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Hollow Viscus Injuries in Abdominal Trauma: A Prospective Study

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Abstract

Introduction:

Abdominal organ injuries are the third most frequent injury, behind head and chest traumas. Hollow viscus injuries are fairly uncommon and may be as dangerous as solid visceral injuries, resulting in higher blood loss and bowel contamination.

Aim & Objectives:

To investigate hollow viscus injuries in individuals undergoing abdominal trauma.

Materials and Methods:

This study was a prospective observational study that included 68 patients admitted in the casualty ward of SRM Medical college and Hospital, Kalahandi with abdominal trauma both blunt and penetrating injuries following road traffic accidents, assault by various objects, interpersonal violence, and accidental falls during the period of one year after following inclusion and exclusion criteria and after approval from institutional ethics.

Results:

Out of 68 patients ranging in age from 12 to 70 years, the majority were between the ages of 16 and 45. Automobile accidents were the leading cause of blunt abdominal injuries (61.8%), with abdominal discomfort being the most common symptom in the present research (61%). The jejunum and ileum were the most usually implicated, followed by the gallbladder, urinary bladder, and colon. Wound infection is the most prevalent consequence in ten individuals (14%). Mortality in this trial was 7.35 percent.

Conclusion

In conclusion, blunt or penetrating abdominal trauma results in hollow viscus injuries in the stomach, small intestine, colon, rectum, gall bladder, and urinary bladder. Trauma may result in anything from a minor bruise to a life-threatening loss of blood.

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Keywords: Hollow viscus injuries, Abdominal pain, Abdominal organ injuries, blunt and penetrating injuries.

Introduction

The abdomen is a frequently wounded body part that, most of the time, requires the intervention of a surgeon for effective treatment. Penetrating injuries are more common in individuals with abdominal trauma than blunt causes. Regardless of the kind of damage, these injuries must be evaluated and treated as soon as feasible. The difficulties to be addressed include bleeding and visceral perforation, both of which are connected with sepsis. Abdominal organ injuries are third after head and chest traumas. Both blunt and piercing injuries are common in hospital emergency rooms. The most typically injured organs in trauma are solid viscera, which have been the subject of several analytical investigations. However, hollow viscus injuries are just as prevalent and, in some cases, more dangerous than solid visceral injuries, since they cause greater blood loss and contaminate the colon. Most injuries, other than abdominal injuries, manifest early, with the exception of blunt abdominal injuries, which might be quiet at first but cause fetal outcome later on. [1,2] Physical examination results are frequently untrustworthy. One explanation is that damage mechanisms often cause secondary injuries, which might distract the physician's attention away from potentially fatal intra-abdominal disease. Any delay in diagnosis will cause morbidity and death to grow. Because abdominal hollow visceral injuries are so widespread nowadays, a general surgeon should be able to diagnose and treat trauma, particularly those linked with them. Deaths from abdominal injuries may be avoided if they are recognized and treated promptly. Rapid resuscitation is required to preserve the unstable but salvageable patient with abdominal injuries.[2] In this research, we will look into hollow viscus injuries in abdominal trauma patients.

Materials and Methods:

This study was a prospective observational study that included 68 patients admitted in the casualty ward of SRM Medical college and Hospital, Kalahandi, with abdominal trauma both blunt and penetrating injuries following road traffic accidents, assault by various objects, interpersonal violence, and accidental falls during the period of one year after following inclusion and exclusion criteria and after approval from institutional ethics.

Inclusion Criteria

• Patients above the age of 12 years.

• Abdominal pain either blunt or penetrating and the clinical or radiological study.

• The intraoperative findings show hollow viscus injuries

Exclusion Criteria

• Patients less than age of 12 years.

• Patients with traumatic abdominal discomfort but did not have radiological or intraoperative signs of hollow viscus injuries were excluded from the study.

Method

A detailed and accurate history was recorded, including the patient's age and gender, the kind of damage (blunt or penetrating), the symptoms given by the patient, and the time passed from injury to

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admission. All patients had baseline examinations, which included hemoglobin, platelet count, blood urea, blood sugar, serum electrolytes, and blood grouping. Cause of injury, presentation, site of injury, associated intra-abdominal and extra-abdominal injuries, surgical intervention delay and impact, type of surgical procedure performed, complications, need for ionotropic and ventilatory support, total hospital stay, and mortality and morbidity outcomes. Intraoperative observations included the organ affected as well as the kind of injury, which might be a contusion, mesenteric rupture, single or multiple perforations. The manner each case was handled was also taken into consideration. The majority of cases included primary perforation closure. Other treatment options included resection, anastomosis, and omental patch closure. After surgery, patients were treated with nasogastric aspiration, intravenous fluids, and antibiotics. Daily, patients were watched and examined for recovery and problems, which were properly handled. Patients were released after complete recovery and monitored based on the kind of operation done.

Results and observation

In this study, 68 patients were admitted with abdominal trauma, including blunt and penetrating injuries from road traffic accidents, assaults, interpersonal violence, and accidental falls. The study included parameters such as age, gender, type of injury, organs injured, radiological findings, and treatment options.

Table 1: Distribution of demographic profile of study population

Parameters	Frequency	Percentage
Age (Years)		
< 15 Years	1	1.5
16 - 30 Years	37	54.4
31 - 45 Years	18	26.5
46 - 60 Years	7	10.3
> 60 Years	5	7.4
Gender		
Male	55	80.9
Female	13	19.1
Mode of Injury		
Blunt Injury	42	61.8
Penetrating injury	26	38.2

Table 2: Distribution of demographic profile of study population

Parameters	Frequency	Percentage
Type of Blunt Trauma		
RTA	26	61.9
Assault [knife, sharp objects]	7	16.7
Fall (Any Kind)	9	21.4
Organ Injured in Blunt Injury		
Jejunum	19	45.2
Ileum	15	35.7
Gall bladder	5	11.9
Urinary bladder	2	4.8
Colon	1	2.4
Organ Injured in Penetrating injury		

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Ileum	11	42.3
Jejunum	7	26.9
Stomach	6	23.1
Colon [transverse]	2	7.7

Figure 1: Distribution of symptoms among study population

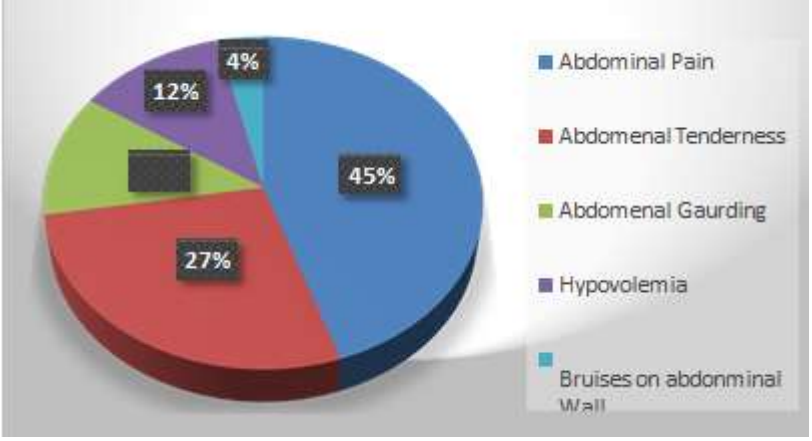

Table 3: Radiological findings based on X-Ray findings

X ray abdomen erect	Frequency	Percentage
Air under diaphragm	42	61.8
Dilated bowel loops	4	5.9
Ground glass appearance	5	7.4
No abnormalities detected	11	16.2
Not taken	5	7.4

Table 4: Distribution of Mode of Management among study population

Mode of Management	Frequency	Percentage
Primary closure of perforation	30	44.1
Omental patch closure of perforation	10	14.7
Resection and anastomosis	14	20.6
Repair of serosal tear	6	8.8
Open cholecystectomy	5	7.4
Urinary bladder repair	3	4.4

Table 5: Distribution of Complications and outcome among study population

Complication	Frequency	Percentage
Complication		
Wound infection	10	14.7
Respiratory complications	7	10.3
Wound dehiscence	5	7.4
Outcome		
Mortality	5	7.35

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Discussion

Hollow viscus injuries include lesions to gastrointestinal tract organs **w**ith lumens, such as the stomach, small intestine, large intestine, and the hollow section of the biliary and urinary systems. Abdominal trauma may cause lesions to these hollow organs, therefore early detection and care are critical for patient outcomes. Abdominal trauma resulting in hollow viscus injuries may occur via a variety of methods, including blunt or penetrating trauma. Motor vehicle accidents, falls, attacks, and other traumatic situations may exert tremendous stress on the abdomen, possibly resulting in injury. Management of hollow viscus injuries is determined on the degree of the damage and any related problems. Surgical intervention is often necessary to fix perforations or remove damaged organ components. Certain stable injuries may be treated without surgery. In this prospective observational analysis, we enrolled 68 patients, with a higher proportion of men than females, which is consistent with Khadilkar's study, which found that abdominal trauma was more prevalent in males.[3]. In the current research, we had patients ranging in age from 12 to 70 years; the bulk of the patients were between the ages of 16 and 45 years; just one patient was younger, and only five patients were beyond the age of 60. Younger people are more prone to blunt and penetrating injuries. This age group is the most productive. This research is comparable to studies [1–3]. In the current research, the most common cause of blunt abdominal injuries was car accidents (61.8%). According to prior research, RTA was responsible for 62% to 70% of instances of blunt traumatic abdominal injuries [1]. In the present investigation, stomach pain was the most common symptom (61%). The findings are similar to those reported by R.B. Dhaded and Dr. Vidhuta, who discovered that stomach discomfort affected 85% and 96% of patients, respectively[4,5]. In the current investigation, all patients underwent a plain x-ray abdomen. In which 61.8% showed gas beneath the diaphragm, suggesting frank pneumoperitoneum, while about 16.2% showed no major radiological abnormalities. Another research by Mohapatra found that x-ray erect abdomen could identify hollow viscous injuries with 100% accuracy.[6] Davis found that 21% of their subjects had abnormal abdominal x-rays, 6% had pneumoperitoneum, and 6% had dilated bowel loops.[2] In this investigation, the jejunum and ileum were the most usually affected, followed by the gallbladder, urinary bladder, and colon. This finding contrasts with a research conducted by Allen and Curry, who found that the small bowel was implicated in 35.3% of cases. [7] R. S. Raikwar reported 45 instances of small intestine (ileal > jejunal) damage, with 18% being the most prevalent hollow viscous injury in abdominal trauma patients. [8] Primary closure of holes is the most often done method (44.1%). This is similar to Khanna's research, in which intestinal perforation was closed in 13 patients (64%), and colostomy in 5 patients. The results are also comparable to Sreenidhi G.'s study, in which bowel perforation was closed in 54% of the patients.[9] In the current investigation, wound infection was the most prevalent complication observed in 10 patients (14%), followed by respiratory problems in 7 (10.3%) and wound dehiscence. Davis identified wound infection as a problem in 15% of patients.Reina Khadilkar identified respiratory complications as the most prevalent complication.[3] Sreenidhi G. showed similar findings.[9]. Five individuals died in the current research. Mortality in this trial was 7.35 percent. Vidutha reported similar findings, with a 13% death rate.[4] In the current context, decreased mortality is attributed to improved health care facilities and the availability of broad-spectrum antibiotics. The current investigation found that the most prevalent cause of death was septicaemia, followed by sudden cardiac arrest.

Conclusion

Based on the foregoing observations and discussions with other research, we may infer that blunt or penetrating abdominal trauma produces hollow viscus injuries in the stomach, small intestine, colon, rectum, gall bladder, and urinary bladder. Blunt force wounds are less common than solid viscera wounds. Trauma may result in anything from a minor bruise to a life-threatening loss of blood. The

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majority of those afflicted were young people aged 16 to 45. Road traffic accidents are the most prevalent cause of injury. The most prevalent symptom is abdominal discomfort, which is accompanied by tenderness. In the current investigation, the most prevalent damaged viscera was the small intestine, which was treated with simple suturing and perforation closure, as well as resection and anastomosis. Postoperative complications included wound infection, wound dehiscence, and respiratory difficulties, with 7% of patients dying from septicaemia followed by abrupt cardiac death.

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