*IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*
*e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 18, Issue 9 Ser.14 (September. 2019), PP 55-59*
*www.iosrjournals.org*

# To Study the Outcome of Patients of Primary Closure Versus Ileostomy In Ileal Perforation

Amit Kumar[1] MBBS, Kapil Vats[1] MBBS,
Bhavinder Kumar Arora[2] MS FIAMS FAIS
[1]*Junior Resident Department of Surgery, Pt. BD Sharma PGIMS Rohtak-124001*
[2]*Professor Department of Surgery, Pt. BD Sharma PGIMS Rohtak-124001*
*Corresponding Author: Amit kumar*

***Abstract***
***Introduction:*** *Gastrointestinal perforations are one of the most common surgical emergencies encountered in Indian subcontinent and tropical countries.In Indian sub-continent, the most common cause is secondary to typhoid, tuberculosis or non-specific enteritis. In spite of advances in surgical techniques ileal perforation still has high morbidity and mortality. Thus, this study was conducted to account various pros and cons of both the procedures (i.e. primary closure and ileostomy) along with postoperative complications, mortality, and morbidity and to establish a management modality in terms of reduced postoperative complications, morbidity, and mortality.*
***Methods:*** *This was a prospective study conducted in Department of General Surgery, Pt. B.D. Sharma University of Health Sciences, Rohtak between September 2017 to December 2018. A total of 100 patients were included in the study. Diagnosis was made on the basis of the X-ray erect abdomen, ultrasound abdomen, Widal test and intra- operative findings. The surgical management was done as primary repair or ileostomy. Postoperative complications in each group was recorded and analysed.*
***Results:*** *In our study, majority of the patients were in the age group ≤ 30 years (46 patients). The incidence in males was greater than females. . In majority of patients chief complaint was pain in abdomen (42.00%), followed by fever (26.00%). Out of 100 patients, Widal test was positive in 34 patients. The overall most common post- operative complication was wound infection (38%), followed by burst abdomen(26%). Complications of primary closure were wound infection in 42.86% patients; anastomic leak in 38.10%; burst abdomen in 33.33%; systemic complication in 23.81%; chest infection in 19.05%; abscess in 14.29%; and fecal fistula in 14.29% patients. Complications in ileostomy group were wound infection in 34.48% patients; burst abdomen in 20.69%; chest infection in 17.24%; systemic complication in 17.24%; and abscess in 3.45% patients.*
***Conclusion:*** *Among the patients treated with primary closure mortality was in 19.05% and in ileostomy was 6.90%. Therefore this study proposes that in debilitated patients ileostomy may be given priority.*
***Keywords:*** *Enteric perforation, Primary closure, Ileostomy*

---

Date of Submission: 13-09-2019 Date of Acceptance: 01-10-2019

---

## I. Introduction

Ileal perforation is one of the common problems encountered in tropical countries. It is caused due to many causes. The most common among them is enteric fever followed by tuberculosis. Trauma continues to be the most frequent reason for high morbidity and mortality [1]. In spite of the availability of modern diagnostic facilities and advancement in treatment regimens, this condition is still found to be associated with high mortality and morbidity in tropical countries such as India. Preoperative resuscitation, antibiotic therapy, and total parental nutrition reduced the mortality from 28.5% to 10%, but serious complications of ileal perforation poses challenge to surgeons [2].

For the management of ileal perforations, numerous modalities are suggested. These range from conservative management to many other surgical modalities such as simple primary repair of perforation;repair of perforation with ileo-transverse colostomy; primary ileostomy;single layer repair with an omental patch;resection and anastomosis[3-8]. The studied procedures also include a diversion in some studies in the form of a diversion ileostomy or an ileo-transverse bypass [9]. The dilemma faced by a surgeon in case of an emergency surgery is to strike a right balance to accomplish an optimum outcome. The decision related to the type of surgery requires balancing the risk of an anastomotic dehiscence to the inconvenience of bowel exteriorization. Thus, this study was conducted to account various pros and cons of both the procedures i.e. primary closure and ileostomy along with postoperative complications, mortality, and morbidity and to establish

a management modality in terms of reduced postoperative complications, morbidity, and mortality.Aims and objective of this study is to compare ileostomy and primary repair for treating ileal perforations.

## II. Material and methods

This prospective study was conducted in the Department of General Surgery, Pt. B.D. Sharma University of Health Sciences, Rohtak on a total of 100 patients from 1 September 2017- 31 December 2018.

**Inclusion Criteria**

1. Single / multiple ileal perforation
2. Enteric ileal perforation
3. Traumatic ileal perforation

**Exclusion Criteria**

1. Children below 12 years
2. Patients presenting with shock/ hemodynamic instability

**Procedure methodology**

Detailed history taking and clinical examination was done in patients presenting with clinical picture suggestive of perforation peritonitis. Patients were further investigated with relevant haematological and radiological investigations like Widal test, erect abdominal radiograph and ultrasound. Antibiotics were given in all patients after admission to hospital and before surgery. The diagnosis of ileal perforation was confirmed intraoperatively. From the edge of perforation, the biopsy was taken and sent for histopathological examination.

The surgical management was done as primary repair in cases of healthy bowel or ileostomy in cases with gross faecal contamination. Primary closure was done in two layers, the inner layer was closed with 3-0 poly glycolic acid and outer layer was closed with silk 3-0. Ileostomy was done. Patients were followed up from admission to discharge for a minimum period of 3 months.

Postoperative complications in each group like wound infection, wound dehiscence, intraabdominal abscess, stricture of anastomosis site, faecal fistula, peritonitis, septicaemia, ileostomy related complications, paralytic ileus, intestinal obstruction and mortality were evaluated.

**Statistical analysis**

Data was recorded on a predesigned Performa. Qualitative data was analyzed using chi-square test and quantitative data through Student's *t*-testIn this study, all the inferences were obtained at 5% level of significance and hence *P* value < 0.05 was considered as statistically significant.

## III. Results

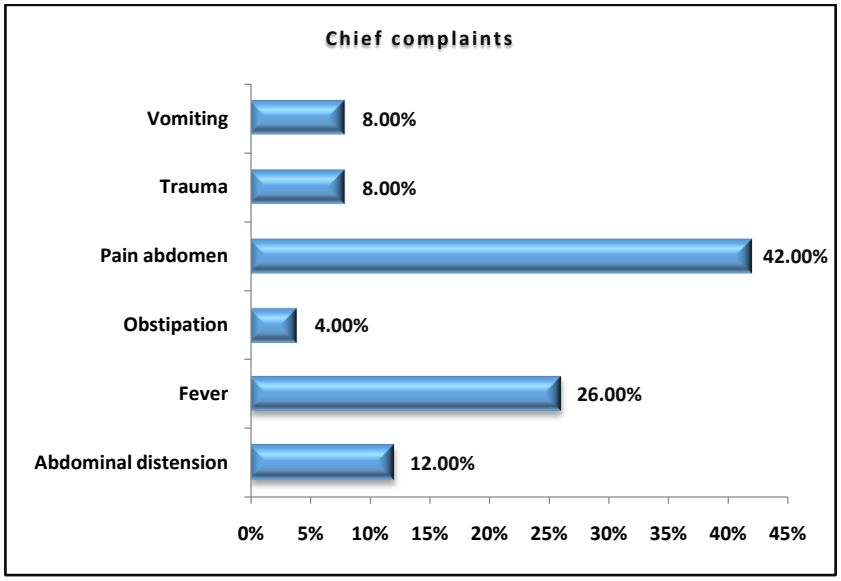
This study showed that based on histopathological report of the patients 80.00% of the patients had non-specific inflammation, 12.00% had typhoid enteritis, and 8.00% had tuberculosis as the cause of ileal perforation.The mean age of patients in our study was 32.06 ± 9.53 years. Majority of the patients (46.00%) belonged to age group of ≤ 30 years. Out of the total 100 patients, 86 were males and 14 were females.

**Chief complaints**

In majority of patients (42.00%) chief complaint was pain in abdomen, followed by fever (26.00%), abdominal distension (12.00%), trauma (8.00%), vomiting (8.00%), and obstipation (4.00%) (Table 1).

**Table 1:-**Chief complaints of study subjects

| Chief complaints | Frequency | Percentage |
|---|---|---|
| Abdominal distension | 12 | 12.00% |
| Fever | 26 | 26.00% |
| Obstipation | 4 | 4.00% |
| Pain abdomen | 42 | 42.00% |
| Trauma | 8 | 8.00% |
| Vomiting | 8 | 8.00% |
| Total | 100 | 100.00% |




**Clinical and radiological findings**

Most of patients presented in>48 hours. In 34.00% patients, gas under diaphragm was seen. X-ray was normal in 16.00% of patients.Widal test was positive in 34 patients.

**Operative findings**

Out of 100 patients,ileostomy was performed in 58.00% patients and primary repair was done in 42.00% of the patients.

**Post- operative complications**

Wound infection is the most common post -operative complication(38.00%), followed by burst abdomen and systemic complication. (Table 2)

**Table 2:-**Post operative complications of study subjects

| Post operative complications | Frequency | Percentage |
|---|---|---|
| Chest infection | 18 | 18.00% |
| Wound infection | 38 | 38.00% |
| Burst abdomen | 26 | 26.00% |
| Abscess | 8 | 8.00% |
| Anastomic leak | 16 | 16.00% |
| Systemic complication | 20 | 20.00% |
| Faecal fistula | 6 | 6.00% |

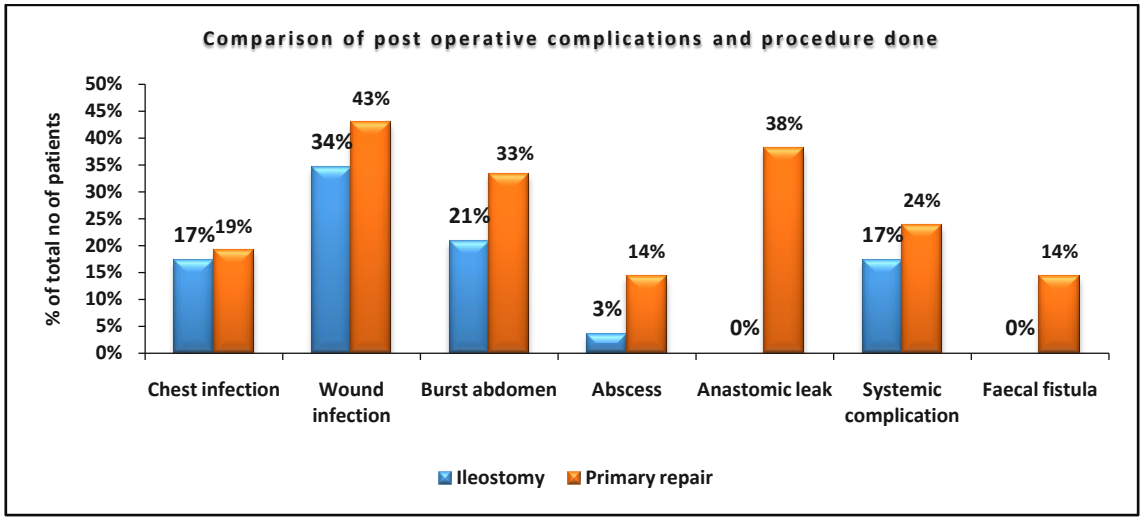
**Comparison of post-operative complications and procedure done**

In patients in whom ileostomy was performed, postoperative complications were as follows: wound infection in 34.48% patients; burst abdomen in 20.69%; chest infection in 17.24%; systemic complication in 17.24%; and abscess in 3.45% patients.

In patients in whom primary repair was performed, postoperative complications were as follows: wound infection in 42.86% patients; anastomic leak in 38.10%; burst abdomen in 33.33%; systemic complication in 23.81%; chest infection in 19.05%; abscess in 14.29%; and fecal fistula in 14.29% patients. (Table 3)

**Table 3:-**Comparison of post-operative complications and procedure done

| Post operative complications | Procedure done | | Total | P value |
|---|---|---|---|---|
| | Ileostomy | Primary repair | | |
| Chest infection | 10 (17.24%) | 8 (19.05%) | 18 (18.00%) | 0.817 |
| Wound infection | 20 (34.48%) | 18 (42.86%) | 38 (38.00%) | 0.394 |
| Burst abdomen | 12 (20.69%) | 14 (33.33%) | 26 (26.00%) | 0.155 |
| Abscess | 2 (3.45%) | 6 (14.29%) | 8 (8.00%) | 0.066 |
| Anastomic leak | 0 (0.00%) | 16 (38.10%) | 16 (16.00%) | <.0001 |
| Systemic complication | 10 (17.24%) | 10 (23.81%) | 20 (20.00%) | 0.418 |
| Faecal fistula | 0 (0.00%) | 6 (14.29%) | 6 (6.00%) | 0.004 |




**Mortality and hospital stay**

In patients in whom ileostomy was performed, mortality rate was 6.90%. Mortality was 19.05% in patients who underwent primary repair. Mean duration of hospital stay was 13.66 ± 4.51 daysin whom ileostomy was performed and 9.62 ± 3.24 years in whom primary repair was performed.

## IV. Discussion

Ileal perforations are caused by several causes such as trauma, tuberculosis, etc. In the developing countries, typhoid fever is most common cause of ileal perforation and its complications, which pose a challenge to the surgeons. If not treated in time, perforation may lead to high morbidity and mortality [10-11].

In spite of advancement in treatment regimens and availability of modern diagnostic facilities, this disease has an abrupt onset and a high mortality, if not treated [12]. Onset of the symptoms and time of presentation in the hospital are the important prognostic factors. An early presentation to hospital holds a good prognosis, even with primary repair of the perforation.

In this study, the mean age of the patients was 32.06 ± 9.53 years. Majority of the patients were in the age group ≤ 30 years. Our age distribution was in concordance with studies by Malik et alwho reported that maximum number of patients were in the age group 31-40 years [13].

In our study on ileal perforations, there were 86 males and 14 females. In a study by Pujar et al80% patients were male [14]. Similar study by Khalilur et al included 71.42% males and 28.57% females. It is a common finding that being male is an independent risk factor for intestinal perforation [15].

In our study, in majority of patients (42.00%) chief complaint was pain in abdomen, followed by fever (26.00%). Similar study by Khalilur et alout of 28 patients, abdominal pain was present in all patients, fever in 16 patients, vomiting in 17 patients, and distension in 26 patients [15]. Findings of these studies are similar to that of our study as most of the patients presented with features suggestive of peritonitis in all studies.

Onset of symptoms and time of presentation in the hospital are important prognostic factors. An early presentation holds a good prognosis. Unfortunately, in developing countries, the presentation to hospital is usually late with fully blown peritonitis, some cases may present with septicemia and multi-organ failure.

In our study, time of presentation in 60.00% of patients was>48 hours. In a similar study by Mittal et almajority of the patients, i.e. 83.33% presented within 72 hours of perforation [16]. Findings of these studies are similar to that of our study.

On radiological examination, in 50.00% of patients free fluid in abdomen was seen. In 34.00% patients, gas under diaphragm was seen. As per study by Khalilur et alfree gas was seen under diaphragm in 71.4% of the perforations. A plain abdominal or chest radiograph with free air under diaphragm is a fairly frequent but variable finding significant hollow viscus perforation, but its absence does not exclude the diagnosis [15].

Out of 100 patients, Widal test was positive in 34% patients. In a study by Pujar et al widal was positive in 80% patients [14]. In a study by Khalilur et al,widal test was positive in 53.5% cases [15]. In developing countries, Widal test is used for diagnosing typhoid fever. But, it has low sensitivity, specificity, and positive predictive value which changes with geographical area.

In patients in whom ileostomy was performed, postoperative complications were as follows: wound infection in 34.48% patients; burst abdomen in 20.69%; chest infection in 17.24%; systemic complication in 17.24%; and abscess in 3.45% patients. In patients in whom primary repair was performed, postoperative complications were as follows: wound infection in 42.86% patients; anastomic leak in 38.10%; burst abdomen in 33.33%; systemic complication in 23.81%; chest infection in 19.05%; abscess in 14.29%; and fecal fistula in

14.29% patients. No significant difference was seen in the procedure performed and postoperative complications(P >.05) except in case of anastomic leak and fecal fistula (P < .05) which was seen only with primary repair and not seen with ileostomy. In a study by Khalilur et al wound infection was the most common complication, with a complication rate of 21.4%. Five patients of primary closure did not have any post-operative complications while 9 patients of ileostomy group were without complications [15]. This is similar to our study as wound infection was the most commonly found postoperative complication in our study also.

Mean duration of hospital stay in patients in whom ileostomy was performed was 13.66 ± 4.51 years and in patients in who underwent primary repair was 9.62 ± 3.24 years. Significant difference was seen in the procedure performed and duration of hospital stay(P<.0001). Mittal et al in their study reported the average duration of hospital stay in patients who underwent primary closure was 14.3 days as compared to 21.53 days in patients with ileostomy that included ileostomy closure [16].Ileostomy-specific complications may increase post-operative hospital stay of the patient.

Mortality rate in patients in whom ileostomy was performed was 6.90% and that of primary repair was 19.05%. No significant difference was seen in the procedure performed and mortality.(P>0.05).Similar study by Mittal et al reported that there was no mortality in their study [16]. This is in contrast to our study as overall mortality in our study was 12%. The reasons for high mortality may be multiple perforations, delayed presentation, inadequate antibiotic treatment prior to admission, severe peritoneal contamination, and presence of post-operative complications.

## V. Conclusion

Ileostomy may be given priority over other surgical options, mainly in the moribund patients who present late in course of their illness, or have more than one perforation with massive fecal contamination of abdominal cavity. Primary repair of the perforation can be preferred in clinically stable patients with single perforation with minimum soiling of abdominal cavity.

This study also proposes that ileostomy may be adopted technique in cases of ileal perforation as it doesn't have life threatening complications like fecal fistula and anastomic leak; thereby reducing the mortality in such patients; however the duration of hospital stay is higher in ileostomy group as compared to primary repair, which is due to ileostomy-specific complications.

## References


[1]. Ajao OG. Typhoid perforation, factors affecting morbidity and mortality. Int Surg 1982;67:317-319.
[2]. Voermans RP, Le Moine O, von Renteln D, Ponchon T, Giovannini M, Bruno M, et al. Efficacy of endoscopic closure of acute perforations of the gastrointestinal tract. Clin Gastroenterol Hepatol 2012;10(6):603-608.
[3]. Huckstep RL. Recent advances in the surgery of typhoid fever. Ann R Coll Surg Engl 1960;26:207-210.
[4]. Turnbull RB, Weakley FL. Ileostomy technics and indications for surgery. Rev Surg 1966;23(5):310-314.
[5]. Ahmed HN, Niaz MP, Amin MA, Khan MH, Parhar AB. Typhoid perforation still a common problem: situation in Pakistan in comparison to other countries of Low Human Development. J Pak Med Assoc 2006;56(5):230-232.
[6]. Phang PT, Hain JM, Perez-Ramirez JJ, Madoff RD, Gemlo BT. Techniques and complications of ileostomy takedown. Am J Surg 1999;177(6):463-466.
[7]. Adang EM, Engel GL, Rutten FF, Geerdes BP, Baeten CG. Cost-effectiveness of dynamic graciloplasty in patients with fecal incontinence. Dis Colon Rectum 1998;41(6):725-733. discussion 733-734.
[8]. Wong KS, Remzi FH, Gorgun E, Arrigain S, Church JM, Preen M, et al. Loop ileostomy closure after restorative proctocolectomy: outcome in 1,504 patients. Dis Colon Rectum 2005;48(2):243-250.
[9]. Ambikavathy M, Bhaskaran A, Kumar S, Uday KM, Sathiadev. Nontraumatic ileal perforation: Surgical experience in rural population in Indian scenario. Int J Biomed Adv Res 2013;4(1):47-55.
[10]. Saxena V, Basu S, Sharma CL. Perforation of the gall bladder following typhoid fever-induced ileal perforation. Hong Kong Med J 2007;13:475-477.
[11]. Farooq T, Rashid MU, Lodhi MF, Farooq A, Ahmad S. Enteric ileal perforation primary repair versus loop ileostomy. Infection 2011;3(13):9.
[12]. Sharma AK, Sharma RK, Sharma SK, Sharma A, Soni D. Typhoid intestinal perforation: 24 perforations in one patient. Ann Med Health Sci Res 2013;3:S41-3.
[13]. Malik AM, Laghari AA, Mallah Q, Qureshi GA, Talpur AH, Effendi S, et al. Different surgical options and ileostomy in typhoid perforation. World J Med Sci 2006;1(2):112-116.
[14]. Pujar AK, Ashok AC, Rudresh HK, Srikantaiah HC, Girish KS, Suhas KR. Mortality in typhoid intestinal perforation-A declining trend. J Clin Diagnostic Res 2013;7(9):1946-1948.
[15]. Khalilur RA, Krishnaswamy J, Muthukumaran G, Prakash JS.A comparative study on outcome of ileal perforation after primary perforation closure and resection and ileostomy. Int Surg J 2018;5(2):445-451.
[16]. Mittal S, Singh H, Munghate A, Singh G, Garg A, Sharma J. A comparative study between the outcome of primary repair versus loop ileostomy in ileal perforation. Surg Res Pract 2014;2014:729018.


Amit Kumar. "To Study the Outcome of Patients of Primary Closure Versus Ileostomy In Ileal Perforation." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 18, no. 9, 2019, pp 55-59.