



## A Comparative Study between the Outcome of Primary Repair Versus Ileostomy in Ileal Perforation: Our Institutional Experience

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### Abstract

**Background:** *In emergency surgery, ileal perforation is commonly encountered. Management of ileal perforation can be either by primary repair or ileostomy. The decision regarding repair or stoma is controversial. Therefore, in this study we reviewed our institutional experience regarding the ideal management of ileal perforation and its associated morbidity.*

**Aims and Objectives:** *To study the management of ileal perforation and to evaluate and compare the outcome of primary repair and ileostomy in ileal perforation with respect to the preoperative parameters, post operative complications and mortality and also to find the ideal procedure.*

**Methods:** *This is a prospective comparative study done from June 2017 to May 2019. 30 cases with ileal perforation were included. Informed consent was taken. Patients were divided into two groups, group A and group B namely. Group A underwent primary repair and group B underwent ileostomy. All patients between 18 years to 75 years presenting with ileal perforation were included in the study. Emergency cases other than ileal perforation were excluded.*

**Results:** *The most common age group involved was 46-60 years. There were 24 males and 6 females. Out of 30 patients of the study, 14 patients underwent primary repair and 16 patients underwent ileostomy. Most common complication is leak in primary repair. Stoma related complications occurred in 2 cases. Mortality rate was higher in primary repair group in this study.*

**Conclusion:** *Despite of various procedures, mortality and morbidity is high in emergency bowel surgery. Over all, the main determine to do primary repair or ileostomy is the general condition of the patient.*

**Keywords:** *Primary repair, stoma, diversion, ileal perforation, ileostomy.*

### Introduction

Perforation is said to occur once pathology extends through the full thickness of the hollow viscus leading to peritoneal contamination with intraluminal contents. Intestinal perforation can occur anywhere from duodenum to rectum<sup>1</sup>. One

of the common surgical emergency is ileal perforation peritonitis. It is the fifth common cause of abdominal emergencies. It can be due to trauma or secondary to inflammatory process.

Patients may present with abdominal pain, vomiting, abdominal distension, fever,

constipation. Patients may have signs of hypovolemia, electrolyte imbalance, signs of tenderness, peritonitis, or shock.

The following operative procedures were advocated by various authors:

- i. Simple primary repair of the perforation<sup>4</sup>
- ii. Perforation repair and ileotransverse anastomosis
- iii. Primary ileostomy<sup>5,6</sup>
- iv. Resection and anastomosis<sup>7</sup>

Hence, management of ileal perforation can be either by primary repair or ileostomy. Primary repair is the approximation of the cut edges of bowel segment. Ileostomy is exteriorisation of the ileal segment. Despite of various procedures, mortality and morbidity is high in ileal perforation<sup>2,3</sup>. The decision regarding the type of surgery needs to balance the risk of an anastomotic dehiscence to the inconvenience of bowel exteriorisation. It depends on the combination of variables such as age of the patient, associated comorbid conditions, time of presentation, and intra-operative adverse patient condition.

### Aims and Objectives

- To study the management of ileal perforation.
- To evaluate and compare the outcome of primary repair versus ileostomy in cases of ileal perforation with respect to the preoperative parameters, post operative complications and mortality.

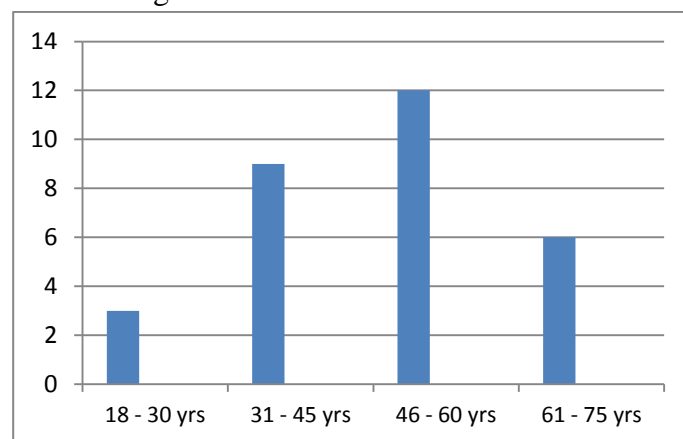
### Materials and Methods

This is a prospective comparative study, with a study sample of 30 cases with ileal perforation, done in the period from June 2017 to May 2019. Informed consent was taken. Patients were divided into two groups, group A and group B namely. Group A underwent primary repair and group B underwent ileostomy. All patients between 18years to 75 years presenting with ileal perforation were included in the study. Emergency cases other than ileal perforation were excluded.

Patients demographic data, detail history taking and clinical examination is done. All the patients underwent investigations like complete blood counts, renal function tests, serum electrolytes, X-ray chest and x ray erect abdomen. Ultrasound abdomen was done when necessary. Air under diaphragm in x ray erect abdomen was confirmative of hollow viscus perforation. Ileal perforation was confirmed intraoperatively. After adequate resuscitation and high risk consent patients were taken up for emergency surgery under anaesthesia. Broad spectrum antibiotics were given prior to surgery in both the groups. The lag period from onset of symptoms to presentation, fecal soiling and volume of peritoneal fluid, nature of bowel wall were recorded. All the cases of both the groups were carried with same surgical technique respectively. Post operative complications like wound infection, leak and stoma related complications were evaluated. Mortality was taken into consideration .All these parameters were compared and results obtained.

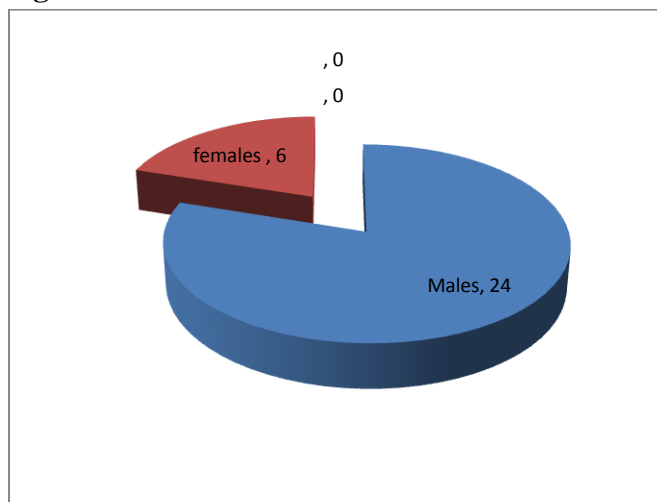
### Results

**Table 1:** Age distribution



Age distribution was from 18 to 75 years. The most common age group involved was 46-60 years. The mean age in group A was 38.36 and in group B was 52.14.

**Figure 1:** Sex distribution



In this study, a male predominance was observed with 24 males and 6 females (male to female ratio 4:1).

**Table 2:** Clinical features

SYMPTOMS	NO. OF PATIENTS	PERCENTAGE
Pain abdomen	30	100
Vomiting	18	60
Abdominal distension	24	80
Fever	3	10
Constipation	2	6.67

All cases had pain abdomen. 18 cases had vomiting, 24 had abdominal distension. Fever was present in 3 cases. Only 2 cases had constipation.

**Table 3:** Groups

Group A (n=14)	Patients who underwent primary repair
Group B (n=16)	Patients who underwent ileostomy

Out of 30 patients of the study, 14 patients, Group A underwent primary repair and 16 patients, Group B underwent ileostomy.

**Table 4:** Preoperative and intraoperative factors

FEATURES	Group A	Group B
Mean age	38.36 yrs	52.14yrs
Anemia(Hb<10g/dl)	5 (35.7%)	12(75%)
<6hrs	8(57.2%)	3(18.75%)
>6hrs	6(42.8%)	13(81.25%)
Sepsis	3(21.4%)	4(25%)
Septic shock	0	7(43.75%)
Other comorbidities	2(14.2%)	8(50%)
Fecal contamination	2(14.2%)	11(68.75%)

Most of the cases who were elderly, presented late, have comorbidities, hemodynamically unstable with massive feculent intra peritoneal contamination underwent ileostomy. Those cases who presented early, had no comorbidities, hemodynamically stable with minimal fecal soiling underwent primary repair.

**Table 5:** Complications

Complications	Group A	Group B
Wound infection	3	4
Leak	4	-
Respiratory complications	3	-
Stoma related complications	-	2

Wound infection is the most common complication in this study with more cases in group B

Leak occurred in 4 cases which is the most common complication in group A. Stoma related complications occurred in 2 patients.

**Table 6:** Mortality

	COMPLICATIONS	MORTALITY
GROUP A	8(57.14%)	3(21.4%)
GROUP B	4(25%)	1(6.25%)

Overall, 8 cases had complications in group A while only 4 had complications in group B. Mortality rate was higher in group A (21.4%) where as only 1 case in group B expired.

**Discussion**

Bowel perforation peritonitis is a common surgical emergency in India with ileal perforation being fifth common abdominal emergency .There is a rapid downhill course with a high mortality if not treated.

The most common cases involved are in middle age with male preponderance (male:female is 4:1) which is similar to the ratio reported by Wani et al, Talwar et al<sup>8</sup>, Beniwal et al. Majority of patients were in the age group 46-60(40%).

Time between onset of symptoms and presentation in hospital is an important prognostic factor. An early presentation holds a good prognosis. In this study majority of the patients presented late after a lag period of 6 hrs. Majority of patients who presented late underwent ileostomy which is

comparable to study done by Rahman et al. An advanced lag period is associated with deterioration of general condition of patient and increased peritoneal contamination. These two factors, warrant an exteriorisation of bowel as put forward by Rasslan S et al which is comparable to this study<sup>9</sup>.

In this study, the outcome of primary repair versus ileostomy in ileal perforation is compared in terms of preoperative variables, complications and mortality. The morbidity was higher in patients who underwent primary repair as compared to patients who underwent ileostomy in our study, but this was not statistically significant. The most common complication in this study is wound infection followed by leak. Leak occurred in 4 patients, subsequently reoperation was done in 3 cases. 1 patient expired prior to re operation. The leak rates of our study are comparable to the results of Jain BK *et al.* Stoma related complications occurred only in 2 patients. Parastomal skin excoriation was managed by patient education, use of skin protectants and changing from adhesive collecting systems to belt held pouches. Stomal necrosis occurred in 1 patient. Mortality in group A is 21.4% (3cases) while in group B it is 6.25% (1 case) which is in contradiction to the study by Eggleston that reported the procedure done did not influence outcome. In this study high mortality rate was attributed to delayed presentation, inadequate antibiotic treatment prior to admission, severe peritoneal contamination and presence of postoperative complications. In this series the outcome of best results in terms of mortality, morbidity and post-operative complications were found to be in patients with stoma<sup>10</sup>.

### Conclusion

Decision regarding the ideal surgery for managing an enterotomy in a patient, is best governed by a combination of pre-operative and intra-operative parameters. Choosing the best method minimises short term complications and long term morbidities.

Patients who present late, elderly, anaemic, having other comorbidities, who are hemodynamically unstable along with feculent intraperitoneal collection and edematous bowel wall are best managed by ileostomy. Primary repair is a preferred technique in clinically stable patients with no comorbidities who present early with minimal soiling of the abdominal cavity. Morbidity and mortality is higher in patients who underwent primary repair.

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