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RESEARCH ARTICLE

TRAUMATIC GASTROINTESTINAL INJURIES: AN OVERVIEW OF CLINICAL PROFILE, MODE AND SITE OF INJURIES

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Abstract

Introduction: Trauma has become the major health care challenge, with abdomen being the third most commonly involved region of the body. Gastrointestinal tract injuries require prompt attention owing to potential for sepsis, caused either by blunt or penetrating injuries. Blunt trauma usually affects solid organs while as penetrating trauma mostly affects Gastrointestinal tract, commonly ileum, jejunum, colon, etc

Material and methods: The patients with traumatic gastrointestinal perforation resulting from both blunt as well as penetrating trauma, were identified based on clinical presentation like pain abdomen, vomiting, fever, distension of abdomen, tenderness and supportive radiological evidences. The patients were examined and resuscitated and data was collected and organized according to the following categories: age, gender, clinical presentation, mode of trauma, duration of injury prior to admission/ presentation, radiological assessment, diagnosis, anatomical location.

Results: Maximum patients were found to be in the age group of 21-40 years, with male preponderance. RTA (50%) was the most common mode of trauma, with Ileum (61.36%) being the most commonly involved site of GI tract.

Conclusion: Traumatic GIT injuries is on the rise, mainly among young males with RTA being the most common mode of trauma.

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Introduction:-

Trauma has become a major public health challenge accounting for most deaths in the first four decades of life[1], owing to the increase in domestic violence, use of fire arms, road traffic accidents, and, fall from height. Abdomen is the third most commonly injured region of the body. Gastrointestinal tract injuries require prompt attention because of the potential for sepsis. Traumatic gastrointestinal tract perforations/ injuries maybe caused either by blunt trauma or penetrating abdominal trauma, with blunt trauma being the major cause of deaths in the society[2].

The organs most commonly affected by blunt trauma are the spleen, liver and kidney, while penetrating trauma mostly affects the gastrointestinal (GI) system [3], particularly the ileum, jejunum, colon, duodenum and stomach [4]. The patient's medical history, physical examination, laboratory results, and radiological imaging are important

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for the diagnosis of gastrointestinal perforation in trauma patients [3,5]. Mortality rate for cases of traumatic gastrointestinal perforation depends on the presence of concomitant pathologies in other organs. The diagnostic challenges presented by traumatic GI perforations lead to an increase in mortality and morbidity. Among various modes of trauma, penetrating trauma requires an immediate surgical intervention in most of the cases. Surgical intervention forms mainstay of the treatment in gastrointestinal perforations whether traumatic or non-traumatic.

In order to minimize the mortality rates in case of abdominal injuries, there is a need to study and identify the risk factors. Patients with penetrating abdominal trauma and blunt trauma have mostly gastrointestinal injuries. Traumatic injuries remain the leading cause of blunt abdominal trauma and incidence varies from 4 to 15% [6].

Aims:-

1. To study the incidence, clinical profile of traumatic GI perforations
2. To study the mode of injury
3. To study the anatomical distribution of GI perforations

Material and Methods:-

This was a prospective observational study conducted in the Post Graduate Department Of Surgery, GMC Srinagar, over a period of 2.5 years. During this study, the patients with traumatic gastrointestinal perforation resulting from both blunt as well as penetrating trauma, were identified based on clinical presentation like pain abdomen, vomiting, fever, distension of abdomen, tenderness and supportive radiological evidences like erect abdominal x-rays, FAST and CT abdomen. The patients were examined and resuscitated according to their hemodynamic status and data was collected and organized according to the following categories: age, gender, clinical presentation, mode of trauma, duration of injury prior to admission/ presentation, radiological assessment, diagnosis, anatomical location, hospitalization period and treatment and outcome.

Observations And Results:-

Gender distribution

In our study, a total of 44 patients with traumatic gastrointestinal perforation were included. Out of 44 patients, 39(88.69%) were males and 05(11.36%) were females, with a Male to Female ratio (M:F)= 7.8:1,

Age distribution

Majority of the patient in our study were in 3rd and 4th decades of life accounting for 28 patients (63.63%). The mean age was 32.86 years (min=09 years, max=80 years) [table 1, Fig.1].

Table 1:- Age distribution.

S No.	Groups	No of patients	percentage
1	0-20	08	18.18%
2	21-40	28	63.63%
3	41-60	06	13.63%
4	61-80	02	4.54%
5	>80	0	0%
Total		44	100%

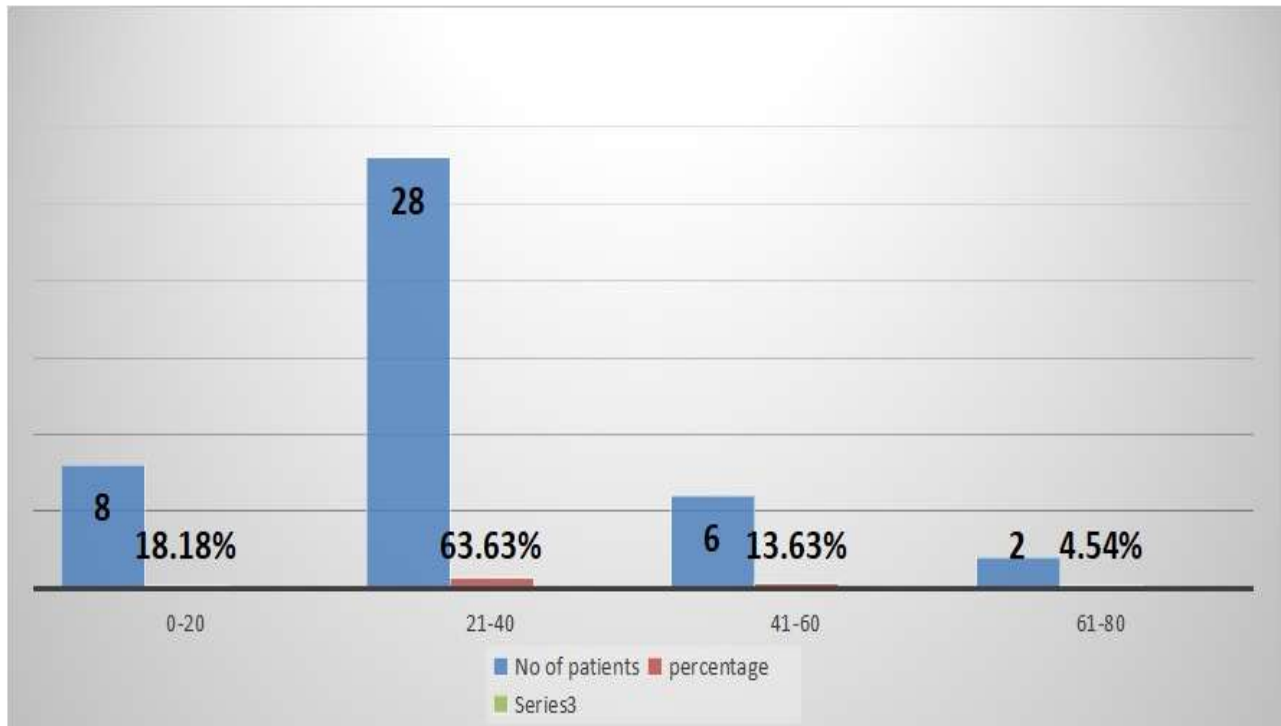


Fig 1:- Showing the Age distribution of the patients.

Clinical features of the patients

Abdominal pain was present in 100% of the patients, abdominal distension was present in 40.90% of the patients and abdominal guarding was present in 63.63% of the patients presenting with traumatic gastrointestinal perforation.

Duration of injury prior to presentation

25 patients with blunt abdominal trauma and 6 patients with penetrating abdominal trauma presented within <6 hours, 9 patients with blunt and 3 patients with penetrating abdominal patients presented within 6-11 hours and 1 patient with blunt abdominal trauma presented after >12 hours (table2, Fig.2).

Table 2:- Showing the duration of injury prior to presentation.

Duration	Blunt trauma	Penetrating trauma	Total	Percentage
<6 hrs	25	6	31	70.45%
6-11 hrs	9	3	9	20.45%
>12 hrs	1	0	1	2.27%
Total	35	9	44	100%

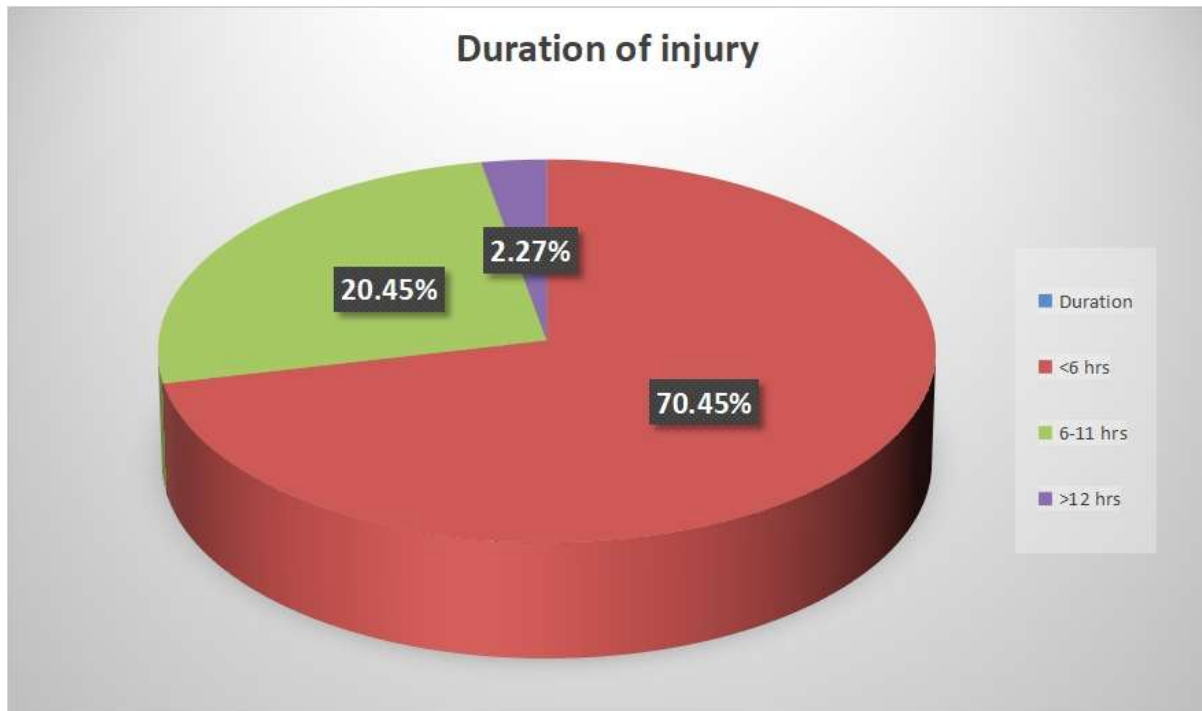


Fig. 2:- Showing duration of injury prior to presentation.

Mode of Trauma/injury

RTA was the most common mode of trauma with total of 22 (50%) patients followed by Fall from height (FFH) with 17 (38.63%) patients and others 5 (11.36%) patients including Stab injury, fall on sharp object and blast injury etc (Table 3).

Table 3:- Showing mode of Trauma.

S No.	Mode	No. of patients	Percentage
1	RTA	22	50%
2	FFH	17	38.63%
3	Others	5	11.36%

Radiological finding of traumatic Gastrointestinal perforation.

In our study, 86.36% of the patients presented with pneumoperitoneum and 13.63% of patients with absence of pneumoperitoneum on CECT abdomen/pelvis, with traumatic gastrointestinal perforation.

Distribution of the patients according to site of Gastrointestinal perforation.

35 patients presented with blunt trauma while 09 patients presented with penetrating injury. Traumatic perforation was most commonly seen in ileum accounting for 61.36% of the patients followed by Jejunum accounting for 20.45% patients, with blunt trauma. In patients with penetrating injury, most common site of perforation was ileum. (Table 4, fig3).

Table 4:- Distribution of patients according to site of gastrointestinal perforation.

Site of perforation	Blunt Trauma	Penetrating Trauma	Total	Percentage
Gastric	2	1	3	6.81%
Duodenal	1	0	1	2.27%
Jejunal	8	1	09	20.45%
Ileal	20	7	27	61.36%
Colon	2	0	2	4.54%
Rectosigmoid	2	0	2	4.54%
Total	35	9	44	100%

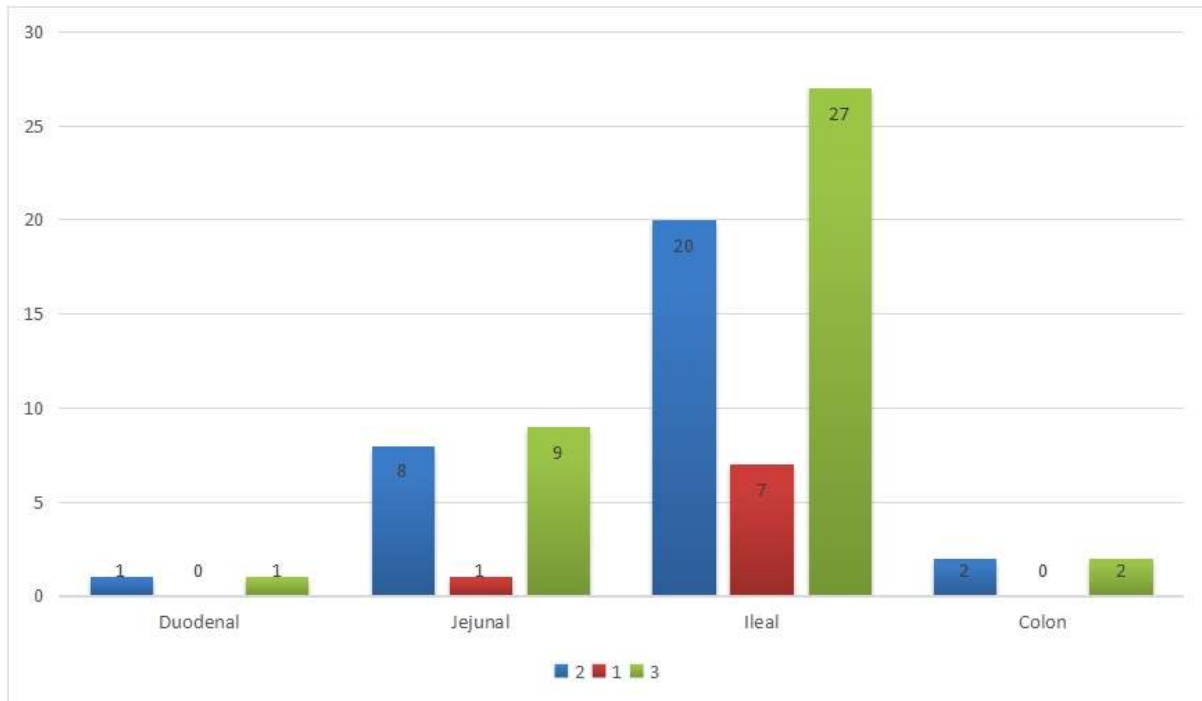


Fig 3:- Showing Distribution of patient according to site of Gastrointestinal perforation.

The maximum patients were managed by primary repair of the perforation, with around 16% of patients requiring exteriorisation of the bowel, in the form of ileostomy/colostomy.

Discussion:-

A Total of 44 patients were enrolled in our study, with age ranging from 9-80 years, with a mean of 32.86 years. Maximum incidence of traumatic gastrointestinal injury was found in age group of 21-40 years (63.63%) with male preponderance (39 patients) with male: female ratio of 7.8:1 in our study. The age group with maximum incidence in our study corresponded very well with the age group in the studies by **Naqvi RH et al⁷**, **Olasehinde et al⁸**, **Jha NK et al⁹** as 52%, 68.9% and 87% respectively. All the patients in our study presented with pain abdomen as the prominent feature, which corresponded well with the results of studies by **Pradhan A et al¹⁰** and **Chirdan LB et al¹¹**, having pain abdomen in 100% and 80% respectively.

In our study, **RTA was the most common mode of injury (50%)** followed by FFH (38.63%) and others (stab/gunshot/blast injury) comprising 11.36%. Our results were similar to the results reported by the studies conducted by **Kumar A et al¹²** [RTA 57.2%, FFH-36.4%] & **Chirdan LB et al¹¹** [RTA 52.53%, FFH-31.57%] respectively.

The **most common site** of gastrointestinal perforation in our study was **ileum (46.2%)** followed by jejunum (44.5%), gastric perforation (6.81%), duodenal perforation (1.15%), colonic and rectosigmoid (1.15%) each. Our results were quite similar to the results of previous studies^{9,12}.

Conclusion:-

Traumatic injury to gastrointestinal tract due to blunt and penetrating abdominal trauma is on a rise mainly due to road traffic accidents and fall from height, more common in the young age group i.e. 20-40 years and males being the most vulnerable group. Most of the patients presented within less than 12 hours. Traumatic gastrointestinal perforation most commonly involved small intestine predominantly ileum followed by jejunum and other sites were less frequently involved.

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