SAS Journal of Surgery ISSN 2454-5104
SAS J. Surg., Volume-1: Issue-1 (May-Jun, 2015); p-21-24
Available online at http://sassociety.com/sasjs/

Research Article

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

Sandeep Thakre*[1], Kamal Singh Mandloi[2], Madan Mohan Mudgal[3], Achal Gupta[4]
[1,2]Resident, Department of Surgery, Gajara Raja Medical College, Gwalior, Madhya Pradesh- 474009, India
[3]Associate Professor, Department of Surgery, Gajara Raja Medical College, Gwalior, Madhya Pradesh- 474009, India
[4]Professor and Head, Department Of Surgery, Gajara Raja Medical College, Gwalior, Madhya Pradesh- 474009, India

***Corresponding author**
Dr. Sandeep Thakre
Email: drsdeep09@gmail.com

Abstract: Perforation of upper gastrointestinal tract constitutes the majority of cases in India and subcontinent. The postulated causes of ileal perforation include typhoid fever, tuberculosis, trauma, crohn's Disease, malignancy etc. Perforation of the intestine is the most serious complication of typhoid fever and remains a significant problem with in many parts of the world. Typhoid fever is caused by salmonella typhi, a gram negative bacillus and is acquired by ingestion of contaminated water or food. Various operative procedure have been advocated by different authors such as primary repair of perforation, repair of perforation with ilio-trasverse colostomy, single layer repair with omental patch, trimming of ulcer edge and closure, wedge excision and anastomosis. Even with such variety of procedures, enteric perforation still has a high rate of morbidity and mortality.
Keywords: Typhoid fever, ileal perforation, morbidity and mortality, complication, primary repair, ileostomy.

INTRODUCTION

Perforation peritonitis is the most common surgical emergency in India. In contrast to the western literature, where lower gastrointestinal tract perforations predominate, upper gastrointestinal tract perforation constitutes the majority of cases in India and subcontinent [1].

The postulated causes of ileal perforation include typhoid fever, tuberculosis, trauma, crohn's Disease, malignancy etc. perforation of the terminal ileum constitutes the fifth most common cause of abdominal emergencies in the tropical countries[2, 3].

Typhoid fever is an endemic disease in India and other tropical countries. Small intestinal perforation and gastrointestinal hemorrhage are the most common and dreadful complication of enteric fever [4]. The frequency of enteric perforation in typhoid in typhoid fever has been reported variously from 0.8 to 18 % [5]. An exhaustive study in India shows that enteric fever is responsible for nearly 87% of all non-traumatic small bowel perforation with a mortality ranging between 11 to 34% [3]. The enteric perforation was more common in male than in females with a ratio of 6:1. The age ranges from 8-65 year with the maximum number of patient (40%) in their 3rd decade followed by 32% of patients in their 2nd decade. Patients of enteric perforation were admittedthroughout the year with the highest number in the months of august and September[2, 6].

Perforation of the intestine is the most serious complication of typhoid fever and remains a significant problem with in many parts of the world. Typhoid fever is caused by salmonella typhi, a gram negative bacillus and is acquired by ingestion of contaminated water or food. The disease has a seasonal incidence, peaking at times of heavy rainfall, when water contamination is more likely. The organism passes through payer's patches without causing inflammation. Second week of symptomatic illness the bacteria reach the gut, either via the bile or by bacteramic spread and localize in payer's patches. Ulceration occurs and there is an associated mesenteric adenitis. Perforation occurs along the long axis of the bowel and where perforation does not occur and the disease healing occurs without scaring so that late strictures are not seen. Perforation occurs classically on the anti-mesenteric border of the terminal ileum. The size of the perforation varies but true micro perforations are uncommon and the average diameter is 5mm [7].

Various operative procedure have been advocated by different authors such as primary repair of perforation, repair of perforation with ilio-trasverse colostomy, single layer repair with omental patch, trimming of ulcer edge and closure, wedge excision and anastomosis. Even with such variety of procedures,

enteric perforation still has a high rate of morbidity and mortality. The mortality ranges between 9% to 43% while survivors have wound infection and a history of long hospital stays. Mortality from other post-operative complication ranges 8.8-71.3% [8].

Our study to evaluate morbidity and mortality of those patient who underwent surgical treatment either primary closure or ileostomy.

METHODS AND MATERIALS

It is a prospective study of patients who were operated for typhoid ilealperforation at JAH Group and Kamala Raja hospital Gwalior, India from Jan.2011 to Dec.2011. It is a one year study and conducted after approval of ethical committee. In our study 50 patients undergoing operation were randomized between two groups. Groups A were dealt with by primary repair and another Group B dealt with ileostomy of gut. All the patients initially presented to the casualty department as cases of acute abdomen. On the basis of history and clinical examination, a provisional diagnosis of intestinal perforation was made. All patients were actively resuscitated and started on IV fluids, Third generation cephalosporin and metronidazole and supportive treatment. USG abdomen, x-ray chest and x-ray abdomen were done in all patients. With the confirmation of the initial diagnosis of intestinal perforation laparotomy was planned in all cases. Patients were taken after written and inform consent in Operation Theater and under suitable anesthesia (GA) laparotomy were done from midline incision. After opening of peritoneum, peritoneum lavage and exploration of gut was done. Intra operative finding were recorded. Identifying the perforation site (perforation is oval or round ulcer in terminal ileum on the anti-mesenteric border). According to assessment of the surgeon, primary repair or ileostomy was done.

RESULT

In our study 50 patients were studied and evaluated and following observation was made. Out of 50 patients, in one group 24 [48 %] patients underwent primary repair and another group 26 (52%) patients underwent ileostomy with followed up for 15 days, 1 month and 3 months.

Table-1 show that maximum ileal perforation occurred in the second to third decade. Ileal perforation was more common in males with male: female ratio of 4:1. The patient was 13 years and oldest was 70 years.

As shown in Table-3, all the patients presented with pain which started in lower abdomen and letter radiated to involve whole abdomen. The average duration of pain was 4 days. 100 % of patients presented with fever with duration of average 12 days. Fever preceded the abdominal symptoms in these patients.

Widal test was performed in 50 cases out of 50 patients who were diagnosed as typhoid perforation on basis of clinical suspicion. As per Table-3, 36 (72 %) were positive of the widal test and 14 (28%) widal negative.

Blood culture was performed in 50 cases, which was positive for salmonella typhi in 42 (84%) cases. Rest of the culture was steril (Table-4).

Morbidity was found more in group 2, which was related to ileostomy related complication (p value 0.263). Two patient in group 1 and three patient in group 2 expired accounting for mortality (Table-7).

Table-1: Age and Sex Distribution

AGE (YEARS)	SEX DISTRIBUTION		Patients numbers %
	Male	Female	
12-20	10	02	24%
21-30	12	06	36%
31-40	08	01	18%
41-50	06	-	12%
>51	04	01	10%
Total	40	10	100%

Table-2: Clinical Presentation

Symptoms	Number of patients (%)
Pain abdomen	50 (100%)
Fever	50 (100%)
Abdomen distension	45 (95 %)
Vomiting	40 (80%)
Constipation	38 (76%)
Diarrhea	01 (20 %)

Table-3: Blood Investigations

Finding	Widal test	Blood culture
Positive	36 (72%)	42 (84 %)
Negative	14 (28 %)	08 (16%)

Table-4: Operative procedure

Groups	Procedure	Numbers
1.	Primary repair	24
2.	Primary repair with ileostomy	26

Table-5: Complication [Local]

Complication	Group 1 (n=24)	Group 2 (n=26)	P value
Wound infection	06	14	0.037
Wound dehiscence	02	10	0.012
Primary repair leak	01	-	-
Skin excoriation	-	13	-
Ileostomy prolapse	-	03	-
Ileostomy retraction	-	03	-
Burst abdomen	02	04	0.44
Obstruction	01	04	0.18
Incisional hernia	01	03	0.33
Bleeding	-	-	-
Necrosis	-	-	-
Stenosis	-	-	-
Parastomal hernia	-	-	-

Table-6: Complication [Systemic]

Complication	Group 1 n=24 Primary repair	Group n=26 Ileostomy	P value
Electrolyte imbalance	02	08	0.047
Pulmonary infection	02	04	0.447
Septicemia	02	02	0.933
Weight loss	02	12	0.002
Renal failure	-	-	-
Shock	01	01	-

Table-7: Morbidity and Mortality Pattern

Complication	Group 1 n=24	Group 2 n=26	P value
Morbidity	12 (50%)	17(65.6%)	0.263
Mortality	02(8.33%)	03 (11.53%)	0.708

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[8-10]. 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%).

In our 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[9], 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 perforation is rare under 5 year of age. Patients with enteric perforation were admitted throughout the year with higher number in months of July, august and September.

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. 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%.

However mortality was unrelated to type of operative performed. Wound infection was the most common post operative complication about 25% in group 1 and 53.8% in group 2 followed by wound dehiscence, intra-abdominal collection and repair leak which is in accordance with previous study (p value <0.05). The other complication in group 2 was related to ileostomy which hampered quality of life and significantly added to morbidity in these patients.

CONCLUSION

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. Ileostomy was advocated in multiple perforation with ileum is grossly inflamed feacal peritonitis and unhealthy gut due to edema.

However, ileostomy lifesaving procedure in poor condition but patient who underwent ileostomy showed great morbidity and mortality.

REFFERENCE

1. Jhobta RS, Attri AK, Kaushik R, Sharma R, Jhobta A; Spectrum of perforation peritonitis in India – review of 504 conservative cases. World J Emerg Surgery, 2006 ; 5:1:26.
2. Siddiqui S; Epidemiologic pattern and control strategies in typhoid fever. J Pak Med Assoc, 1991; 41(6):143-6.
3. Pal DK; Evaluation of best surgical procedures in typhoid perforation- An experience of 60 cases. Trop D; 1998; 28(1):16-18.
4. Gupta S, Kaushik R; Peritonitis –The Estern experience. World J Emerg Surg, 2006;26: 1:13.
5. 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.
6. Beniwal U, Jindal D, Jain S, ShyamG; Comparative study of operative procedure in typhoid perforation. Indian J Surg, 2003;65(2);172-177
7. Eggleston FC, Santoshi B, Singh CM; Typhoid perforation of bowel. Experiences in 78 cases. Ann surgery 1979 Jul; 190(1):31-35.
8. Gibney EJ; Typhoid perforation. Br J Surg, 1989; 76(9):887-889.
9. Adesunkanni AR, Ajao OG; Typhoid ileal perforation: A prospective study, Journal of royal college of surgeons Edingburg,1997; 25(4):311-315.
10. 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