

A STUDY OF PATIENTS OF ABDOMINAL TRAUMA AND ITS MANAGEMENT

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Abstract

Background: The effects of abdominal injuries could be fatal. It is a critical public health concern that abdominal trauma affects people of all ages and socioeconomic statuses. To increase the likelihood of a favorable outcome, patients with abdominal injuries should receive prompt examination, stabilization, and surgical consultation. Hemorrhage or sepsis is the causes of abdominal trauma deaths. Most abdominal trauma fatalities can be avoided. Patients at risk for abdominal trauma should be assessed. Ultrasonography, computed tomography, and peritoneal lavage may be used to diagnose the condition, and surgery may be used to treat it. **Materials and Methods:** The study included all trauma patients over the age of 18 who were admitted to the emergency department of the government medical college in Jagdalpur, Chhattisgarh. Detailed history of the patients was taken. ABCDE is first evaluated by a local examination of the head and neck, chest, belly, limbs, and back. An initial assessment of the type of abdominal trauma was made through physical examination. Laboratory and radiographic investigations were done. SPSS was used for all data analysis and entry using Microsoft Excel. **Result:** 63 patients, or 96.92%, experienced pain, 20 had gastrointestinal hemorrhage, 7 experienced hypovolemia, 11 experienced blood-stained vomit, 23 experienced breathing noises, and 9 experienced protruding intestine. There were more male patients, 49 (75.38%), than female patients, 16, (24.61%). More patients (63.07%) were in the age group of 21 to 40 years. 11 patients out of 65 had diaphragmatic injury, 6 had esophageal injury, 9 had stomach injury, 20 had liver injury, 15 had small intestine injury, and 4 had spleen injury. **Conclusion:** In order to reduce avoidable morbidity and mortality, an immediate assessment of the abdomen is required. Death rates can be reduced by 50% with early detection. However, any worsening of the clinical signs and symptoms should be followed by surgical care.

INTRODUCTION

Trauma or injury is described as harm to the body brought on by an interaction with external energy that exceeds the body's capacity for resistance. No matter the person's age, trauma continues to be the third most common cause of mortality for all people between the ages of 1 and 44. Injury is the seventh greatest cause of death worldwide, accounting for 5.8 million fatalities in 2006. Injury-related deaths account for 6% of all fatalities in the United States and are the main cause of death for children, adolescents, and adults between the ages of 1 and 44.^[1]

In spite of socioeconomic development, trauma continues to be the leading cause of death in the first 40 years of life and is a serious public health concern everywhere. The third most often wounded body part

is the abdomen, which requires surgery in roughly 25% of civilian cases. Traditionally, abdominal trauma is categorized as either blunt or penetrating. While blunt abdominal trauma is sometimes overlooked because the clinical indications are less clear, penetrating abdominal trauma can typically be detected quickly and accurately. In rural areas, blunt abdominal injuries are more common, but in cities, penetrating injuries are more common. Stabbing and gunshot wounds are two common subtypes of abdominal penetration that need for different types of care.^[2]

Both penetrating trauma and blunt trauma can result in significant morbidity and mortality due to abdominal injuries. The greatest worry is hemorrhage after the initial post-injury phase; during which serious brain injury and damage to the heart and great vessels are the main causes of death. In his patient

population, unrecognized intra-abdominal damage is a substantial cause of avoidable death. The investigation and treatment of individuals with abdominal trauma are evolving. Due to the increased accessibility and utilization of ultrasonography and computed tomography (CT) scanning, diagnostic peritoneal lavage (DPL) is now infrequently performed at the majority of large trauma centers for patients with acute abdominal injuries.^[3]

The pancreas is located in the retroperitoneal cavity, where it is shielded anteriorly by the intra-abdominal organs and posterior by the spine and paraspinal muscles, pancreatic injury is unusual. About 5% of individuals with blunt abdominal trauma and 8% of patients with penetrating abdominal injuries experience pancreatic damage. Despite its rarity, pancreatic damage is linked to mortality rates of up to 30% and morbidity rates of up to 45%. Surgical intervention is typically used to treat patients who have suffered pancreatic injuries.^[4]

The fundamentals of surgical trauma, regardless of the type of injury, are exposure and hemostasis. These hold true in liver trauma in particular. Simple lacerations can be treated with direct pressure, electrocautery, argon beam coagulation, and topical hemostatic medications if the liver has been sufficiently mobilized. Additionally beneficial are finger fracture methods involving direct closure of bleeding arteries. In serious injuries, achieving hemostasis is substantially more challenging. The Pringle maneuver, which compresses the portal triad, should be used if the aforementioned approaches are unsuccessful. This will stop continuous bleeding from the hepatic artery and portal vein systems. If the Pringle technique is successful, finger fractionation and direct ligation of the bleeding arteries may be used to treat the laceration.^[5]

MATERIALS AND METHODS

All trauma patients over the age of 18 who were admitted to the emergency department (ED) of government medical college Jagdalpur, Chhattisgarh between 2019 and 2020 were the subjects of this descriptive (prospective and retrospective) study.

Sociodemographic information, such as age, sex, residence, occupation etc was taken. A preliminary evaluation of ABCDE a regional examination of the head and neck, chest, belly, limbs, and back is performed. Physical examination was used to make an initial evaluation of the type of abdominal trauma. Two types of investigations were carried out laboratory and radiographic investigations. An attempt was made to get a medical history in each case, with a focus on confirming the existence of any coexisting chronic diseases. Recorded the abdominal damage pattern, the timing of the incident, the mechanism of trauma, and any related injuries. All data was entered in Microsoft excel and analyses using SPSS.

Inclusion Criteria

- All patients arriving for a surgical emergency who have experienced abdominal trauma.
- Before a specific patient was included, written informed consent was obtained.

Exclusion Criteria

- Age group in pediatrics.
- Lack of informed consent from patients.

Statistical Analysis: The gathered information was put into a Microsoft Excel spreadsheet, which was then exported to the data editor of SPSS Version 20.0.

RESULTS

[Table 1] shows age distribution of study subjects. Out of 65 patients, number of patients were more in between 21 – 40 years i.e. 63.07% whereas less than 20 years, 13 patients i.e. 20% and 9 patients in between age group 41 – 60 years, only 2 patients in the age group more than 60 years.

[Table 2] shows sex distribution of study subjects. Out of 65 patients numbers of male patients were more i.e. 49(75.38%) than female patients i.e. 16(24.61%).

[Table 3] shows signs and symptoms of abdominal trauma patients. 63 patients had pain i.e. 96.92% and 20 patients had gastrointestinal hemorrhage, 7 patients had hypovolemia, 11 patients had blood stained vomit, 23 patients had breathing noises and 9 patients had protruding intestine.

Table 1: Age Distribution of Study Subjects

Age (years)	Number	Percentage
< 20	13	20%
21 - 40	41	63.07%
41 - 60	09	13.84%
>60	02	3.07%
Total	65	100%

Table 2: Sex Distribution of Study Subjects

Sex	Number of patients	Percentage
Male	49	75.38%
Female	16	24.61%
Total	65	100%

Table 3: Clinical Signs and Symptoms of Abdominal Trauma

Signs and symptoms	Number of patients	Percentage
Pain	63	96.92%

Gastrointestinal hemorrhage	20	30.76%
Hypovolemia	07	10.76%
Blood stained vomit	11	16.92%
Breathing noises	23	35.38%
Protruding intestine	09	13.84%

Table 4: Type of Injury

Type of injury	No of patients	Percentage
Blunt injury	30	46.15%
Penetrating injury	35	53.84%
Total	65	100%

Out of 65 patients, 30 patients i.e 46.15% got blunt injury and 35 patients i.e. 53.84% got penetrating injury.

Table 5: Abdominal Organ Injury and Clinical Manifestations and Management

Abdominal organ name	Type of trauma	No of patients	Clinical manifestations	Management based On organs
Diaphragmatic injury	Penetrating trauma	11	Acute chest pain, Shortness of breath, decreased breath sounds, abdominal peristalsis	Repaired surgically to prevent visceral herniation in later years
Oesophageal injury	Blunt trauma	06	Difficulty in swallowing, peritoneal irritation, cervical tenderness	Gastric decompression with a nasogastric tube, antibiotic therapy
Stomach injury	Penetrating trauma	09	Epigastric pain, blood gastric drainage, epigastric tenderness	Partial gastrectomy may be needed if extensive injury has occurred
Liver injury	Blunt trauma	20	Persistent hypotension, persistent thoracic bleed.	Albumin transfusion, blood glucose regulation
Small intestine injury	Penetrating trauma	15	Mild abdominal pain, fever, jaundice, intestinal obstruction	Perforation or laceration are managed by surgical exploration and repair, colostomy
Spleen injury	Blunt trauma	04	Left upper quadrant pain, tachycardia, shortness of breath	Splenectomy

11 patients out of 65 had diaphragmatic injury, 6 had esophageal injury, 9 had stomach injury, 20 had liver injury, 15 had small intestine injury, and 4 had spleen injury.

DISCUSSION

In patients receiving elective or trauma-related surgery, performing several surgical operations has been linked to an increased risk of nosocomial infection. In our sample, 293 individuals underwent 315 surgeries or similar treatments. Of these, 171 (54.3%) were thoracostomies which didn't provide a danger for the emergence of an intra-abdominal infection. Surgical strategies such as trauma damage-control surgery, abdominal packing with compresses, and open abdomen have improved mortality for some patients with severe hepatic trauma and other major intra-abdominal lesions linked to coagulopathy, acidosis, and hypothermia. 23 Surviving individuals, however, may experience organ failure and sepsis complications.^[6]

Friedmann examined a cohort of 108 stabbing victims from 1956 to 1965 and showed that a required laparotomy policy would have resulted in a negative laparotomy rate of 70%. 219 patients who experienced stab wounds (SWs) to the abdomen between 1974 and 1983 and were treated selectively were studied retrospectively by Lee et al. Negative or unnecessary laparotomies occurred at a rate of 7.8%, whereas false-negative initial examinations occurred at a rate of 5.5%. The overall accuracy of the initial clinical presentation and examination was 88.6%.

They reported one case of a patient who passed away from sepsis despite clear indications for a laparotomy and emphasized the significance of adhering to procedure strictly if selective therapy is to be undertaken.^[7]

The chest x-ray will highlight any concomitant injuries to the chest and mediastinum, and it should also show whether the diaphragm has ruptured due to the intra-thoracic displacement of some abdominal viscera. The presence of retroperitoneal air, indications of severe retroperitoneal hemorrhage, expansion of the kidney, enlargement of the splenic shadow, blurring of the psoas shadows, or any of these should prompt surgical intervention, according to the abdominal films. While the patient is receiving x-rays, IVP can be collected if hematuria is present. When necessary, paracentesis or lavage can be performed after x-rays have been taken.^[8]

Blunt abdominal trauma results in a specific pattern of damage. Steering wheel accidents frequently result in injuries to the liver, spleen, and sternum, which run the risk of myocardial contusion. Pelvic fractures are linked to urethral and bladder damage as well as diaphragm ruptures. Diverse abdominal injuries are linked to diverse lumbar spinal fracture types from acceleration or deceleration traumas. With renal trauma, transverse spinous process fractures can happen, and pancreatic, duodenal, or small bowel mesentery injuries can lead to horizontal vertebral fractures throughout the body. It's crucial to comprehend the idea of the trimodal distribution of fatalities (%) in traffic accidents.^[9]

The phrase "A man wounded in war in the abdomen dies if he is operated upon and remains alive if he is left in peace" was first advocated by Sir McCormack in 1900. In the early 20th century, this aphorism served as a surgical guideline for treating abdominal damage on the battlefield. Due to the notion that a laparotomy must be performed in every case of hemoperitonium, this procedure was abandoned. The development of more advanced imaging methods and high-resolution CT scanners has allowed doctors to precisely determine the degree of intra-abdominal organ harm. NOM has established itself as a recognized and accepted care paradigm for solid organ injuries in hemodynamically stable patients thanks to the publishing of several reports of success over the past 20 years.^[10]

CONCLUSION

For abdominal trauma complications to be reduced, early diagnosis and fast treatment are crucial. Seventy-five percent of all abdominal injuries are caused by blunt trauma, and penetrating wounds that perforate a hollow organ can result in infection. The mortality and morbidity of these patients could be decreased via careful assessment, attentive monitoring, and early surgical consultation. The mechanism of injury, the site of injury, the patient's hemodynamic and neurological conditions, any concomitant injuries, and institutional resources all play a role in the evaluation and treatment of abdominal trauma. The management of this subtype of patients necessitates a cautious approach that may involve the use of noninvasive or minimally invasive procedures. The frequency of these injuries can be decreased using preventative measures.

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