DOI: https://doi.org/10.53350/pjmhs22161885

ORIGINAL ARTICLE

Compare Outcomes of Primary Repair and Ileostomy in Patients Presented with Typhoid Perforation

KHADIJAH AHMAD CHEEMA[1], MUMTAZ AHMED QURESHI[2], SADIAASMAT BURKI[3], JEHANGIR KHAN[4], FARIN ZADA[5], ABID HUSSAIN[6]

[1]*Consultant Pediatric Surgery, Children Hospital and Institute of Child Health, Lahore*
[2]*Assistant Professor Pediatric Surgery, Liaquat University of Medical & Health Sciences, Jamshoro Sindh*
[3]*Consultant Pediatric Surgery, PIMS Hospital, Islamabad*
[4]*Assistant Professor Paediatric Surgery, Gajju Khan Medical College, Swabi*
[5]*District Specialist Paediatric Surgery, DHQ Hospital, Buner*
[6]*Assistant Professor of Paediatric Surgery, Khawaja Muhammad Safdar Medical College, Sialkot*
Corresponding author: SadiaAsmatBurki, Email: burki_sadia@yahoo.com, Cell: +92 333 9295429

ABSTRACT

Objective: The aim of this study is to compare the outcomes between primary repair and ileostomy inpaediatric patients presented with typhoid perforation.

Study Design: Comparative study

Place and Duration: The study was conducted at pediatric surgery department of Children Hospital and Institute of Child Health, Lahore andBacha Khan Medical Complex, Swabifor duration of six months from June 2020 to December 2020.

Methods: Total 100 patients of both genders were presented in this study. Patients were aged between 3-18 years. Detailed demographics of patients including age, sex and body mass index were recorded after taking informed written consent. Patients who had typhoid perforation were enrolled. Patients were equally divided into two groups. Group I had 50 patients and received primary repair and group II received ileostomy with 50 patients. Post-operative outcomes in terms of complications and mortality were assessed and compared among both groups. Complete data was analyzed by SPSS 26.0 version.

Results: There were 72 males (36 in each group) and 28 females (14 in each group) in this study. Mean age of the patients were 11.14±7.44 years in group I and in group II mean age was 10.17±9.68 years. In group I 35 (70%) cases had low socio-economic status while in group II 33 (66%) cases had low socio-economic status. 60 patients were from rural areas (30 in each group)**.** Wound infection was the most common complication 9 (18%) found in group I and 12 (24%) in group II followed by wound dehiscence in group I 5 (10%) and in group II 7 (14%). Mortality rate in group II 8 (16%) was significantly higher as compared to group I 3 (6%). Satisfaction among patients of group I was significantly higher as compared to group II with p value 0.05.

Conclusion: We concluded in this study that the primary repair in patients with typhoid perforation was effective and useful as compared to ileostomy in terms of post-operative complications and mortality.

Keywords: Mortality, Complications, Typhoid Perforation, Ileostomy, Primary Repair

INTRODUCTION

Typhoid fever is an infectious febrile condition caused by the Gram-negative bacteria Salmonella typhi[1,2]. Typhoid fever is a long-term illness that begins with fever and chills, progresses to widespread reticuloendothelial involvement with rash, stomach discomfort, and prostration in the second week, and culminates in ulceration of Payer's patches with intestinal hemorrhage and perforation in the third part of ileum. The most prevalent consequence of typhoid fever is intestinal bleeding; nonetheless, intestinal perforation continues to be the most common cause of significant morbidity and mortality. On antimesenteric boundary, within 45 cms of the ileocaecal valve, most individuals develop longitudinal ulcers. [3]

There is a 5 to 62 percent mortality rate for typhoid intestinal perforation (TIP). Late perforations increase perioperative mortality to 80 percent[4-6]. Primary double layered closure[7], segmental resection and end-to-end anastomosis8 and primary ileostomy9 are currently available surgical alternatives Diagnosis relies mostly on a blood culture. In addition, feces may include microbes that can be grown in the laboratory. In the widal reaction, a serological test, anti-bacterial antibodies are found.

Perforations in the gastrointestinal tract have been a surgical concern since the dawn of humanity. There is evidence that Egyptian mummies had holes in their stomachs. As soon as a pathology penetrates the complete thickness of the hollow viscus, peritoneal contamination with intraluminal materials occurs, perforation occurs. From the oesophagus to the rectum, the gastrointestinal system might be perforated at any point [8].

A common surgical emergency on the subcontinent and in tropical nations is ileal perforation peritonitis. Due to the high prevalence of enteric fever and tuberculosis in these locations, it is reported to be the fifth most prevalent cause of abdominal crisis. Untreated, this disease has an abrupt start, a rapid decline and a high mortality rate [9,10] despite the availability of contemporary diagnostic facilities and breakthroughs in treatment regimes.

Some of the more common causes of nontraumaticileal perforation include: bacterial infections (salmonella, tuberculosis), viral infections (cytomegalovirus and human immunodeficiency virus), fungal infections (histoplasma), parasitic infections (A. lumbricoides, E. vermicularis, and E. histolytica), and others (Wagener's granulomatous and drugs (nonsteroidal anti-inflammatory drugs, e Perforations that have no recognized cause are

called non-specific ileal perforations. Peritonitis results from gram-negative aerobic and anaerobic infection [11].

The aim of this study is to compare the outcomes between primary repair and ileostomy in patients presented with typhoid perforation.

MATERIAL AND METHODS

This comparative study was conducted at pediatric surgery department of Children Hospital and Institute of Child Health,Lahore and Bacha Khan Medical Complex, Swabi for duration of six months from June 2020 to December 2020.The study was comprised of 100 patients. Detailed demographics of patients' age, sex and body mass index were recorded after taking informed written consent. Patients <3 years of age and those did not give written consent were excluded from this study.

Patients were aged between 3-18 years. Patients had typhoid perforation were enrolled. Patients were equally divided into two groups. Group I had 50 patients in which primary repair wasdone and in 50 patients of group II, ileostomy was made. Informed agreement was obtained from these individuals before they were sent for emergency surgery. Both groups received 3rd generation cephalosporins (cefotaxime, ceftazidime, ceftriaxone, etc.) and metronidazole after hospitalization and before surgery. Post-operative outcomes in terms of complications and mortality were assessed and compared among both groups. Complete data was analyzed by SPSS 26.0 version. In order to compare the results of the two methods, the chi-square test was utilized. Categorical variables were calculated by frequencies and percentages.

RESULTS

There were 72 males (36 in each group) and 28 females (14 in each group) in this study. Mean age of the patients were 11.14±7.44 years in group I and in group II mean age was 10.17±9.68 years. In group I 35 (70%) cases had low socio-economic status while in group II 33 (66%) cases had low socio-economic status. 60 patients were from rural areas (30 in each group).(table 1)

Table 1: Baseline detailed demographics of enrolled cases

Variables	Group I (n=50)	Group II (n=50)
Mean age (years)	11.14±7.44	10.17±9.68
Gender		
Male	36 (72%)	36 (72%)
Female	14 (28%)	14 (28%)
Socio-economic status		
Low	35 (70%)	33 (66%)
High	15 (30%)	17 (34%)
Residency		
Rural	30 (60%)	30 (60%)
Urban	20 (40%)	20 (40%)

Wound infection was the most common complication 9 (18%) found in group I and 12 (24%) in group II followed by wound dehiscence in group I 5 (10%) and in group II 7 (14%),intra-abdominal collection was in 4(8%) in group I and in group II 7 (14%) and anastomotic leak in group I was 2 (4%) and in group II was 6 (12%).(table 2)

Mortality rate in group II 8 (16%) was significantly higher as compared to group I 3 (6%).(table 3)

Table 2: Post-operatively comparison of complications among both groups

Variables	Group I	Group II
Complications		
Wound infection	9 (18%)	12 (24%)
Wound dehiscence	5 (10%)	7 (14%),
Intra-abdominal collection	4(8%)	7 (14%)
Anastomotic leak	2 (4%)	6 (12%)

Table 3: Comparison of mortality among both groups

Variables	Group I (n=50)	Group II (n=50)
Mortality		
Yes	3 (6%)	8 (16%)
No	47 (94%)	42 (84%)

Satisfaction among patients of group I was significantly higher 48 (96%) as compared to group II 43 (86%) with p value 0.05.(table 4)

Table 4: Comparison of satisfaction among both groups

Variables	Group I (n=50)	Group II (n=50)
Satisfaction		
Yes	48 (96%)	43 (86%)
No	2 (4%)	7 (14%)

DISCUSSION

Typhoid fever is a severe health problem in developing countries, with a high morbidity and mortality rate due to a lack of resources and inadequate sanitation. [17] In children, typhoid perforation is the most common lethal illness with a significant fatality rate. For the treatment of typhoid ileal perforation, there are a variety of options, but primary repair and ileostomy are the most prevalent. [18]If left untreated, this disease has an abrupt onset and a rapid downhill path, with significant fatality rates.

In this comparative study 100 patients of both genders with ages 3-18 years were presented. Patients were equally divided into 2-groups.Group I had 50 patients and received primary repair and group II received ileostomy with 50 patients. There were 72 males (36 in each group) and 28 females (14 in each group) in this study. Mean age of the patients were 11.14±7.44 years in group I and in group II mean age was 10.17±9.68 years. These findings were comparable to the previous some studies.[19,20] In group I 35 (70%) cases had low socio-economic status while in group II 33 (66%) cases had low socio-economic status. 60 patients were from rural areas (30 in each group).[19] A variety of operational methods have been supported by various authors, including simple primary repair of perforation [12], repair of perforation with ileotransverse colostomy [13], primary ileostomy [14], single layer repair with an omental patch [15], and resection and anastomosis [16].

In current study wound infection was the most common complication 9 (18%) found in group I and 12 (24%) in group II followed by wound dehiscence in group I 5 (10%) and in group II 7 (14%),intra-abdominal collection was in 4(8%) in group I and in group II 7 (14%) and anastomotic leak in group I was 2 (4%) and in group II was 6 (12**%).** These results were comparable to the previous researches.[21-23]. Patients who underwent primary repair, according to Ahmed et al [24], experienced a 24.4%

postoperative wound infection, 5 percent dehiscence, 6.4 percent intra-abdominal collection and 4.3 percent anastomotic leakage. Four patients with wound infection who underwent surgery for ileostomy and three who underwent primary repair were described in another study by Naga Babu et al[25]. These results were opposite to our findings.

We that mortality rate in group II 8 (16%) was significantly higher as compared to group I 3 (6%).[26]However, several studies found no significant difference between patients treated with primary repair and ileostomy in terms of mortality and morbidity.[27] Satisfaction among patients of group I was significantly higher 48 (96%) as compared to group II 43 (86%) with p value 0.05.Children with typhoid perforation have a significant mortality and morbidity rate. It was determined from this study in terms of morbidity and mortality that primary repair in patients with typhoid perforation is better than ileostomy. Early and accurate treatment may also lessen the number of problems. Procedures are chosen based on a patient's clinical presentation.

CONCLUSION

We concluded in this study that the primary repair in patients with typhoid perforation was effective and useful as compared to ileostomy in terms of post-operative complications and mortality.

REFERENCES

1 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

2 Saxe JM, Cropsey R. Is operative management effective in treatment of perforated typhoid? Am J Surg 2005; 189: 342-34

3 Karmacharya B, Sharma VK. Results of typhoid perforation management.Our experience in Bir Hospital, Nepal. Kathmandu University Medical Journal 2006; 4: 22-4

4 Pegues DA, Miller SI. Salmonella Species, Including Salmonella Typhi. In: Mandell GL, Bennett JE, Dolin R, editors. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases. 7th ed. Philadelphia: Elsevier Churchill Livingstone, 2009: 2287- 2903

5 Atamanalp SS, Aydinli B, Ozturk G, Oren D, Basoglu M, Yildirgan MI. Typhoid intestinal perforations: twenty-six year experience. World J Surg 2007; 31: 1883-1888

6 Mock CN, Amaral J, Visser LE. Improvement in survival from typhoid ilealperforation.Results of 221 operative cases.AnnSurg 1992; 215: 244-249.

7 Athie, C.G. and C.B. Guizar et al, 1998. Twenty five years of experience in the surgical treatment of perforation of ileum caused by salmonella typhi at the General Hospital of Mexico city. Surgery, 23: 632-636

8 Nadkarni FM, Shetly SD, Kagzi RS. Small-bowel perforation.A study of 32 cases. Archives Surgery. 1981;116:53–57

9 Siddiqui S. Epidemiologic patterns and control strategies in typhoid fever. Journal of the Pakistan Medical Association. 1991;41(6):143–146

10 Pal DK. Evaluation of best surgical procedures in typhoid perforation—an experience of 60 cases. Tropical Doctor. 1998;28(1):16–18

11 Rathore AH, Khan IA, Saghir W. Prognostic indices of typhoid perforation. Annals of Tropical Medicine and Parasitology. 1987;81(3):283–289.

12 Bhansali SK. Gastrointestinal perforations.A clinical study of 96 cases.Journal of Postgraduate Medicine. 1967;13(1):1–12.

13 Prasad PB, Choudhury DK, Prakash O. Typhoid perforation treated by closure and proximal side-to-side ileo-transverse colostomy. Journal of the Indian Medical Association. 1975;65(11):297–299

14 Singh KP, Singh K, Kohli JS. Choice of surgical procedure in typhoid perforation: experience in 42 cases. Journal of the Indian Medical Association. 1991;89(9):255–256.

15 Athie CG, Guizar CB, Alcantara AV, Alcaraz GH, Montalvo EJ. Twenty-five years of experience in the surgical treatment of perforation of the ileum caused by Salmonella typhi at the General Hospital of Mexico City, Mexico. Surgery. 1998;123(6):632–636

17 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

18 Srihari G, Sudheer D. Study of prognostic factors and outcomes in ileal perforations. J Evid Based Med Health 2016;3(90):4911-7.

19 MOHAMMAD DAWOOD KHAN , MOHYUDDIN KAKAR , NASEEBULLAH ZARKOON, AZIZULLAH KHAN. Typhoid Perforation: Comparison of Outcomes between Primary Repair and Ileostomy in Children. P J M H S Vol. 14, NO. 1, JAN – MAR 2020

20 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.

21 Nema A. A study of surgical approach to typhoid ileal perforation at a Tertiary Care Hospital of South Gujarat. Open Access J Surg 2018; 9(2): 555757.

22 Qureshi SA, Khan MI, Arbab R, Badini M, Mehmood M, Arshad A, et al. Outcomes of primary repair in typhoid perforation. Ann Pak Inst Med Sci 2017;296-300

23 Gremaa BA, Aliyub I, Michaela GC, Musac A, Fikind AG, Abubakarc BM, et al. Typhoid ileal perforation in a semi-urban tertiary health institution in north-eastern Nigeria. South AfrFamPrac 2018; 60(5):168–73

24 Naga Babu TVSS, Harika R, Chakravarthy DS, Akkidas S. A comparative study between the outcome of primary repair versus ileostomy in ileal perforation: our institutional experience. JMSCR 2019; 7(9): 327-31

25 Khan SH, Aziz SA, Haq MI. Perforated peptic ulcers: a review of 36 cases. Professional Med J 2011; 18(1): 124-7.

26 Ugochukwu AI, Amub OC, Nzegwu MA. Ileal perforation due to typhoid fever - review of operative management and outcome in an urban centre in Nigeria.Int J Surg 2013;11:218–22.

27 Shrivastava D, Kumar JA, Pankaj G, Bala SD, Sewak VR. Typhoid intestinal perforation in Central India – a surgical experience of 155 cases in resource limited setting. IJBAR 2014;5:600–4.