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Original Research Paper

General Surgery

INCIDENCE OF ILEOSTOMY IN PATIENTS HAVING SMALL BOWEL PERFORATION

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ABSTRACT

Introduction: Small Bowel perforation is a commonly encountered surgical emergency in India. Procedure of choice for source control depends on patient's condition, surgeon's preference and associated morbidity and mortality. There is paucity of data on management of small bowel perforation peritonitis. **Methodology:** A prospective observational study was conducted over a period of two years (April 2021 to August 2022) involving 62 patients with small bowel perforation due to any aetiology and undergoing emergency laparotomy in a tertiary care teaching hospital in North India. **Results:** The majority of patients were male. Pain abdomen and vomiting were the most common presenting complaints. Operative findings showed that 77.4% patients had a single perforation and within 100 cm proximal to ileocecal junction. Ileostomy was the most frequent procedure (64.5%), followed by Resection and Anastomosis (19.3%) and primary repair (16.1%). Majority of patients were discharged in 6-12 days. Overall mortality rate was 17.7%. **Conclusion:** Patients with small bowel perforation are routinely seen in surgical emergency and their intraoperative findings may guide choice of surgical procedure. Ileostomy creation is frequently done procedure in patients having small bowel perforation peritonitis with adverse conditions.

KEYWORDS : Incidence of ileostomy, small bowel perforation

INTRODUCTION

Peritonitis is characterized as peritoneal cavity inflammation. In India, perforation peritonitis is the most prevalent surgical emergency. The spectrum of aetiology of perforation in India continues to be different from western countries and there is paucity of data regarding its aetiology, prognostic indicators, morbidity and mortality pattern. In majority of cases, presentation to the hospital is late with well-established generalized peritonitis with purulent/faecal contamination and varying degree of septicaemia.[1,2]Typhoid fever is the commonest cause of ileal perforation in India. Other causes of perforation include perforation of peptic ulcers which are usually encountered along the first part of the duodenum anteriorly and in the pylorus of the stomach, nonspecific ileal perforations caused due to sub mucus vascular embolism, chronic ischemia due to atheromatous vascular disease, ischemia due to arteritis or drugs such as enteric coated potassium tablets. These 'nonspecific' ileal perforations are closely followed by small bowel perforations occurring in intestinal tuberculosis. Most of these (50-80%) occur in the ileum, usually proximal to strictures of the bowel. Other rare causes of perforation include blunt trauma abdomen, intestinal amoebiasis, gastrointestinal carcinomas, foreign bodies, ulcerative colitis, Meckel's diverticulum, steroid ulcer of ileum, radiation treatment for GI malignancy causing mucosal ischemia, iatrogenic perforation.[2] The present prospective observational study was undertaken to analyze the epidemiology and presentation incidence of ileostomy in patients having small bowel perforation at our institution.

AIMS

- To study incidence of ileostomy in small bowel perforation.

OBJECTIVES

- To study clinical presentation in patients having small bowel perforation
- To study perforation sites in small bowel perforation patients.

MATERIAL AND METHODS

A prospective observational study was conducted in the Department of General Surgery at Postgraduate Institute of Medical Sciences, Rohtak, a tertiary care centre in North India. The study was conducted over a period of two years (April 2021 to August 2022) after getting approval from the institutional ethical committee. Sixty-two patients were admitted with perforation peritonitis due to small bowel perforation due to any aetiology and undergoing emergency laparotomy were included in the study. Patients having perforation proximal to first part of duodenum and distal to Ileocecal Junction or below age 16 were excluded from study. On admission, a thorough clinical history and proper physical examination was performed on all the patients. The patients were subjected to routine haematological investigations, X-ray Abdomen standing and lying. All the patients were managed with intravenous fluids for resuscitation, nasogastric tube for gut decompression, urethral catheterization for monitoring urine output, third generation cephalosporins, and analgesics. Patients were taken up for midline emergency laparotomy after explaining the procedure and taking consent of the patient regarding stoma creation after initial resuscitation in emergency department. The intraoperative findings, namely, site, number, and size of perforations, nature of peritoneal exudate/intestinal contents drained from peritoneal cavity, condition of gut were recorded and thorough peritoneal lavage with normal saline was done and tube drains were placed to drain the pelvis and the paracolic gutters. Patient's operative outcome of surgery in terms of stoma (ileostomy), resection and anastomosis, primary repair was noted and all the patients were monitored clinically in the hospital till the patient was discharged.

Inclusion Criteria:

Cases of small bowel perforation due to any etiological factor including trauma.

Exclusion Criteria:

Any case of perforation proximal to first part of duodenum and distal to ICJ.

All Patients below age 16.

RESULTS

The study included 62 patients with a mean age of 41.19 ± 16.22 years (range 17-80 years), majority of these cases belonged to the age group of 40–50 years with 45 (72.6%) being males. Majority of patients had Non traumatic perforation peritonitis (69.4%; n=43) and rest had traumatic perforation peritonitis (30.6%; n=19). Duration of symptoms ranged from one to 10 days with a mean of four days. Abdominal pain was the constant symptom present in all patients (100.0%; n = 62), while vomiting (94.6%; n = 59), obstipation (61.29%; n = 38), and fever (35.48%; n =22) were the other frequent symptoms (Table 1). On examination, there was abdominal tenderness (100%), guarding (88.7%), absent bowel sounds (82.3%), and abdominal distension (85.5%) (Table 2). Blood investigations showed that 59.67% patients had total leucocyte counts more than 11,000/mm3. On chest X-ray (erect film), thirty-seven patients (59.7%) had air under diaphragm suggestive of gut perforation. Seven patients had associated pleural effusion and three had changes suggestive of pneumonitis. Twenty-three patients had normal skiagram. All patients of were operated within 24 hours of hospital admission.

Table 1

Symptoms		N	%
Pain abdomen		62	100
Vomiting	Bilious	25	40.3
	Non bilious	34	54.83
Obstipation		38	61.29
Fever		22	35.48

Table 2

Signs	N	%
Distension	53	85.5
Tenderness	62	100
Guarding	55	88.7
Absent Bowel sound	51	82.3

Operative Findings

There was one perforation in 48 patients (77.4%) and multiple perforations in 8 patients (12.9%). The remaining 6 patients (9.7%) had two perforations. Majority of the perforations were located in distal 100 cm. of ileum (64.5%). Peritoneal contaminations were assessed in terms of volumes of peritoneal exudates/ intestinal contents evacuated from the peritoneal cavity and its nature (reactionary, purulent and feculent). Contamination was less than one litre in 72.5% (n = 45) of patients; in the remaining 27.4% patients (n = 17), it was more than one litre.

Operative Procedure

Ileostomy was the most frequently performed procedure (64.5%; n = 40), followed by Resection and Anastomosis (19.35%; n = 12), Primary Repair (16.12%; n = 10) (Table 3).

Table 3

Operative Procedure	Frequency	Percent
loop or end ileostomy	40	64.5
Primary Repair	10	16.12
Resection and Anastomosis	12	19.35
Total	62	100.0

Mortality

The overall mortality was 17.7% (11 out of 62 patients). The mean hospital stay of the patients (n = 62) was 8 ± 4 days (range 4-32 days).

DISCUSSION

In surgical practise, peritonitis caused by hollow viscus perforation is frequently encountered. The word "Stoma" comes from the Greek word meaning mouth or opening. An intestinal stoma is an opening of the intense on anterior abdominal wall made surgically. Stomas are used to divert the fecal stream away from distal bowel in order to allow a distal anastomosis to heal as well as to relieve obstruction in emergency. It may be temporary or permanent, end or loop or double barrel, depending on their role. An ileostomy was first advocated in ulcerative colitis in 1912 but was not widely used until Brooke demonstrated his everted ileostomy in 1952. Various Indications for which intestinal stomas are formed are ulcerative colitis, bowel obstruction, cancer of colon & rectum, Crohn's disease, congenital bowel defects, uncontrolled bleeding from large intense, injury to the intestinal tract, inflammatory bowel disease, ischemic bowel disease, carcinoma urinary bladder and spinal cord injury (up to 30 days after operation) The formation of an intestinal stoma is one of the most frequent operations in emergency gastrointestinal surgery. Despite the new operative techniques and a more restrictive use, the stoma formation remains the best emergency necessary surgical procedure, which results in dramatic improvement in the patient's condition. Though a lifesaving procedure, it may result in significant number of complications.[3,4]

In most of the studies from Asia, mean age of the patients presenting with ileal perforation is around 35 to 40 years and the findings in the present study were the same.[5-8]

The incidence of perforation peritonitis due to ileal perforation is significantly more in male population as seen in the present and the previous similar studies. In most of the studies, male patients contributed more than 75% of total cases.[5-8]

Park et al. found that there was no relation between sex and complications in these cases.[9] The majority of the patients in the present study and previous similar studies presented with pain abdomen, vomiting, constipation, and fever.

Shock and dehydration were seen more in our patients compared to other studies, indicating that patients in the present study were sicker and presented late and underwent ileostomy as a lifesaving measure. The clinically stable cases underwent primary closure/resection anastomosis of small gut.

Most patients with ileal perforation peritonitis have one or two perforations. Sometimes, there may be multiple perforations especially in immune-compromised patients.[10] Mock et al.[11]in their series of 221 patients found that the increased number of perforations was associated with a significantly higher mortality rate. In the present study, all the patients had multiple perforations with severe enteritis and postoperative mortality occurred in three cases (7.3%).

In this study patients underwent either simple primary closure, resection anastomosis, and ileostomy formation. None of the patients were treated by conservative measures. In our study primary repair was done in 16.12% of patients, Resection anastomosis done in 19.35% of patients and Ileostomy done in 64.5% of patients. Resection anastomosis was employed in typhoid and traumatic perforations where multiple perforations were found on laparotomy. Jain BK et al(2010)[12] reported that primary repair was the most frequent procedure done (44.0%), followed by ileostomy (25.5%) and resection-anastomosis (19.3%). In our study the possible reason for higher incidence ileostomy was due to late presentation of patients, shock and dehydration, poor immunity and poor nutrition status of patients leading to poor gut conditions like multiple perforations dirty peritoneum which favoured more towards creation of ileostomy.

Most cases in developing countries have mortality following stoma creation due to various factors like septicaemia, cardio-respiratory failure, malnutrition, delayed presentation, inadequate therapeutic resources and age. Post-operative

mortality reported in various studies range from 1.17 to 21.6%.[13-15] In present study, mortality following operative procedure was 17.7%, which is comparable to previous reports in literature.

CONCLUSION:

Temporary de-functioning protective ileostomy is a lifesaving procedure., Apart from reducing mortality, it plays a vital role in decreasing the incidence of complications like faecal fistula. The fecal diversion can be performed by creation of stoma (end ileostomy or loop ileostomy). Study showed more cases of ileostomy creation as compared to previous studies was due to late presentation of patients, unhealthy gut conditions, more no of perforation, dirty peritoneum, poor immunity and poor nutrition status of patients leading to poor gut conditions which favoured more towards creation of ileostomy. However, further such studies of larger magnitude are needed in cases of ileal perforation peritonitis to substantiate the results of present study.

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