

## The Role of Ileostomy in Ileal Perforation and Its Outcome

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### Abstract:

**Background:** Postoperative complications, hospital stay, and mortality observed in all the patients with ileal perforation and comparing surgical procedures in between 1. Primary closure of ileal perforation 2. Primary closure with protective ileostomy 3. Reception and anastomosis of ileal perforation site.

**Materials and Methods:** It is a prospective study of 50 patients admitted to Government General Hospital, Guntur with ileal perforation from January 2019 to December 2020. Group A: patients with ileostomy and Group B: primary repair, which includes primary closure and resection and anastomosis.

**Results:** Of all the postoperative complications, faecal fistula is the most serious complication. In the present study, about 10 cases in primary repair have shown faecal fistula out of which two are seen in patients with resection and anastomosis, and the rest is seen in patients with primary closure. Skin excoriation is the most common complication among patients with ileostomy with an incidence of 10-14% and in the present study, it is seen in 16 patients with an ileostomy. Other complications include wound infection, which is seen in 6 cases with ileostomy and 15 patients with primary repair and ileostomy specific complications which include ileostomy retraction (12%) and prolapse (4%). **Outcome:** Complications overall were noted in 33% of patients in group A and 35% in group B (P-value 0.808). The mean hospital stay for all patients was 17.4 days ranging from 1-60 days. The mean hospital stay for Group A patients was 12.6 days ranging from 1-25 days, and for group B 22.2 days ranging from 5-60 days. (P-value: 0.011). Overall mortality in the present study was 30% with 44% mortality observed in Group B, and 16% in Group A (P-value 0.031). Patients with ileostomy have shown less mortality than in patients with primary repair without ileostomy.

**Conclusion:** Typhoid is the leading cause of ileal perforation accounting 50%, and other causes are tuberculosis and non-specific. Most common symptoms are abdominal pain, vomiting, fever. Early presentation, adequate resuscitation and surgical intervention improve the outcome of the patient. An ileostomy is a preferred choice for patients with the poor general condition and faecal contamination and multiple perforations. Though it is associated with specific complications, proper stoma positioning, and adequate nursing may reduce the complications, and it is the life-saving procedure. Primary repair is preferred for clinically stable patients and minimal contamination.

**Key Words:** ileal perforation, Typhoid fever, primary surgery without ileostomy and primary surgery with a protective ileostomy.

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### I. Introduction

Perforation of the bowel, especially ileal perforation, is one of the leading cause of obscure peritonitis. It is a severe complication and remains a significant surgical problem. It is usually associated with high morbidity and mortality. Typhoid is the most common cause for this dreaded condition; followed by tuberculosis, trauma, and non-specific enteritis. This study evaluates the impact of protective ileostomy in ileal perforation and comparing its outcome in terms of postoperative complications, hospital stay, and mortality with primary surgery without ileostomy and observing its effects on the prognosis of the patient.

### II. Objectives

- To study the incidence of ileal perforation concerning age and sex.
- To study the various causes of ileal perforation.
- To observe the outcomes of the two modalities of treatment primary surgery without ileostomy and primary surgery with a protective ileostomy, and both are compared concerning the following:
  1. Postoperative complications

2. Duration of hospitalstay
3. Mortality

### III. Material And Methods

**Source of data:**It is a prospective study of 50 patients admitted to Government General Hospital, Guntur with ileal perforation from January 2019 to December 2020.

**Criteria for inclusion**

- All patients admitted to Government General Hospital, Guntur that are diagnosed as ilealperforation.
- Patients who have given consent for thestudy.

**Criteria for exclusion**

- Patients below 14 years ofage.
- *Patients who refused to participate in thestudy.*

Sample size: Cases of ileal perforation during the study period (limited to 50)

Group A: patients with ileostomy and Group B: primary repair, which includes primary closure and resection and anastomosis.All the data will be analysed using mean values, standard deviation, standard error and Chi-square test/contingency table analysis. The values thus calculated will be compared at appropriate levels of significance for the corresponding degree of freedom. Suitable software will be employed for theanalysis.

### IV. Result

Fifty patients of ileal perforation admitted between January 2019, to December 2020 were included in the study.

Group A: Patients with a protective ileostomy

Group B: Patients with primary repair includes primary closures of perforation and resection and anastomosis without ileostomy.

**Aetiology**

The most typical cause of ileal perforation was typhoid(25), followed by non-specific(20), tuberculosis(5). Cases of malignancy are not reported.

**Table 1: Etiology of ileal perforation**

Diagnosis	Numberofcases	Percentage
Typhoid	25	50
Non-specific	20	40
Tuberculosis	5	10
Total	50	100

**Figure 1: Etiology of ileal perforation**

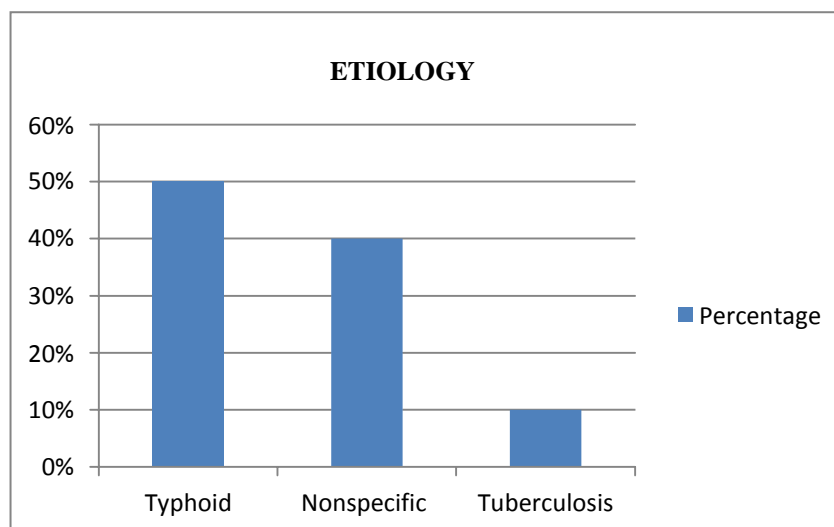
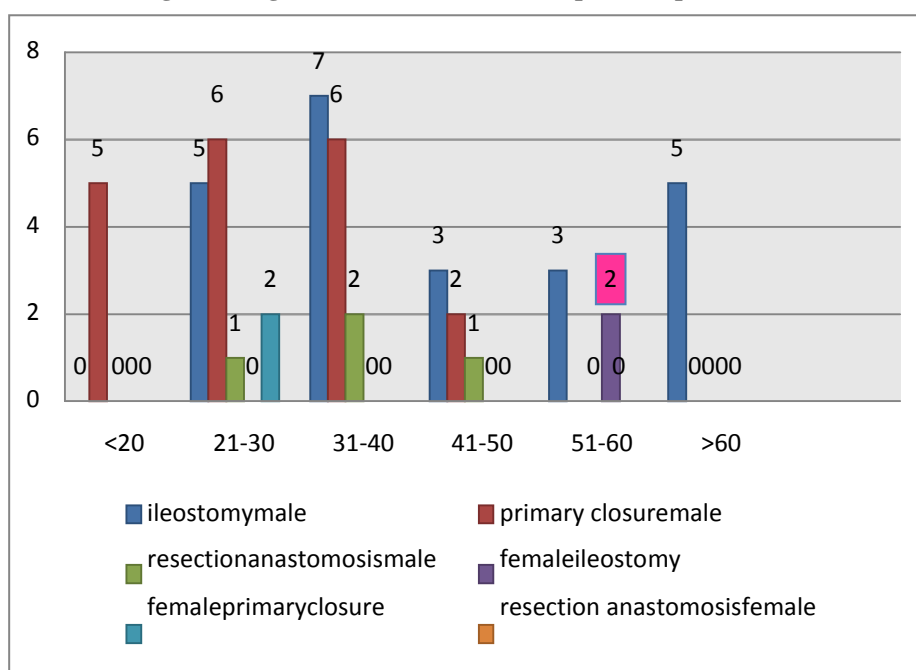


Figure 2: Age and sex incidence with operative procedures



**Symptoms and signs:**

Most of the patients have presented with the features of peritonitis with most typical symptoms were pain abdomen, fever and vomiting. The most typical signs were abdominal tenderness, guarding and rigidity, absent bowel sounds, abdominal distension and obliteration of liver dullness.

Table 2: Symptoms at the time of presentation

Symptoms	Number of cases	Percentage
Pain abdomen	50	100
Fever	33	66
Vomiting	24	48
Constipation	14	28
Diarrhoea	10	20

Table 3: Signs of hollow viscous perforation

Signs	Number of cases	Percentage
Dehydration	12	24
Abdominal tenderness	49	98
Guarding/Rigidity	44	88
Abdominal distension	24	48
Obliteration of liver dullness	20	40
Absent bowel sound	32	64

**Investigations :**

**X-ray:** Erect X-ray abdomen was taken immediately after the clinical suspicion of hollow viscous perforation for all the cases to look for gas under the diaphragm. It was found in 43(86%) cases in our study.

**Widal:** Widal was done in all the patients whom ileal perforation was diagnosed per-operatively. Widal was positive in 24 out of 25 cases of typhoid.

**Table 4: Investigations**

Investigations	Number of cases	Percentage
X-ray	43	86
Widal	24	48

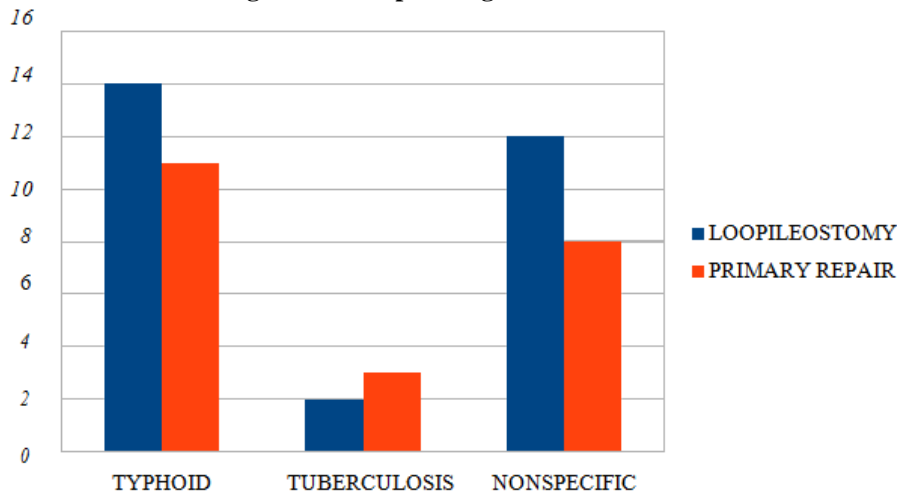
**Histopathological examination:**

Majority of HPE reports suggestive of typhoid (50%). A diagnosis of tuberculosis was made in 5 cases, and the rest of the cases showed features of non-specific inflammation with no conclusive diagnosis.

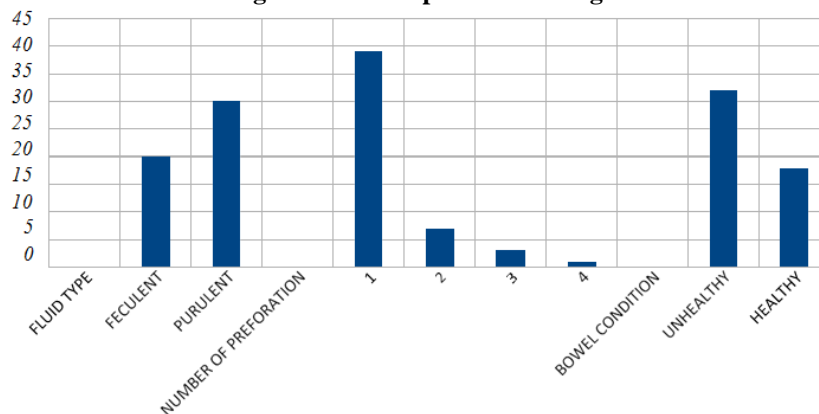
**Table 5: Histopathological examination:**

Histopathological examination	Number of cases
Typhoid	25
Tuberculosis	5
Non-specific	20

**Figure 3: Histopathological examination**



**Figure 4: Intra-operative findings**



**Table 6: Postoperative complications**

Complications	GroupA(ileostomy)n= 25		GroupB(Primaryrepair)n=25	
	No.ofpatients	Percentage	No.ofpatients	Percentage
Wound infection	6	24	15	60
Wound dehiscence	2	8	9	36
Skin excoriation	16	64	-	-
Ileostomy prolapse	1	4	-	-

Ileostomy retraction	3	12	-	-
Electrolyte imbalance	5	20	1	4
Faecal fistula	-	-	10	40
Death	4	16	11	44

**Table 7: Postoperative complications of the operative procedures**

Complications	Ileostomy	Primary repair	Resection and anastomosis
Wound infection	6	14	1
Wound dehiscence	2	8	1
Skin excoriation	16	-	-
Stoma prolapse	1	-	-
Stoma retraction	3	-	-
Electrolyte imbalance	5	1	-
Leak or Faecal fistula	-	8	2
Mortality	4	9	2

Of all the postoperative complications, faecal fistula is the most serious complication. In the present study, about 10 cases in primary repair have shown faecal fistula out of which two are seen in patients with resection and anastomosis, and the rest is seen in patients with primary closure. Skin excoriation is the most common complication among patients with ileostomy with an incidence of 10-14% and in the present study, it is seen in 16 patients with an ileostomy. Other complications include wound infection, which is seen in 6 cases with ileostomy and 15 patients with primary repair and ileostomy specific complications which include ileostomy retraction (12%) and prolapse (4%).

**Outcome:**

Complications overall were noted in 33% of patients in group A and 35% in group B (P-value 0.808).

The mean hospital stay for all patients was 17.4 days ranging from 1-60 days. The mean hospital stay for Group A

patients was 12.6 days ranging from 1-25 days, and for group B 22.2 days ranging from 5-60 days. (P-value: 0.011).

Overall mortality in the present study was 30% with 44% mortality observed in Group B, and 16% in Group A (P-value 0.031). Patients with ileostomy have shown less mortality than in patients with primary repair without ileostomy. About nine cases in primary closure and two in patients with resection anastomosis have succumbed to death.

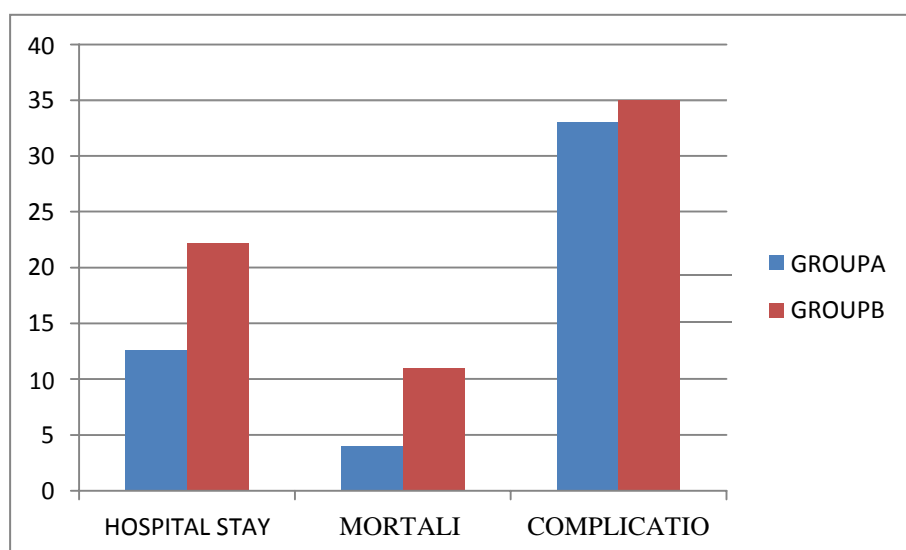
**Table 8: Outcome of operative procedures**

Type of procedure	No. of cases	No. of deaths	Percentage
Primary closure without ileostomy	21	9	43%
Resection and anastomosis	4	2	50%
Ileostomy with primary repair	25	4	16%

**Table 9: Outcome of the study**

Outcome	Group A	Group B	P-value	Significant
Hospital stay	12.6 days	22.2 days	0.011	Yes
Mortality	16%	44%	0.031	Yes
Complications	33%	35%	0.808	No

Figure 5: Outcome of the study



### V. Discussion

Typhoid fever is the predominant cause of non-traumatic ileal perforation while other causes include tuberculosis, non-specific inflammation, radiation enteritis, Crohn's disease and obstruction.

Table 10: Comparison of aetiology of ileal perforation

Aetiology	Current study	Wani et al
Typhoid	50%	62%
Non specific	40%	26%
Tuberculosis	10%	4%
Obstruction	-	6%
Radiation enteritis	-	1%

In a series of 79 patients of non-traumatic ileal perforation by Wani et al., typhoid and non-specific inflammation were found to be leading causes with the incidence of 62% and 26% cases respectively<sup>82</sup>. In this study, typhoid fever accounts 25 cases (50%), followed by non-specific inflammation and tuberculosis, which accounted for 20 (40%) and 5 (10%) respectively. Bhalariao, Karmakar in their study, reported the same findings with typhoid fever and non-specific inflammation being the most common causes of ileal perforation<sup>70</sup>.

#### Age and sex incidence:

There was a male preponderance in this study with a male: female ratio being 23:2. Published literature shows a similar finding with reported ratios from 2.3:1 to 6.1:1. The age of the patients ranged from 17 to 75 years. It is common in the second and third decades of life, with 58% of patients between 20 and 40. About 12 patients underwent ileostomy, and 14 patients underwent primary closure, and 3 underwent resection and anastomosis in the age group of 20-40 yrs. Most of the patients in the study have presented with features suggestive of peritonitis. Pain abdomen (100%), fever (66%) and vomiting (48%) were the most typical symptoms. The most consistent is pain abdomen and seen in all cases in our study and it is 100%, 97% in Abdul Ghaffur et al., Chowdhury et al., respectively.

Table 11: Comparison of symptoms at presentation

Symptoms	Current study	Abdul Gahffur Ansari et al	Chowdhury et al
Pain abdomen	100.00%	100.00%	97.00%
Fever	66.00%	100.00%	97.00%
Vomiting	48.00%	27.30%	65.00%
Constipation	28.00%	9.10%	72.00%
Diarrhoea	20.00%	11.40%	-

## VI. Conclusion

Typhoid is the leading cause of ileal perforation accounting 50%, and other causes are tuberculosis and non-specific. Most common symptoms are abdominal pain, vomiting, fever. Early presentation, adequate resuscitation and surgical intervention improve the outcome of the patient. An ileostomy is a preferred choice for patients with the poor general condition and faecal contamination and multiple perforations. Though it is associated with specific complications, proper stoma positioning, and adequate nursing may reduce the complications, and it is the life-saving procedure. Primary repair is preferred for clinically stable patients and minimal contamination.

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