



A clinical study of surgical management and outcome of ileal perforation

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ABSTRACT

Background: Perforation in the ileum is a common surgical emergency noted in the Indian subcontinent. The most common etiology is salmonella infection. In western countries, the most common etiology is neoplastic, traumatic, and mechanical in the decreasing order of incidence. **Aim & Objective:** 1. A clinical study of surgical management and outcome of ileal perforation. 2. To study the risk factors of ileal perforation and complication. **Methods:** **Study design:** Prospective study. **Study setting:** Department of surgery of tertiary care center. **Study population:** A total of 100 patients with a confirmed diagnosis of ileal perforation. **Sample size:** 100. **Results:** Hundred patients of Ileal Perforation admitted in our institute were included in this study. Patients have been grouped into etiological categories, namely, typhoid, non-specific, trauma and miscellaneous. **Conclusions:** Etiology, presentation, management and outcome of patients with ileal perforations were studied with emphasis on typhoid, non-specific, TB, round worms, meckels, stab injury and traumatic perforations and the factors that influenced the prognosis.

Keywords: ileal perforation, etiology, evaluation, management, typhoid, emergency surgery

INTRODUCTION:

Perforation in the ileum is a common surgical emergency noted in the Indian subcontinent. The most common etiology is salmonella infection. In western countries, the most common etiology is neoplastic, traumatic, and mechanical in the decreasing order of incidence (1, 2, 3). Recent advances have led to a definite change in the trends in ileal perforations in terms of causes, management, and outcomes. The availability of modern facilities and advances in treatment regimens have not led to a decrease in the high mortality and morbidity associated with ileal perforation.

In the presence of advanced anesthesia of today and tremendous improvement in resuscitative measures, every patient diagnosed to have ileal perforation is universally recommended to be treated surgically. The purpose of the operative protocol is to correct the pathology while avoiding severe accidents and to adopt a surgical procedure that is associated with minimal complications(4).

This study has been undertaken in order to contribute to the improvement in the Knowledge of this disease. This study aims to study clinical features, management, complications, and prognostic factors affecting the outcome in ileal perforations (4).

AIM AND OBJECTIVE

OBJECTIVE:

1. A clinical study of surgical management and outcome of ileal perforation.
2. To study the risk factors of ileal perforation and complication

MATERIAL AND METHODS

Study design: Prospective study

Study setting: Department of surgery of tertiary care center.

Study duration: from..to....

Study population: All patients with ileal perforation

Sample size: 100

Inclusion criteria:

1. Patients presenting the hospital with signs of hollow viscus perforation
2. Patients with an intra-operative finding of Ileal perforation
3. Patients who consented for emergency exploratory laparotomy.

Exclusion criteria:

1. Not willing to participate

Procedure of data collection:

Demographic Data of all Patients presenting with hollow viscus perforation will be recorded in a proforma. Patients with ileal perforation will be identified from the group after doing a clinical examination and USG abdomen & X-ray abdomen. Patients with a history of typhoid fever and tuberculosis in the past will be identified. Patients with signs of peritonitis, shock, and septicemia will be considered for emergency surgery.

This study consists of 100 patients admitted with ileal perforation to tertiary care center. This study was focused on clinical features, investigations, operative procedures performed, postoperative morbidity and mortality and outcome. Jejunal, caecal, appendicular, gastric or duodenal perforations were excluded from the study. History with special reference to presence of fever, pain, vomiting, abdominal distension, constipation and treatment prior to admission was taken. Vital signs, hydration, abdominal distension, tenderness, guarding and presence of free fluid were noted. Systemic examination of cardiovascular, respiratory and central nervous system was done.

All patients were resuscitated preoperatively with intravenous fluids and antibiotics. Patients unfit for surgery were initially treated with flank drains under local anaesthesia as a temporary measure prior to definitive laparotomy. Most cases received cefotaxime or ciprofloxacin with metronidazole. In case of gross peritoneal contamination aminoglycosides were added.

All patients underwent laparotomy under general anaesthesia. Midline or Para median incisions were employed. The amount and type of peritoneal contamination, number, site and size of perforations and procedure employed were noted.

The following procedures were employed.

- Simple two layer closure
- Closure with free or pedicled omental patch
- Resection and anastomosis

For both closure and anastomosis, the inner all-coats layer and the outer layer was performed with 2.0 silk. Antibiotics were routinely given for 5-7 days unless the diagnosis was typhoid in which case antibiotics were continued for up to 10 days. A diagnosis of typhoid was made only if Widal test was positive, or Salmonellae were isolated from blood or urine and if

histopathological evidence of typhoid perforation was found. When the etiology of a non-traumatic perforation was not found, it was termed non-specific. Postoperative complications

were noted. The factors influencing mortality and morbidity and outcome were assessed. The various parameters were recorded in a proforma and tabulated.

Statistical analysis:

All statistical analyses will be performed using SPSS 20.0 version and MS EXCEL-2007. All descriptive values will be presented as Mean \pm Standard deviation and percentages. A chi-square test will be performed to find an association between categorical variables. For all statistical analyses, $p < .05$

Result and observations

Hundred patients of Ileal Perforation admitted in our institute were included in this study. Patients have been grouped into etiological categories, namely, typhoid, non-specific, trauma and miscellaneous.

Table 1: Etiology of Ileal Perforation

Diagnosis	Cases	Percent
Typhoid	48	48
Nonspecific	30	30
With h/o fever	12	
Without h/o fever	18	
Trauma	20	20
Tuberculosis	2	2
Total	100	100

Table 2: Age and Sex incidence in Ileal Perforation

Age	Male	Female	Total	Percent
10-20	3	0	3	3
20-30	29	8	37	37
30-40	19	7	26	26
40-50	18	2	20	20
50-60	7	2	9	9
60-70	3	0	3	3
70-80	0	1	1	1
80-90	1	0	1	1
Total	80	20	100	100

Table 3: Surgical Procedures and their Complications

Complications	Simple n = 70 (%)	Omental n = 20 (%)	Resection n=10 (%)	Total n = 100
Wound Infection	20 (28)	8 (40)	5 (50)	33 (33)
Wound Dehiscence	20(28)	7 (35)	1 (10)	28 (28)
Abd. Collection	7 (10)	7 (35)	2 (20)	16 (16)
Fecal Fistula	7(10)	8 (40)	3 (30)	18 (18)
Reperforation	6(8)	2 (10)	2 (20)	10 (10)
Respiratory	17 (24)	2 (10)	2 (20)	21 (21)
Mortality	11 (16)	2 (10)	2 (20)	15(15)

DISCUSSION:

The commonest cause of ileal perforation in the series was typhoid fever accounting for 48% of cases. Typhoid fever was the commonest cause of ileal perforation in tropical countries. Typhoid fever accounted for 56.6% of cases of ileal perforation in the series by Karmakar¹. Mechanical causes and malignancy are the commonest causes of small bowel perforation in the western world. Mechanical causes and lymphomas accounted for 40.7% of perforations in the series by Dixon².

Malignancy was the commonest cause in the series by Orringer³. There were no cases of typhoid perforations in either series^{2,3}. When the etiology of the perforation was not identified it was termed non-specific perforation. Non-specific perforation was the second commonest cause in this study accounting for 30% of cases. 12 patients of non-specific perforation had fever prior to onset of abdominal symptoms. These cases may be undiagnosed cases of typhoid.

Non-specific perforations were the commonest cause of small bowel perforation in the series by Dixon and Bhalerao^{2,4}. Trauma accounted for 20% of cases of ileal perforation in this series. 8.25% of ileal perforations published by Karmakar were due to trauma¹. There was a male preponderance with the male: female ratio in this study being 4:1. This preponderance was seen in typhoid, non-specific and traumatic perforations. Published literature also shows a similar finding with reported ratios from 2.3:1 to 6.1:1^{5,6,7,8,9,10,11,12}.

Most patients presented with features suggestive of peritonitis. Patients with typhoid perforation had fever, abdominal pain and vomiting. Examination revealed tenderness, guarding, distension and intraperitoneal free fluid. 13 patients were in shock on admission.

Examination revealed signs of toxemia and acute abdomen¹³. Gibney and Gulati reported pneumonia, cholecystitis, gastrointestinal bleed, osteomyelitis and intestinal perforation in patients with typhoid perforation^{14,15}. Perforation was commonly seen to occur in the second week following onset of illness^{7,11,12,16}. Keenan reported that 88% of patients perforated in the second week¹⁶.

Chest X-ray is a useful investigation to detect hollow viscus perforation. Free gas was seen under the diaphragm in 78% of perforations and in 75% of typhoid perforation. Abdominal X-ray revealed gas and features suggestive of ileus. Pneumoperitoneum has been reported in 52% to 82% in studies by Hadley, Archampong, Tacyildiz and Vaidyanathan^{9,16,17,18}.

Widal was positive in 55% of tested cases and in 86% of patients of typhoid perforation. It was reported positive in 75.5% of cases by Jarrett and in 73% by Vaidyanathan¹⁸. Four-fold increase in titres is considered more significant²⁰.

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