

Study of surgical management and outcome of small bowel perforation

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Abstract

Background: Perforation of the small bowel from a wide variety of causes comprises the majority of emergency surgical admissions and is a common abdominal emergency faced by the general surgeon. **Aim:** To find out the various surgical procedures for gastrointestinal perforations and its outcome in our setup. **Material and Methods:** This prospective study included 50 patients admitted to Department of Surgery with a diagnosis of small bowel perforation and who underwent surgery. Patients were followed up for postoperative complications and mortality. **Results:** Simple closure of perforation was done in 30 cases (60%) followed by resection and End -End anastomosis in 13 cases (26%) and stoma in 7 cases (14%). The most common complication in this series was wound infection which accounted for 17 cases (34%). The mortality in our study was 10%. **Conclusion:** the most common cause of small bowel perforation was ileal perforation. Resection and anastomosis in two layers was the commonly done procedure. The most common complication in this series was wound infection with mortality rate of 10%.

Key Words: Small bowel perforation, ileal perforation, resection and anastomosis, wound infection, mortality

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INTRODUCTION

Perforation of the small bowel from a wide variety of causes comprises the majority of emergency surgical admissions and is a common abdominal emergency faced by the general surgeon. Perforation of the small bowel is relatively uncommon in Western societies except in regions where Typhoid, Tuberculosis and parasitic infestation are endemic.¹ The preeminent complication of Typhoid is perforation seen in 3rd week. The ileum is the main site of perforation.² The perforated viscus challenges the surgeon's skill as a technician and his

knowledge of pre-operative, intra-operative and post-operative care of severely ill surgical patient³. Majority of the patients present with sudden onset of abdominal pain. A high index of suspicion is essential to diagnose hollow viscus perforation early as significant mortality and morbidity results from diagnostic delay. Surgery plays an important role in the management of perforations. Evaluation and management of gastro intestinal perforation provide some of the most challenging experiences for a surgeon with the advent of new technology. This study was undertaken to find out the various surgical procedures for gastrointestinal perforations and its outcome in our setup.

MATERIAL AND METHODS

This prospective study included 50 patients admitted to Department of Surgery with a diagnosis of small bowel perforation and who underwent surgery over a period of two years.

Inclusion criteria

- Patients aged > 12 years
- Patients presenting with Small bowel perforation.
- Patients underwent surgery

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Exclusion criteria

- Patients aged <12years
- Patients managed conservatively (non surgically).
- Patients with peptic ulcer disease.

The data was collected with respect to their age and sex. A detailed clinical history was taken for all these patients with an emphasis on the presenting complaints. A thorough physical examination was done for all patients. Vital signs were recorded. Presence of Guarding / Rigidity, rebound tenderness, liver dullness obliteration was looked for in all patients. Absence or decreased bowel sounds were also recorded. All routine blood investigations were done. An Erect Abdomen X-ray was done for all patients to particularly look for presence of gas under diaphragm. All patients were operated upon after adequate resuscitation with midline laparotomy. The perforations were managed according to the protocol followed in our hospital. The surgical procedures undertaken were recorded. Patients were followed up in the postoperative period to know the postoperative complications, morbidity and mortality rates.

RESULTS

In the present study, most common age group affected is 21 – 30 years followed by age group of 31- 40 years. A major part of the study group was males (80%) whereas females accounted for (20%) of cases.

Table 1: Age and sex distribution in study population

Age in years	Male (%)	Female (%)	Total (%)
12-20	4 (10%)	5 (50%)	9 (18%)
21-30	16 (40%)	4 (40%)	20 (40%)
31-40	14 (35%)	1 (10%)	15 (30%)
41-50	4 (10%)	-	4 (8%)
>50	2 (5%)	-	2 (4%)
Total	40	10	50

Pain abdomen was the presenting symptom in almost all cases under study followed by vomiting (76%), fever (46 %) and distension of abdomen (44%). Constipation accounted for 50% of cases. In the present study majority of cases had guarding and rigidity at presentation (84%), rebound tenderness (84%), absent bowel sounds were in

72% cases, distension of abdomen (66%), obliteration of liver dullness (42%) and per rectal tenderness (12%). Ileal perforation was the most common cause of small bowel perforation accounting for 80% of cases. Tubercular perforation accounts for 28% of ileal perforations. Iatrogenic perforation was seen in 1 case of ileal perforation. The patient had undergone Abdominal Hysterectomy 15 days prior to development of pain abdomen which did not respond to conservative treatment. On re-laparotomy, a loop of ileum was caught in the suture during abdominal closure. Resection and end-end anastomosis in was done in this case.

Table 2: Postoperative diagnosis

Postoperative Diagnosis	Number	Percentage
Ileal perforation (n=40)		
Tuberculosis	14	28%
Typhoid	12	24%
Iatrogenic	01	2%
Non specific	13	26%
Jejunal perforation (n=10)		
Traumatic	04	08%
Non specific	06	12%

Simple closure of perforation was done in 30 cases (60%) followed by resection and End-End anastomosis in 13 cases (26%) and stoma in 7 cases (14%). The most common complication in this series was wound infection which accounted for 17 cases (34%). Reoperation was seen in one case. Enterocutaneous fistula was managed by relaparotomy. We came across 5 deaths in the present study (10%). One death was with ileal perforation where patient developed acute respiratory distress syndrome (ARDS) and not affordable for care in intensive care unit. One death was seen in jejunal perforation as the patient developed acute renal failure (ARF). Three patients died of septic shock in the postoperative period. The patients were followed up for a period of 2 months and the complications were noted. At the end of 2 months Wound Infection was seen in one case (2.4%). In this case, the patient underwent re laparotomy for iatrogenic ileal perforation as explained earlier. The wound was infected and healed with regular dressings by two and half months.

Table 3: Postoperative complications and follow up status

Post-operative complication	Upto one week (n=50)	15 days follow up (n=44)	60 days follow up (n=43)	90 days follow up (n= 41)
Wound infection	17 (34%)	14 (31.8%)	10 (23.2%)	1 (2.4%)
Burst abdomen	3 (6%)	2 (4.5%)	1 (2.3%)	-
Re-operation	1 (2%)	-	-	-
Enterocutaneous fistula	1 (2%)	-	-	-
Mortality	5 (10%)	-	-	-
No complication	28 (56%)	28 (63.7%)	33 (76.7%)	40 (97.6%)

DISCUSSION

Small bowel perforation causing peritonitis is a frequently encountered surgical emergency in India. In tropical countries like India, it commonly affects young men whereas in western countries it affects adults with the mean age of 45–60 years.³ In majority of cases the presentation to the hospital is late with well-established generalized peritonitis with purulent/fecal contamination and varying degree of septicemia. The signs and symptoms are typical and it is possible to make a clinical diagnosis of peritonitis in all patients. The perforations of proximal gastrointestinal tract were six times as common as perforations of distal gastrointestinal tract as has been noted in earlier studies from India, which is in sharp contrast to studies from developed countries like United States,⁴ Greece⁵ and Japan⁶ which revealed that distal gastrointestinal tract perforations were more common. Not only the site but the etiological factors also show a wide geographical variation. Khanna *et al*⁷ from Varanasi studied 204 consecutive cases of gastrointestinal perforation and found that over half (108 cases) were due to typhoid. They also had perforations due to duodenal ulcer, appendicitis, amoebiasis and tuberculosis. These figures show the importance of infection and infestation in the third world which is also reflected in the high incidence of typhoid and tubercular perforation in our study. At the other end of the spectrum, Noon *et al*⁸ from Texas studied 430 patients of gastrointestinal perforation and found 210 cases to be due to penetrating trauma, 92 due to appendicitis and 68 due to peptic ulcer. This shows the importance of trauma in developed countries. The maximum number of cases were in the age group of 20–40 years accounting for 75 percent in our study and are comparable to Ahmad *et al*,⁹ which shows a maximum incidence in the same age group (50%). There is a male predominance in our study accounts for 4:1 and is comparable to Ahmad *et al*⁹ and Gupta *et al*,¹⁰ which were 2.5:1 and 1.7:1 respectively. In the present study majority of cases had guarding and rigidity at presentation (84%), rebound tenderness (84%), absent bowel sounds were in 72% cases, distension of abdomen (66%), obliteration of liver dullness (42%) and per rectal tenderness (12%). The most common complication in this series was wound infection which accounted for 17 cases (34%). We came across 5 deaths in the present study (10%). In Ahmad *et al*⁹ and Gupta *et al*.¹⁰ Wound infection was most common complication. The mortality in our study was 10% and is comparable to Ahmad *et al*,⁹ Gupta *et al*,¹⁰ and Alam SM *et al*¹¹ which was 5.4%, 6% and 10% respectively. One death was with ileal perforation where patient developed ARDS and not

affordable for ICU care. One death was seen in jejunal perforation as the patient developed ARF. Three patients died of septic shock in the postoperative period. Delay in seeking medical care i.e., late presentation with septicemia accounted for adverse outcome of the patients in our study.

CONCLUSION

In our study the most common cause of small bowel perforation was ileal perforation. Resection and anastomosis in two layers was the commonly done procedure. The most common complication in this series was wound infection with mortality rate of 10%. Delay in the surgery and septicemia were associated with high mortality.

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