

Original Research Article

A Comparative Study of Morbidity and Mortality in Typhoid Ileal Perforation with Primary Repair or With Ileostomy

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ABSTRACT

Background & Methods: The aim of the study is to compare study of morbidity and mortality in typhoid ileal perforation with primary repair or with ileostomy. Postoperative events were recorded for one week till the patient is discharged. Outcome of two procedures i.e. wound infection and other complications i.e. wound dehiscence and septicaemia was also noted.

Results: All the patients presented with pain which started in lower abdomen and radiated to involve whole abdomen is 100%. The average duration of pain was 4 days. 98% of patients presented with fever with duration of average 12 days. Fever preceded the abdominal symptoms in these patients. Morbidity was found more in Ileostomy, which was related to ileostomy related complication (p value 0.031). Two patient in Primary repair 1 and three patient in group 2 expired accounting for mortality

Conclusion: Early repair of the perforation is a better procedure than temporary ileostomy in enteric perforation due to its cost effectiveness and absence of complications related to ileostomy. However, ileostomy lifesaving procedure in poor condition but patient who underwent ileostomy showed great morbidity and mortality. Significantly added to morbidity in these patients. Typhoid ileal perforation still carries high morbidity and mortality. The typhoid ileal perforation should always be treated surgically. There are many operative techniques to deal typhoid ileal perforation but no one is without complication. Primary repair is to be preferred and choice of procedure in patient with single perforation.

Keywords: morbidity, mortality, typhoid, ileal, perforation & ileostomy.

Study Design: Observational Study.

1. Introduction

One of the most common emergency procedures performed in a surgical practice for a case of acute abdomen is a hollow viscus perforation leading to peritonitis. One of the most common surgical emergencies that surgeons deal with is intestinal perforations [1]. In underdeveloped nations, ileal perforation peritonitis is a common surgical emergency. There are two types of ileal perforations: Traumatic and non-traumatic.

Typhoid fever, intestinal tuberculosis, round worm infestation, malignant small intestinal tumors, etc. are etiological variables linked to non-traumatic perforations [2]. Traumatic perforations can occur as a result of piercing abdominal trauma or blunt abdominal trauma,

both of which can cause ileal perforation. Other abdominal viscera may or may not also be injured. Typhoid fever incidence is declining globally, although it is still endemic in India [3]. The most frequent causes of ileal perforation include typhoid, TB, trauma, and nonspecific enteritis. Typhoid fever has a documented incidence of perforation ranging from 0.8% to 18% [4]. After typhoid fever, tuberculosis is the second most common cause of minor intestinal perforations in India, accounting for 5 to 9% of all cases.

The most common surgical emergency in Pakistan and the subcontinent is perforation peritonitis. According to the literature, lower gastrointestinal tract perforations in the west are more common, whereas, in Asian countries, upper gastrointestinal tract perforation is more frequent[5].

A comprehensive study conducted in India emphasizes that enteric fever is the cause of nearly 87% of all nontraumatic small bowel perforations, with a fatality between 11 to 34%. The most prevalent and dreadful complications of enteric fever are small intestinal perforation and gastrointestinal bleeding.

Most series have stated simple closure of the perforation or resection and anastomosis in case of multiple perforations, though results have only been satisfactory. This procedure, even though it seems to be appealing in an emergency, has complications. Even though there is a wide range of procedures available, Ileal perforation has high morbidity and mortality rates.

Intestinal perforation is the most dreadful complication of enteric fever in the developing countries leading to diffuse peritonitis. Enteric fever is a severe febrile illness caused primarily by the Salmonella typhi. Enteric fever affects 13-17 million people yearly and kills an estimated 600,000 internationally[6]. Typhoid fever is a life-threatening problem in Pakistan especially due to the emergence of multi-resistant strains of Salmonella typhi. Intestinal perforation is one of the most dreadful and common complication of typhoid fever, remarkably so in the developing countries where it usually leads to diffuse peritonitis. Ileostomy should be considered as a treatment option in patients with unhealthy terminal ileum. Ileostomy is a lifesaving procedure to be used judiciously accepting its inconvenience to patient. Primary repair should be done in patients with short history of symptoms and per-operatively minimal faecal contamination of the peritoneal cavity[7]. In cases with good reserves and early hospitalization, primary repair is certainly the procedure of choice. Simple repair of perforation in two layers is the choice of treatment for enteric perforation because the patient has to undergo surgery for single time and the results are equivalent to that of ileostomy.

2. Material and Methods

Present study was conducted at Index Medical College Hospital & Research Centre, Indore for 01 Year on 50 patients, Various operative procedures were advocated by different authors, such as the following: simple primary repair of perforation, repair of perforation with ileo-transverse colostomy, primary ileostomy, single layer repair with an omental patch, resection and anastomosis. All patients underwent an emergency explored. In present study 50 patients undergoing operation were randomized between two groups:

Groups A- Dealt with By Primary Repair.

Group B- Dealt with Ileostomy of Gut.

Postoperative events were recorded for one week till the patient is discharged. Outcome of two procedures i.e. wound infection (purulent discharge either from wound or drain placed

accompanied by signs and symptoms of infection) and other complications i.e. wound dehiscence and septicaemia was also noted.

Inclusion criteria

- Out patients presenting to present emergency with signs of hollow viscus perforation.
- Patients with an intra-operative finding of Ileal perforation.
- Patients who consented for emergency exploratory laparotomy.
- Patient operated for pyoperitonium and found to have ileal perforation.

Exclusion criteria

- Patients with hollow viscus perforation other than ileal perforation.
- Patients who refused to undergo exploratory laparotomy.

3. Result

Table No. 1:

Age in years	Primary repair		Ileostomy		P Value
	No.	Percentage	No.	Percentage	
18 – 28	29	58	30	60	0.719
29 – 38	11	22	10	20	
39 – 48	03	06	06	12	
49 – 58	07	14	04	08	
Male: Female ratio	1.50:1		2.57:1		

Table No. 2: Complications in both groups

Age in years	Primary repair		Ileostomy		P Value
	No.	Percentage	No.	Percentage	
Wound infection	13	26	41	82	0.047
Wound dehiscence	07	14	21	42	
Septicemia	05	10	19	38	

There were three complications, wound infection 13 (26%) patients in Primary repair and 43 (86%) in Ileostomy, wound dehiscence was in 7 (14%) in Primary repair while 20 (40%) in Ileostomy and septicemia in 4 (8%) patient in Primary repair and 18 (36%) patients in Ileostomy B. Statistically the difference between the two groups was significant [<0.05]

Table No. 3: Clinical Presentation

Symptoms			P Value
	No.	Percentage	
Pain abdomen	50	100	0.049
Fever	49	98	
Abdomen distension	45	90	
Vomiting	41	82	
Constipation	37	74	

Diarrhea	01	02	
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All the patients presented with pain which started in lower abdomen and radiated to involve whole abdomen is 100%. The average duration of pain was 4 days. 98% of patients presented with fever with duration of average 12 days. Fever preceded the abdominal symptoms in these patients.

Table No. 4: Morbidity and Mortality Pattern

Age in years	Primary repair (N=24)		Ileostomy (N=26)		P Value
	No.	Percentage	No.	Percentage	
Morbidity	12	50	17	65.6	0.031
Mortality	02	8.3	03	11.5	

Morbidity was found more in Ileostomy, which was related to ileostomy related complication (p value 0.031). Two patient in Primary repair 1 and three patient in group 2 expired accounting for mortality

4. Discussion

Perforation of a typhoid ulcer usually occurs during the third week and is occasionally the first sign of disease [7]. Typhoid perforation is still seen in our environment with higher male incidence. This is similar to reports in other series[8]. This may due to in fact young men in search of job are compelled to eat unhygienic food outside the home. In our mean age was 30 year with range of 13-70. Majority of the patients were in the age group 13-30 years (60%). Perforation of a typhoid ulcer usually occurs during the third week and is occasionally the first sign of disease. Typhoid perforation is still seen in present environment with higher male incidence. This is similar to reports in other series[9]. This may due to in fact young men in search of job are compelled to eat unhygienic food outside the home. In present mean age was 30 year with range of 13-70. Majority of the patients were in the age group 13-30 years (60%). In present study peritonitis was present in all and the contamination was feco-purulent in nature. The majority of the perforation was single (92%) of size less than 1 cm and located within 60 cm of terminal ileum (96%). Adesunkanni observed 86% single perforation and rest had multiple perforations, Wani et al observed 62% had single perforation and rest had multiple perforations[10]. Almost all of the perforations were located on the anti-mesenteric border of terminal ileum.

Typhoid ileal perforation is best treated by surgery is universally accepted, but exact nature of the surgical procedure remains controversial to date. In our study, two procedures – primary repair of perforation and ileostomy were performed. Primary repair of perforation was done in 24 patient and proximal loop ileostomy or exteriorization of perforation was done in 26 patients. The morbidity associated with primary repair is 50% which is less then morbidity of 65.5% associated with ileostomy formation[11]. Mortality in our study was 8.33% in primary repair and 11.53% in ileostomy which is low in comparison to other studies which reported about 28%. Mishra et al. found morbidity in patients who underwent primary repair to be 50%, while for those who underwent ileostomy, morbidity was 65.5% [12].

5. Conclusion

Early repair of the perforation is a better procedure than temporary ileostomy in enteric perforation due to its cost effectiveness and absence of complications related to ileostomy. However, ileostomy lifesaving procedure in poor condition but patient who underwent ileostomy showed great morbidity and mortality. Significantly added to morbidity in these patients. Typhoid ileal perforation still carries high morbidity and mortality. The typhoid ileal perforation should always be treated surgically. There are many operative techniques to deal typhoid ileal perforation but no one is without complication. Primary repair is to be preferred and choice of procedure in patient with single perforation.

6. References

1. Gupta S, Kaushik R; Peritonitis –The Eastern experience. *World J Emerg Surg*, 2006;26: 1:13.
2. Nadkarni KM, Shetty SD, Kagzi RS, Pinto AC, Bhalera RA; Small bowel perforation. A study of 32 cases *Arch Surg*, 1981; 116(1):53-57.
3. Beniwal U, Jindal D, Jain S, ShyamG; Comparative study of operative procedure in typhoid perforation. *Indian J Surg*, 2003;65(2);172-177
4. Eggleston FC, Santoshi B, Singh CM; Typhoid perforation of bowel. Experiences in 78 cases. *Ann surgery* 1979 Jul; 190(1):31-35.
5. Adesunkanni AR, Ajao OG; Typhoid ileal perforation: A prospective study, *Journal of royal college of surgeons Edingburg*,1997; 25(4):311-315.
6. Wani MD, Mir SA, Bhat JA, Gul S, Maqbool U, Moheen HA; Hyperbilirubinemia, C-reactive protein and ultrasonography as predictors of appendiceal perforation: A prospective study. *Saudi Surgical Journal*, 2014; 2(1):1
7. Ramanaiah J, Kumar CP, Indla R. Protective Ileostomy in Ileal Perforation and Its Outcome Compared to Primary Repair. *Tuberculosis* 2019; 5(3): 10.
8. Shrivastava A. A comparative study between right hemicolectomy with ileotransverse anastomosis and primary repair with or without ileostomy/Colostomy in the management of Caecal perforation. *Int J Surg* 2020; 4(3): 168-170. doi: 10.33545/surgery.2020.v4.i3c.488.
9. Babu TN, Harika R, Chakravarthy DS, Akkidas S. A comparative study between the outcome of primary repair versus ileostomy in ileal perforation: our institutional experience. *J Med Sci Clin Res*. 2019; 7(9): 327-331. doi:10.18535/jmscr/v7i9.57
10. Neelma UA, Khan H, Jan Y, Ilyas SM, Salam A. Outcome of primary repair versus ileostomy in patients with typhoid ileal perforation. *Rawal Med J* 2020; 45(2): 406-409.
11. Kumar A, Fais MF. To Study the Outcome of Patients of Primary Closure Versus Ileostomy in Ileal Perforation. *Trauma* 2019; 18(9): 55-59.
12. Mishra M, Singh P, Tripathi A. Typhoid ileal perforation: comparative study of ileostomy versus primary ileal repair and associated morbidity and mortality. *Int J Surg* 2018; 5(9): 3129- 3133. doi:10.18203/2349-2902.isj20183735.