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General Surgery

A Prospective Clinico-Pathological Study of Non-Traumatic Terminal Ileal Perforation

Dr. Nilottpal Dey[1*], Dr. Maniranjan Debbarma[2], Dr. Kishan Rao B[3]
[1]MS, MCh (Plastic Surgery) Assistant Professor Department of Plastic Surgery, Agartala Government Medical College and GB Hospital, Agartala, Tripura, India
[2]MS (General Surgery), FMAS Assistant Professor Department of General Surgery, Agartala Government Medical College and GB Hospital, Agartala, Tripura, India
[3]Post Graduate Resident Department of General Surgery Agartala Government Medical College and GB Hospital, Agartala, Tripura, India

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***Corresponding author**
Dr. Nilottpal Dey

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Abstract: Non traumatic terminal ileal perforation is still common as a cause for obscure peritonitis in developing and underdeveloped world although in the West, it is quite rare. The terminal ileal perforation presents a diagnostic dilemma to the surgeon. Laparotomy is usually carried out late often suspecting a perforated appendicitis or a duodenal ulcer. The morbidity and mortality from ileal perforation could be reduced by early patient presentation, early diagnosis of perforation, improved patient care and prompt surgical intervention with closure of perforated site after proper intraoperative decision making .
Keywords: ileal perforation, appendicitis, duodenal ulcer.

INTRODUCTION

Terminal ileal perforation is a common cause of abdominal catastrophe. The etiological factors are numerous. Even though enteric perforation is the commonest cause in the tropics, others include ulceration or perforation secondary to obstructive lesion, tuberculosis, worm infestation, small bowel lymphoma, Crohn's disease, polyarteritis nodosa, radiation enteritis.

Terminal intestinal perforation is mostly caused by typhoid fever and tuberculosis. Perforation mostly occurs within 60cm of ileocecal valve. Although tuberculosis consists of less than 1% of cases, antituberculous chemotherapy is mandatory after operation [1].

The incidence of bowel perforation in typhoid fever varies markedly from place to place and also appears to be changing with time, the highest quoted incidence being from Ghana (17.9%).

It is well to remember that the classical signs of perforation may be absent in those who are very toxic and repeated abdominal examination is stressed by several authors. Most typhoid cases which have abdominal symptoms of equivocal signs with no free sub-diagphragmatic gas on X-ray, if doubt persists despite repeated clinical examinations, are better explored than continued observation [2].

The present study was carried out prospectively to evaluate the clinicopathological presentation in the cases of non-traumatic terminal ileal perforation based on the patients treated in the surgical wards of the GB Hospital, Agartala , during the study period from September 2015 to August 2018.

MATERIALS AND METHODS

Thirty cases of ileal perforation admitted in Surgical Wards, GB Hospital, Agartala, during the study period, were studied prospectively.

- All the patients with history of acute pain abdomen (with/without- fever, vomiting, constipation), with physical sign of tenderness /distension /rigidity /guarding were looked for obliteration of liver dullness/shock.
- Radiological evidence (X-ray abdomen erect posture) to assess free air, air fluid level, ileus, diffuse haziness.

Emergency base line investigations

- Haemoglobin
- Blood urea, Serum creatinine, Serum electrolytes
- Random Blood sugar
- Chest X-ray
- Urine - albumin & sugar
- Widal and typhidot tests

Preoperatively patient was kept nil orally, resuscitated by fluid and electrolytes, broad spectrum antibiotic and analgesic were given & nasogastric aspiration and catheterization done.

Intraoperatively

- Incision was given depending on surgeon's choice.
- Findings noted were; site of perforation, size and shape, number of perforation, adhesion - present/absent, faecopurulent fluid/ ascitic fluid.
- Perforated site was managed by executing different operative procedures after excising small piece of tissue from the margin for histopathological examination.
- Thorough peritoneal toileting was done with normal saline and a Ryle's tube drain was provided at the flank with the tip kept near the sutured bowel and the abdomen was closed in layers.

RESULTS AND OBSERVATIONS

Thirty cases of non-traumatic terminal ileal perforation were studied prospectively in three years. Diagnosis of ileal perforation was done from clinical features supported by radiology and confirmed by operative findings followed by biopsy report.

Clinical Presentation

Pain abdomen was the commonest symptom (100%) among almost all the patients. Fever was present in 24 (80%) patients, vomiting in 7 (23.33%), constipation in 13 (43.33%) patients.

3 (10%) patients gave history of tuberculosis in the past, 1 malaria, 1 alcoholic liver disease, 1 peptic ulcer disease, 1 hernia, 1 renal calculi & 1 gave history of partial salphingo- oophorectomy.

Clinical examination showed distension in 24 (80%) patients, abdominal guarding was present in 100% of the patients, whereas liver dullness was found to be obliterated in 24(80%) patients. Mild to moderate dehydration was present in 29 (96.66%) patients, 2 (6.66%) patients were in shock at the time of presentation.

Table-1: Clinical presentation of ileal perforation

Signs and symptoms	No of cases	Percentage (%)
Pain abdomen	30	100
Fever	24	80
Vomiting	7	23.33
Constipation	13	43.33
Abdominal distension	24	80
Abdominal guarding	30	100
Obliterated liver dullness	24	80
Dehydration	29	96.66
Shock	2	6.66

Investigations

The emergency investigations performed were Hb%, Blood urea, serum electrolytes, Serum creatinine, Random blood sugar, Chest x-ray PA view. The average hemoglobin level was 10.99gm%. Urea level was high in one patient; blood sugar was increased in nine patients.

Widal test was done in 30 patients. Out of them it was positive in 11 (36.66 %) patients. Typhidot was done in 18 patients where 12 (66.66%) patients were positive. Plain abdominal X-ray (erect) showed pneumoperitoneum in 25 (83.33%), air-fluid level in 4 (13.33%) and in one patient there was haziness.

Biopsy was taken from the perforation margin in all cases and the histological report suggested typhoid perforation in 22 (73.33%) cases - (presence of mainly macrophages and lymphocytes and necrosis of Peyer's patches with ulceration of the intestinal mucosa). 5 (16.66%) biopsy report suggested tubercular pathology, one patient had malignant growth (adenocarcinoma), 2 (6.89%) cases were reported as nonspecific inflammation.

Table-2: Histopathology variations

Histopathology types	No of cases	Percentage %
Enteric	22	73.33
Tubercular	5	16.66
Adenocarcinoma	1	3.33
Non-specific	2	6.66

Intra-Operative Findings

In this study 12 (40%) cases had feco-purulent contamination of peritoneal cavity, 16 (53.33%) cases had purulent peritoneal fluid collection and 2 (6.66%) patients had serous collection.

The average sizes of the perforated areas were about 0.5 cm. The shapes of the perforations were often round to oval. Solitary perforation was observed in 25 (83.33%) cases where rest had multiple perforations. Two had 3 (10%) perforation sites and 3 had double (6.66%) perforations sites. The perforation site ranged from 2.5cm to 60cm from ileocaecal junction, the average distance being 31.25cm.

Table-3: Distance of perforated site from the ileocaecal junction

Distance from ileocaecal junction (cm)	No of perforations	Percentage (%)
<10	6	20
11-20	12	40
21-30	5	16.66
31-40	0	-
41-50	6	20
>51	1	3.33

Operative Procedures

The operative procedure executed were trimming the perforated margin and primary closure in 23 (76.66%) cases , resection and anastomosis in 5 (16.66%) cases, closure with omental patch in 1 patient and resection with ileostomy in one patient.

Table-4: Operative procedures performed

Operative procedures	No of cases	Percentage (%)
Primary closure	23	76.66
Resection anastomosis	5	16.66
Closure with omental patch	1	3.33
Resection and ileostomy	1	3.33

CONCLUSION

Terminal ileal perforation should be considered as a possibility in obscure peritonitis. In developing countries enteric perforation is a strong possibility. Early diagnosis and treatment avoid extensive procedures and is associated with lower morbidity and mortality.

Nonspecific inflammation and tuberculosis are other causes in developing countries. The operative findings are typical with most enteric perforations on the antimesenteric border of terminal 60 cm of ileum.

Factors like delay in presentation, long perforation-operation interval, peritoneal contamination, number of perforations, operative procedure performed patient's general condition etc influence the outcome.

In the preoperative period management of haemodynamic status, administration of broad-spectrum antibiotics and early suspicion of bowel perforation by clinical and radiological evidence can reduce the time delay for emergency laparotomy. Again postoperative period fluid and electrolyte management, nutritional maintenance can improve patient's general status to prevent postoperative complications.

Generally, performed procedure is trimming of the perforation margin and simple closure, which is so far the best technique for single perforation. But in case of multiple perforations and growth leading to obstruction and perforation, other alternatives like wedge resection or resection and anastomosis have been done for better outcome.

Despite the use of varieties of antibiotics wound infection remains the commonest postoperative complication. Selection of antibiotics after blood culture and sensitivity test is recommended.

Complications and mortality are higher in patients of extreme age group and they presented late with haemodynamical instability, co-morbid conditions, and increased perforation-operation interval.

The morbidity and mortality from ileal perforation could be reduced by early patient presentation, early diagnosis of perforation, improved patient care and prompt surgical intervention with closure of perforated site after proper intraoperative decision making .

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