Original Article

TO DETERMINE THE ETIOLOGY AND METHODS OF MANAGEMENT OF TRAUMATIC GASTROINTESTINAL PERFORATION: AN OBSERVATIONAL STUDY

Dr. Apoorva Ranjan[1], Dr. Rajat Sharma[2], Dr. Samir Anand[3], Dr. Jony Samria[4], Dr. Randeep Singh[5]

[1]Post Graduate 3rd year, Department of General Surgery, Maharishi Markandeshwar Medical College and Hospital, Kumarhatti, Solan, Himachal Pradesh, India.
[2]Assistant Professor, Department of General Surgery, Maharishi Markandeshwar Medical College and Hospital, Solan, Himachal Pradesh, India.
[3]Professor, Department of General Surgery, Maharishi Markandeshwar Medical College and Hospital, Kumarhatti, Solan, Himachal Pradesh, India.
[4]Assistant Professor, Department of General Surgery, Maharishi Markandeshwar Medical College and Hospital, Kumarhatti, Solan, Himachal Pradesh, India.
[5]Senior Resident, Department of General Surgery, Maharishi Markandeshwar Medical College and Hospital, Kumarhatti, Solan, Himachal Pradesh, India.
Corresponding Author: Dr. Samir Anand

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Abstract

Aim: The aim of the present study was to determine the cause and different methods of management of traumatic gastrointestinal perforation.

Methods: The study was done in the Department of General Surgery, Maharishi Markandehwar Medical College and Hospital, Kumarhatti, Solan, Himachal Pradesh, India for the period of 12 months. In our study, a total of 60 patients with traumatic gastrointestinal perforation were included.

Results: In our study, a total of 60 patients with traumatic gastrointestinal perforation were included. Out of 60 patients, 50 were males and 10 were females. Maximum patients (32) were found in the age group of 21-40 years of age. In our study, RTA was the most common mode of trauma with total of 25 patients.

Conclusion: Traumatic injury to gastrointestinal tract due blunt and penetrating abdominal trauma is on a rise due to road traffic accidents and more common in adulthood and males. Traumatic gastrointestinal perforation most commonly involves small intestine specifically jejunum and is usually managed by primary closure.

Keywords: Abdominal Trauma, Outcomes, patient, Penetrating abdominal trauma

Introduction

Urbanization, automobiles, industrialization, and shifts in economic and social values are transforming societies worldwide. This trend is also occurring in India. As a result of these shifts, road traffic accidents now pose one of the greatest hazards to human life and security worldwide.[1]

India is the leading country in the number of deaths due to Road traffic accidents.[2] Abdomen is the third most common injured region with injuries requiring surgery in about 25% of civilian trauma victims.[3] Due to a lack of protective bony framework, injuries to the abdomen can cause serious damage to the internal organs. Rapid urbanization, motorization, civil violence, wars, and criminal activities are all contributing factors in the rising prevalence of trauma, including abdominal trauma, in developing countries.[4]

Abdominal trauma is traditionally classified as either blunt or penetrating. Blunt abdominal trauma predominates in rural areas, while penetrating ones are more frequent in urban settings. Road traffic accidents are the commonest cause of blunt abdominal trauma in civilian practice.[5-7]

Injuries to the abdomen caused by falls and automobile accidents are the most common. Lack of early diagnostic modalities and optimal management contributed to higher mortality rates among patients with blunt abdominal trauma compared to those with penetrating abdominal trauma. Acceleration injuries leading to small bowel injuries are common after acute abdominal trauma, and they tend to occur in the proximal jejunum close to the ligament of Trietz or the distal ileum close to the ileocecal junction. Weapons like guns and knives, as well as sharp objects like shards of glass, can cause severe stomach injuries. 80% of piercing injuries are caused by firearms, whereas twenty percent are caused by blades. The colon and the small intestine are the most frequently injured organs, and they also resulted in the most postoperative complications.[8-11]

The aim of the present study was to determine the cause and different methods of management of traumatic gastrointestinal perforation and their outcomes.

Materials and Methods

The study was done in the Department of General Surgery, Maharishi Markandehwar Medical College and Hospital, Kumarhatti, Solan, Himachal Pradesh, India, for the period of 12 months. In our study, a total of 60 patients with traumatic gastrointestinal perforation were included. The study was performed according to the guidelines of the ethical committee of the institute.

Inclusion criteria

- All the patients presenting with abdominal trauma with gastrointestinal perforation

Exclusion criteria

- Abdominal trauma patient without gastrointestinal perforation
- Severely injured patients that did not survive the resuscitative measures

Methodology

The study sample was taken from the patients who were admitted in the hospital with history of trauma in whom gastrointestinal injury was suspected. These patients with sudden onset abdominal pain, fever, vomiting, abdominal distension was examined. They were clinically examined for pulse, blood pressure, abdominal distension, tenderness, guarding, rigidity and other clinical signs of perotinitis. After initial assessment and resuscitation, patients were subjected to haematological and radiological investigations. Patients who were haemodynamically stable without any sign of perotinitis were subjected to contrast enhanced computed tomography (CECT) abdomen. Patients who were vitally unstable or had signs of perotinitis on clinical examination were subjected to laparotomy.

Statistical analysis

The data was tabulated and results were expressed using statistical package for the social sciences (SPSS) software.

Results

Table 1: Age distribution of the patients with traumatic gut perforation

Age (years)	**Male**	**Female**	**Total**
≤20	10	4	14
21-40	30	2	32
41-60	7	4	11
>60	3	0	3
Total	50	10	60

In our study, a total of 60 patients with traumatic gastrointestinal perforation were included. Out of 60 patients, 50 were males and 10 were females. Maximum patients (32) were found in the age group of 21-40 years of age (Table 1).

Table 2: Distribution of patients according to mode of trauma

Mode	**Male**	**Female**	**Total**
Gunshot	7	-	7 (11.7)
Fall	15	8	23 (38.3)
RTA	23	2	25 (41.7)
Assault	5	-	5 (8.3)
Total	50	10	60 (100.0)

In our study, RTA was the most common mode of trauma with total of 25 patients followed by fall with 23 patients (Table 2).

Table 3: Distribution according to site of perforation

Site of perforation	**Blunt**	**Penetrating**	**Total N (%)**
Gastric	0	6	6 (10.0)
Jejunum	32	3	35 (58.3)
Ileum	5	4	9 (15.0)
Colon	3	7	10 (16.7)
Total	40	20	60 (100.0)

In our study, 40 patients presented with blunt trauma while 20 presented with penetrating injury. In our study, traumatic perforation was most commonly seen in jejunum. Jejunum was also the common site of perforation in patients with blunt trauma. In patients with penetrating injury, most common site of perforation was colon seen in 7 patients (Table 3).

Table 4: Distribution according to surgical intervention

Surgical intervention	**Blunt**	**Penetrating**	**Total N (%)**
Primary repair	38	5	43 (71.7)
Resection anastomosis	8	3	11 (18.3)
Primary repair with stoma	4	2	6 (10.0)
Total	50	10	60 (100.0)

In most of the patients, primary repair of the perforations was done accounting for 71.7% of the patients. Resection anastomosis was done in 18.3% of the patients while 10.0% of the patients underwent primary repair with stoma (Table 4).

Discussion

Consistent with previous research, we found that most patients admitted with abdominal trauma were in their thirties, and that males were more likely to be affected than females.[12-15] This age group represents the economically active age, which may help explain why abdominal trauma is more common among people in their thirties.

Early hospitalization and early diagnosis in our study, maximum incidence of trauma gastrointestinal injury was found in age group of 21-30 years of age with male preponderance. These findings are comparable to the previous studies who reported similar findings. In the study by Traore et al, the mean age was 25 years with male to female ratio of 13.22.[16] In the study by Bajiya et al, 55% of the patients were in the age group of 21-40 years.[17] In another study by Pradhan et al, 48% of the patients were in the age group of 21-40 years with male to female ratio of 5.25:1.[18] In our study, most common mode of injury was RTA accounting for 41.66% followed by fall accounting for 37.5% of the patients. In the study by Mukhopadhyay, the common mode of injury was RTA accounting for 55.32% of the patients.[19] In the study by Troare et al, most common etiology was RTA (36.7%).[16]

In patients with penetrating injury, most common site of perforation was colon seen in 15 patients. In the study by Pradhan, most common site of perforation was small intestine (38%) followed by gastric (16%).[18] In the study by Bajiya et al, most common site of perforation was jejunum (35.9%) followed by ileum (26.9%).[17] In the study by Arslan et al, the most common site of perforation was Ileum accounting for 39% which is contrary to our study.[20] In most of the patients, primary repair of the perforations was done accounting for 72% of the patients. Resection anostomosis was done in 12% of the patients while 16% of the patients underwent primary repair with stoma. In the study by Troare et al primary repair was done in 60.15% patients, resection anastomosis in 25% and stoma in 15% of the patients.[16] In the study by Arslan et al primary repair was performed on 71% patients, resection was performed on 23% patients and 3% patients underwent ostomy.[20]

Conclusion

Accidents on the road are increasing the incidence of blunt and penetrating abdominal trauma, the leading cause of traumatic damage to the gastrointestinal tract. Primary closure is the standard treatment for traumatic perforations of the gastrointestinal tract, especially those of the jejunum (a section of the small intestine). Surgery-

related infections were the most prevalent consequence, especially among younger patients and men. Additional large-scale multi-center studies are required to assess the capacity of local medical centers to treat trauma patients and the effects of trauma on the local community. To reduce the time that patients must wait for surgery, we suggest making ambulances and bedside imaging readily available.

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