following parameters: sex, age, signs, symptoms, organ injured, etiology, latent period, investigations, mode of treatment, procedures, complications, duration of hospital stay, outcome and following results were found out.

Most of the patients involved in Blunt trauma to abdomen were in age group of 21-30 (years) followed by 31-40 (years). The mean age- 38 years. Males (80%) are more commonly affected.

Motor-vehicle accidents (MVA) were the commonest mode of injury to the abdomen accounting for nearly 50% followed by blow with the blunt object (30%)

The time-interval (Duration) between injury and presentation to hospital is the Latent period. Nearly 50% patients presented in the first 4 hours of injury and only 2% presented after 24 hours.

Latent period (LP)	Number of patients	Percentage%
0-4	76	50
more than 4-8	37	24
more than 8-16	21	14
more than 16-24	15	10
more than 24	3	2

Pain is the most common symptom present in almost all the patients followed by vomiting. Tenderness is the commonest clinical sign present in nearly 98% patients followed by absent bowel sounds and

guarding. Approximately 22% patients reported with haemoglobin of <10g/dl and nearly 18% patients reported with hypovolemic shock.

60% patients who were presented with intra-abdominal organ injuries. Spleen being the commonest followed by liver. Most commonly injured hollow viscus was small intestine in which jejunum is the most.

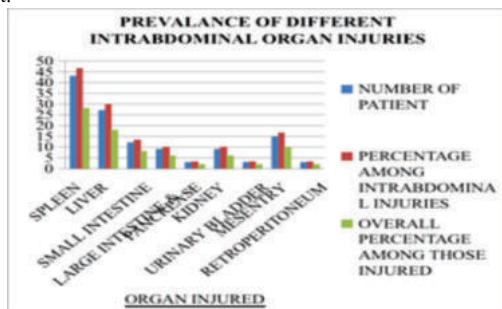


Figure-01

Multiple intra-abdominal organs injuries were seen in 18% patients. Liver with spleen is commonest combination followed by small bowel and mesentery.

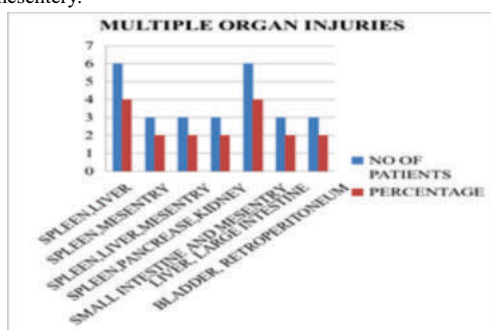


Figure-02

In all 152 patients, X-ray and Ultrasound of abdomen were performed. CE-CT abdomen was performed in only 56% cases. Sensitivity and specificity of ultrasound in our study was 73% and 100% respectively. Sensitivity of X-Ray in detecting hollow viscus injuries was 86% and specificity was 100%. Sensitivity and specificity of CECT abdomen was found to be nearly 100% in this study.

Approximately 56% patients were managed conservatively and rest were managed surgically. The most commonly done procedure was splenectomy in 8% followed by splenorrhaphy (6%) and suturing of bowel (6%).

Surgical site infection (SSI) was the most common complication reported in nearly 18% patients then respiratory infections (8%) and wound dehiscence (6%). No complications were reported in rest of the patients.

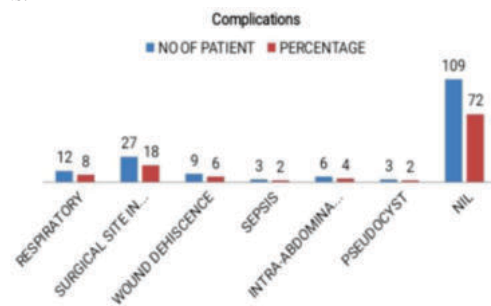


Figure-03

Approximately 50% of the patients were discharged within 7 days and nearly 2% of them were hospitalised for >3 weeks. In conservative management, mean duration of hospital stay was 4 and in operative, it was 13. Blunt trauma to abdomen proved fatal in 6% of total number of cases.

DISCUSSION

Majority of the patients belong to young and working community between 21-30 age group. Male preponderance is more (80%) as they

are involved in outdoor activities including travel. Due to modernization and increase in use of personal Vehicles, Road traffic accidents are commonest cause followed by blow with blunt objects (30%). Prevention of Motor vehicle accidents preeminently decrease the incidence of abdominal trauma. Injured patients with life-threatening bleeding develop Acute Coagulopathy of Trauma (ACOT).⁴

In our study, 50% patients that reported in the initial 4 hours of trauma have better prognosis as compared to those who reported after 8 hours and that lead to clinical deterioration and increased morbidity. Pain (100%) followed by tenderness (98%) are common and reliable symptom. Localised pain may also be indicative of the possible organ injured. Shock is indicative of an intra-abdominal hemorrhage which if not detected early and immediately managed can result in the death of patient. Spleen (28%) followed by liver are most common injuries. Isolated splenic injury comprises approximately 42% of abdominal trauma.⁵ Combined organ injuries were reported in 18% patients. Serious head, chest and orthopaedic injuries are excluded as they require immediate intervention and may affect the morbidity and mortality.

As X-Ray and ultrasound are quick, simple and easily available at bedside. It can be performed along with the resuscitative measures. Therefore, done in 100% patients. To identifying hollow viscus injuries, X-Ray was helpful while ultrasound was better in detection of solid organ injuries. CECT takes lots of time & need healthy kidney function with stable patient and contraindicated in haemodynamically unstable.

In this study, Conservative management was done in 56% patient. Nowadays conservative approach is more in scenario, and has avoided negative laparotomies. Laparotomy or laparoscopy is indicated for suspicion of injury to a hollow viscus.⁶ Splenectomy followed by primary closure of perforation are commonly done procedure. In trauma surgery, priority is to control the haemorrhage and stabilise the patient with the intention of performing definitive surgery in 6 to 48 hours when his or her general condition improves.⁷

Complications were reported in 28% patients with surgical site infections (18%) was the commonest complication followed by respiratory complications and wound dehiscence. Duration of hospital stay was remarkably lengthened when patients had complications. In conservative management, mean duration of hospital stay was 4 and in operative, it was 13. Mortality was 6% in this study. Out of 9 deaths, 6 patients expired as result of intraabdominal hemorrhage with shock secondary to solid organ injury, other due to intestinal rupture with ensuing sepsis.

CONCLUSIONS

In this study, Commonest injuries in this study is hepato-splenic (60%) with spleen being more common (28%). Majority of patients were in 21-30 (years) age group with motor vehicle accidents was commonest mode. High Suspicion and caution is needed to exclude abdominal injury in a polytrauma patient. Thorough and in-depth clinical examination by surgeon and recurring monitoring is needed for early analysis of intra abdominal injury. Immediate resuscitation with necessary investigations such as X-ray (Erect) of abdomen and Chest, peritoneal lavage are important in deciding the organ injury. Ultrasound (USG) is very useful adjuvant in solid organ injury.

Every patient brought to the hospital shortly after abdominal injury should be detained even in seamlessly slight injuries and need to be observed for at least 6 hours in emergency.⁸

Early analysis, proper and judicious use of investigating and imaging modalities along with in-depth clinical examination in patients with abdominal trauma, preeminently decrease the mortality and morbidity in society.

Limitations

Limitations to this study are as follows:

- Associated severe Head, Chest and orthopaedic injury patients are excluded.
- Patients who did not give consent are excluded.

REFERENCES:

1. Sabiston's Textbook of surgery: 21st edition: 2022: p387, p1879
2. Bailey & Love's short practice of surgery: 27th edition: vol-1: p372

3. American College of Surgeons. Committee on Trauma. Advanced Trauma Life Support. 10th ed. Chicago: American College of Surgeons; 2018.
4. Gonzalez E, Moore EE, Moore HB, Chapman MP, Silliman CC, Banerjee A. Trauma induced coagulopathy: an institution's 35-year perspective on practice and research. *Scand J Surg*. 2014;103:89-103.
5. Coccolini F, Montori G, Catena F, et-al. Splenic trauma: WSES classification and guidelines for adult and pediatric patients. *World J Emerg Surg*. 2017;12:40.
6. Farquharson's textbook of Operative General surgery 10th edition-p247
7. Loveland JA, Boffard KD (2004) Damage control in the abdomen and beyond. Review. *Brit J Surg* 91:1095-1101.
8. Hamilton Bailey's Emergency surgery: 8th edition: 1967: p563.