

Clinical Study of Small Bowel Perforation

Maharaul Honeyalsinh H.¹, Bhatt Lauve P.², Shory Vipul³

¹Assistant Professor ^{2,3}Resident, Department of General Surgery, Smt. B.K. Shah Medical Institute & Research Centre, Pipariya, Vadodara, Gujarat 391760, India.

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Abstract

Background and Objectives: Bowel perforation is most common cause of surgical emergency. Perforation of the small intestine causing peritonitis is the most common abdominal surgical emergency encountered. The objective of the study was to analyse the Clinico-Pathological Relations of Small bowel perforations to better understand the condition. **Materials and Methods:** This study was prospective clinico-pathological study starting from September 2015 to September 2017 carried out in Dhiraj General Hospital, Vadodara in General Surgery Department. 30 patients presenting with features of small bowel perforation were studied. **Conclusion:** Perforation commonly occurs in young males. Pain, abdominal distension along with Generalised tenderness was commonly found in all. Non-specific inflammation was most common non-traumatic cause of illeal perforation after blunt abdominal trauma. Stress, smoking and NSAIDS were common risk factors involved in causation of bowel perforation

Keywords: Small Bowel; Perforation; Tuberculosis.

Introduction

Intestinal perforation is the third most common cause for explorative laparotomy as an emergency. Small Bowel Perforation is a perforation in the wall of small intestine anywhere starting from duodenum to ileum. It leads to spillage of contents of small bowel into Peritoneal cavity causing peritonitis. It is a very acute

condition. It needs to be treated as early as possible. Small bowel Perforations are common in occurrence.

Upper bowel perforation can be either free or contained.

1. Free perforation - Bowel contents spill freely into the abdominal cavity, causing diffuse peritonitis (eg. duodenal or gastric perforation).
2. Contained perforation - free spillage is prevented as contiguous organs wall off the area of perforation (as when a duodenal ulcer penetrates into the pancreas).

Lower bowel perforation (eg. in patients with acute diverticulitis or acute appendicitis) results in free intraperitoneal contamination.

Frequency

Small bowel injuries following blunt abdominal trauma are infrequent in children with an incidence of 1-7%. Peptic ulcer perforations are a common cause of morbidity and mortality with an acute abdomen in adults. Though the rate has fallen in parallel with the general decline in the prevalence of peptic ulcer disease. Duodenal ulcer perforations are 2-3 times more common than gastric ulcer perforations. About one third of gastric perforations are due to gastric carcinoma.

Approximately 10-15% of patients with acute diverticulitis develop free perforation. The overall mortality rate is relatively high (20-40%), largely because of complications, such as septic shock and multiorgan failure. In elderly patients, acute appendicitis has a mortality rate of 35% and a morbidity rate of 50%. A major contributing factor to morbidity and mortality in these patients is the presence coexisting medical conditions in elder patients. Bowel injuries associated with endoscopy are not a common cause of perforation.

Corresponding Author: Bhatt Lauve, Resident, Department of General Surgery, Smt. B.K. Shah Medical Institute & Research Centre, Pipariya, Vadodara, Gujarat 391760, India.
E-mail: lauvebhatt@gmail.com

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As perforations related to endoscopic retrograde cholangio pancreatography (ERCP) occur in only about 1% of patients [1].

Materials and Method

Thirty patients presenting with features of small bowel perforation were studied.

In all the patients complete detailed history was taken including age of the patient, signs and symptoms and their duration and relevant past history.

Complete physical examination including clinical and systemic examination was done. All the routine investigations were done. For pathological Analysis peritoneal fluid examination and Biopsy taken from the Perforation will be sent.

Co-relation will be made between Pathological Reports and Clinical presentation of patients.

The outcome will be evaluated as per the predesigned Performa of study.

Inclusion Criteria

1. All patients, who willing to give consent to participate in this study.
2. All patients operated for Small Bowel Perforations.

Exclusion Criteria

1. Patients with multiple co morbidity.
2. Patient not willing for study.

Patients were evaluated for the causes of small bowel perforation based on various investigations, clinical presentation and pathological analysis.

Results and Discussion

Sex and Age Distribution

In the present study nearly two third of the patients (67%) were males with male to female ratio of 2:1 suggesting male preponderance. Most of the patients presented in fourth decade of life with age 31 to 40 years (40%). Mean age was 45.56 years. Overall these findings suggest that, the frequency of small bowel perforation is high among males and are common in third and fourth decade of life. Similarly, Dr. Raja Gopala Rao Akireddy et al. [2] conducted a similar study of 100 patients, in which also male preponderance was noted with 68% of males and male to female ratio of 2.12:1. The commonest age group was 31 to 40 years (39%) and the mean age was 33.97±13.93 years. Most of the patients in our study came from lower socio-economic class & tribal area. Most of them were uneducated and labourers. Males were usually workers and females were usually housewives. This denotes high levels of stress in males. They were unwary of their health. Most of the people remain empty stomach & doing hard work and for their tiredness they were using NSAIDs with their empty stomach suggesting cause for perforations due to peptic ulcers. Smoking was also major risk factor found in all the male patients studied. Mean age study of various study reveals that perforation commonly occurs in younger age group commonly in 3rd to 4th decade of life, with mean age of 45.56 years which is similar to Allsopp T. et al. study [3] while it was 29.36 in Ansari AG study [4]. As most of the patients are labourers and poorly educated younger population was mainly working as labourers in various places. Most of them were ignorant about their health and presented late. Stress was major triggering factor in men of age group between 30 to 40 years.

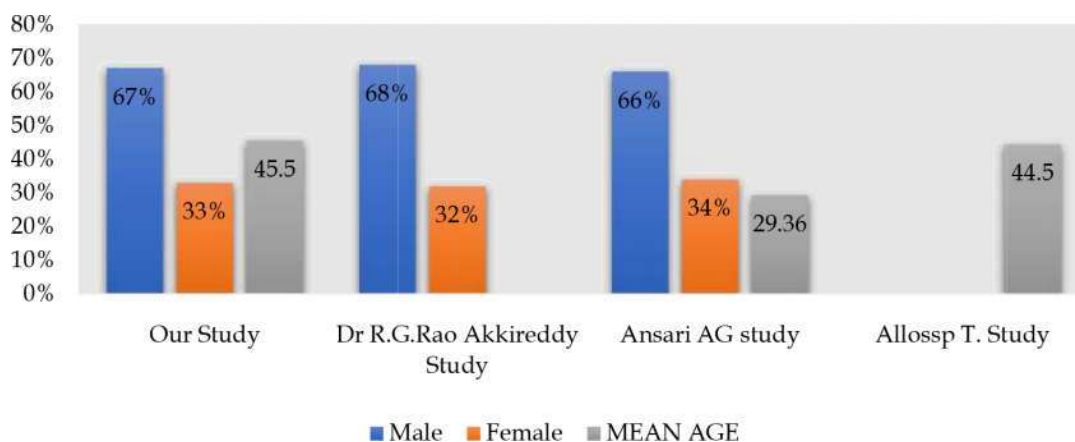


Fig. 1:

Clinical Presentation

• Site of Pain

In our study all the patients of small bowel perforation presented with abdominal pain. In cases of duodenal perforation pain was present over epigastric region in most of the patients. In Ileal and Jejunal perforations pain was commonly generalised and present in right iliac fossa in rest of the cases. In study conducted by Dr. Sunil Sudharshan H [5] of clinicopathological evaluation, management and outcome of gastro-intestinal perforations in 75 patient's similar results were found.

• Clinical Features

In this study all the patients presented with abdominal pain (100%). The next common complaint was vomiting 22 cases (73%), abdominal distension 21 cases (70%) and constipation 17 cases (56%). The other complaints were fever 7 cases (23%) and blunt abdominal trauma. Abdominal pain and distension was the commonest presenting symptoms reported in our patients and the same being reported by Shrivastava D et al. [6] in which they studied on 155 patients. All the patients were presented with fever and abdominal pain. 122 (78.70%) patients presented with abdominal distension. Pain was present in all cases due to peritoneal inflammation secondary to bowel perforation in all cases. Abdominal distension was present as sequel of dilated oedematous bowel loops secondary to inflammatory exudative fluid and paralytic ileus as consequences of protective mechanism for limitation of spread of peritonitis. Also, most of the patients presented late as they came from remote rural areas so abdominal distension was already set in.

• Etiology of Small Bowel Perforation

Small-bowel perforation is a rare event that results from a number of different etiological causes. Causes include, trauma, infection, inflammatory bowel disease, foreign body ingestion, malignancy, iatrogenic causes and medical therapies for other diseases.

• Pathology of Small Bowel Perforation

a. Peritoneal Fluid Study

In our study, most of the patient presented with purulent peritoneal fluid (53%) followed by greenish fluid (23%). Greenish fluid denotes presence of bile in duodenal perforation. Purulent fluid was present due to contamination of peritoneal cavity in cases which presented late for treatment. Dr. Rauf A Wani, Fazl Q Parray Parray and Nadeem A Bhat et al. [7] conducted prospective study on 79 cases of nontraumatic terminal ileal perforation and similar findings were noted.

b. Histopathological Examination

In our study, on histopathological examination, majority of the patients had non-specific inflammation 22 cases (73%) followed by acute inflammation 5 cases (17%), malignancy 2 cases (6%) and tuberculous infection 1 case (3%) as causes of bowel perforation. Dr. Raja Gopala Rao Akireddy et al. [2] conducted a similar study of 100 patients in which on histopathological examination, majority of the patients had (83%) chronic inflammatory changes followed by tuberculosis (12%) and malignancy (5%).

c. Site of Perforation

In the present study, with regard to site of perforation, more than half of the study population

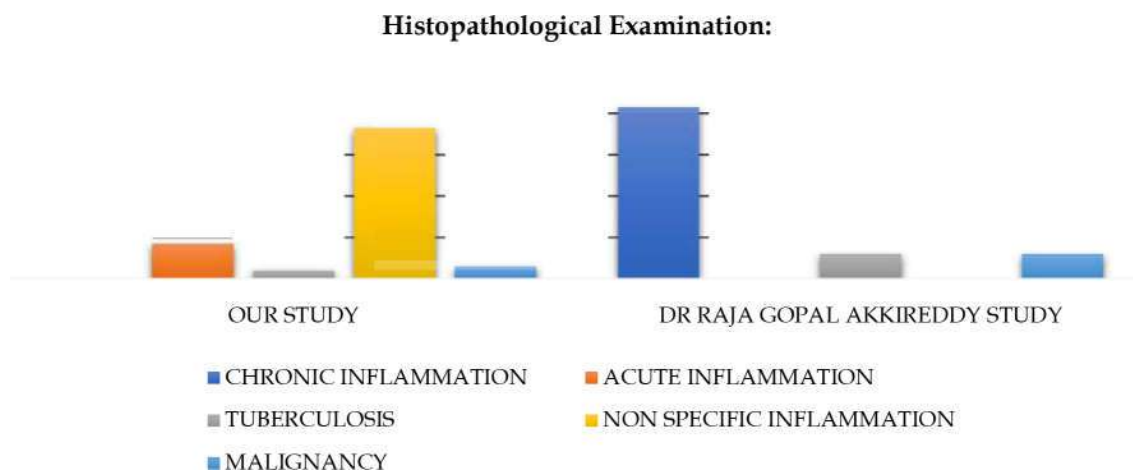


Fig. 2:

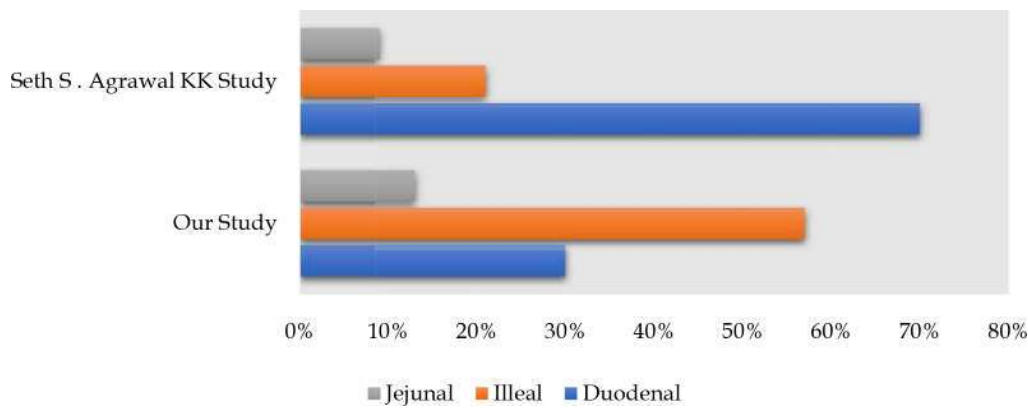


Fig. 3:

had ileal perforation 17 cases (57%) and in the remaining had duodenal 9 cases (30%) and jejunal perforation 4 cases (13%). However Seth S and Agrawal KK, conducted a study of 33 patients & found duodenum being the commonest site followed by ileum and jejunum in their study [8].

d. Tuberculosis

Coccolini F. et al. [10] studied 119 cases of abdominal TB and suggested ileum as common site of perforation in cases of tuberculosis. In our case study also tuberculous inflammation was found in ileum in one case. Intestinal tuberculosis commonly occurs after ingestion of infected sputum in cases of pulmonary tuberculosis. The ileocecal area and jejunum-ileum are the most common sites involved as there are high densities of lymphoid aggregates and physiologic stasis [10].

e. Malignancy

The different pathologic types of small bowel malignant tumors include adenocarcinoma, carcinoid tumors, leiomyosarcoma, and lymphoma. Adenocarcinoma is the most commonly encountered small bowel malignant tumor [11], which is true in case of our study. Adenocarcinoma is malignant tumour most commonly found in ileum. As lymphatics of small bowel are most numerous in ileum in form of Peyer's patches, malignant spread of cancer cells commonly occurs in ileum, which leads to submucosal enlargement of nodes and ulceration and perforation.

f. Trauma

In this study six cases (20%) of traumatic small bowel perforation was noted. Blunt abdominal trauma was the cause in all the bowel perforation. Small bowel is typically compressed against a fixed point, usually the vertebral column. This rapid increase in intraluminal pressure leads to perforation of the bowel wall at the

antimesenteric border, where the bowel is usually weaker. Lap-only seat belts, commonly used in most cars until the 1980s, were largely held responsible for perforation and SBP [12]. Greater length of small bowel particularly ileum and jejunum also predispose it for trauma along with its mobility.

Conclusion

Perforation commonly occurs in young males. Pain, abdominal distension along with Generalised tenderness was commonly found in all. Non-specific inflammation was most common non-traumatic cause of ileal perforation after blunt abdominal trauma. Stress, smoking and NSAIDs were common risk factors involved in causation of bowel perforation

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