

# Perforations of the Terminal Ileum Secondary to Non-specific Inflammation

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## SUMMARY

*Perforations of the terminal ileum secondary to non specific inflammation are a common surgical emergency. The authors present their experience with 47 patients admitted with clinical and laboratory evidence of ileal perforations. Clinical and laboratory data and results of simple closure versus resection and anastomosis are presented.*

## INTRODUCTION

**P**erforations of the gastrointestinal tract are a common cause of peritonitis requiring urgent surgical intervention. Perforations not resulting from external trauma have been labelled spontaneous or non traumatic perforations<sup>1-3</sup>. The usual site of involvement in these cases is the stomach and duodenum. Spontaneous perforations of the small bowel distal to the duodenum are rarely found in Western countries with high hygienic standards<sup>3</sup>. However, in the third world countries with inferior hygienic conditions, spontaneous perforations due to typhoid, tuberculosis, parasitic disease and non specific inflammation are quite common<sup>4-6</sup>. Review of the literature reveals that non specific inflammation of the terminal ileum is the cause of perforation in a large number of cases<sup>2,6-9</sup>. We present our experience with ileal perforations secondary to non specific inflammation and compare the results of simple closure with resection and anastomosis.

The present study includes 47 consecutive patients reporting to the Accident and Emergency department with symptoms and signs of peritonitis following perforation of the terminal ileum. Patients were randomly assigned to treatment with either simple closure or resection and anastomosis. Final decision regarding simple closure was changed to resection and anastomosis per operatively in 6 patients where extensive friability, multiple perforations and gangrene of the terminal ileum

were found and it was considered unethical to proceed with simple closure as this would have jeopardized the survival of patients. On admission all patients underwent a thorough clinical examination and necessary investigations including Widal test and blood cultures for salmonella typhi were carried out. All patients were referred for laparotomy after resuscitation. Patients in simple closure group had primary closure after freshening of the margins while in the second group of patients resection and end to end anastomosis after resection of the visibly diseased part of the ileum was carried out. Specimens for histopathology were obtained from ulcer margins in the former group while the excised specimen was sent in toto in the later group. All patients received postoperative antibiotics and this factor was excluded from the analysis.

## Statistical analysis

Laboratory parameters were reported as Mean±S.D while postoperative complications were recorded as percentage. Comparison of interval data between simple closure and resection and anastomosis groups was made using an independent sample t-test while complication rates were compared with z-test for proportions. A significance level of 0.05 was chosen for all comparisons.

## RESULTS

This study included 47 patients with 39 males and 8 females giving a male to female ratio of 4.8:1 in

favour of males. The mean age of resection and anastomosis was 37 ( $\pm 17.87$ ) which was 9 years greater than the simple closure group with a mean age of 28.8 years ( $\pm 17.63$ ) but this was not statistically significant ( $p > 0.05$ ).

Clinical features are presented in Table 1. Radiological features are presented in Table 2. Postoperative complications in both groups are presented in Table 3.

**Table 1: Clinical features (n = 47)**

Feature	No. of patients
Pain	47
Fever	39
Distention	45
Diarrhea	25
Vomiting	39
Tenderness	47
Rigidity	43
Dehydration	30
Reduced Liver Dullness	1

**Table 2: Radiological features.**

Features	No.	%
Free Air	4	8.5
Fluid Levels	24	51.1
Both free air & fluid levels	2	4.3
Normal X-ray	17	36.1

**Table 3: Postoperative complications (% age)**

Feature	Simple closure	Resection & anastomosis
Postop fever	44	34
Postop ileus	44	34
Wound infection	33	30
Wound dehiscence	5.5	3.4
Abscess	0	0
Anastomotic leak	0	0
DVT	0	0
Embolism	0	0
Resp tract infection	55	48.2

p value for independent sample t-test > 0.05

Table 4 presents the data on survival in the total sample and both the groups separately.

**Table 4: Prognosis after surgery**

	Survived		Died	
	No.	%	No.	%
Total sample	42	89.3	5	10.7
Simple closure	16	88	2	12
Resection & anastomosis	26	89.7	3	10.3

P value t-test for proportions > 0.05

## DISCUSSION

Spontaneous or non traumatic perforations of the terminal ileum also referred to as idiopathic perforations are a common surgical emergency<sup>2,3,8</sup>. Review of the world literature reveals that these perforations are usually due to typhoid, tuberculosis, Crohn's disease, drug induced, secondary to irradiation, malignancy, foreign bodies and non specific inflammation. Nadkarni et al have reported that non specific inflammatory changes were seen in 56.25% of cases of small bowel perforation<sup>6</sup> while Usman and colleagues have reported 90 cases who were subjected to histopathology and found that 70% were secondary to non specific inflammation<sup>10</sup>. Such perforations have also been termed idiopathic perforations. In the series reported by Chaikoff, 14 of his 76 patients diagnosed to have perforation had non specific inflammation<sup>7</sup>. The present study reports experience with 47 patients who presented with signs and symptoms of intestinal perforation and were treated randomly with either simple closure of perforation or resection and anastomosis. The true nature of the disease resulting in perforation i.e. non specific inflammation was discerned subsequently on histopathology. Analysis of clinical features showed that pain abdomen, tenderness and rebound tenderness, rigidity and vomiting were the most common symptoms and signs in our series while reduced liver dullness to percussion was found in one patient. These features should alert the clinician to the presence of intestinal perforation and the need for surgery.

Mortality figures in this study were comparable

for the two groups and this is surprising as review of the literature reveals a reported mortality with simple closure in non specific inflammatory perforation to be as high as 44.4%<sup>7</sup>. Analysis of postoperative complications in both the groups did not reveal any statistically significant difference. We did not find any case of postoperative abscess or anastomotic leak in our series whereas other workers have reported these complications<sup>6,11</sup>

### Role of radiology

Our study indicates that radiology as a method of detecting perforations based on the classical criteria of free air under the diaphragm is insensitive and hence should not be relied upon excessively. 36% patients in this study had a normal abdominal X-ray. Similar conclusions have been reached by other workers<sup>8-10</sup>.

The authors conclude that

1. Resection and anastomosis and simple closure after freshening of ulcer edges in perforations of the terminal ileum secondary to non specific inflammation yielded comparable results in terms of morbidity and mortality.
2. Radiology was an insensitive method for detection of perforations of the terminal ileum and should not be relied upon excessively.
3. Decision to intervene surgically should be guided by the presence of clinical features of abdominal tenderness, guarding, rigidity and vomiting.

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