

Comparison of Outcomes between Primary Repair and Ileostomy in Children with Typhoid Perforation

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ABSTRACT

Aim: To compare the outcomes in term of complications and mortality between primary repair and ileostomy in children presented with typhoid perforation.

Study design: Randomized comparative/observational.

Place and duration of study: Sohail Medical Centre Timergara from 1st January 2019 to 31st December 2019.

Methods: Seventy four patients of both genders with typhoid perforation were included in this study. Patients ages were up to 12 years. All the patients were categorized into two equal groups. Each group contains 37 patients. Group I received primary repair and group II consist received ileostomy. Postoperative outcomes such as complications and mortality were comparing between both groups.

Results: 48 (64.86%) were males and 26 (35.14%) were females with mean age 8.76±2.58 years. Group II had significantly higher complications 20 (54.05%) as compared to group I 8 (21.62%) with p-value <0.05. Mortality rate was high in Group I 13.51% as compared to Group II 8.11%.

Conclusion: Primary repair is safe and effective in term of postoperative complications and mortality as compared to ileostomy in patients with typhoid perforation.

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

INTRODUCTION

Typhoid fever also known as enteric fever is caused by a gram negative bacteria *Salmonella typhi*; it is a major public health problem in developing countries. The incidence of typhoid in Asia is around 274/100,000 persons per year.¹ India has highest incidence worldwide.² This disease is transmitted by faeco-oral route and it exists as an endemic disease, where water supply and sanitation is poor. Around 1% of population up-to the age of 17 years in India yearly suffers once from this disease. The statistical data shows that, there were approximately 1.03 million cases and 421 deaths in 2009³, with many more under-reported cases from rural area makes this picture bit serious. With the emergence of multi-drug resistant strains, there are high incidences of morbidity and mortality.⁴ Intestinal hemorrhage has been reported between 0.8% to 18%, which is most common complication of typhoid fever, ileal perforation continues to be the most frequent reason behind high morbidity and mortality, especially in remote areas where there is lack of good medical facility.⁵ Generally, hemorrhage and perforation occurs at terminal ileum secondary to necrosis of Peyer's patches.⁶ The risk of perforation is higher in males, patients with leucopenia, short duration of disease, emergence of multidrug resistant strains and incomplete antibiotic treatment.⁷ The management of typhoid intestinal perforation poses a unique challenge to treating surgeon because of late presentation due to various reasons; late diagnosis,

treatment by quacks initially, injudicious use of steroids, poor awareness, poverty, lack of transport facility and poor medical facility⁸.

Mortality in cases of perforation is around 9%-22% in developing world, when compared to developed world (0%-2%). In the past, enteric perforation was considered almost fatal as most surgeon up till 1960 remains with conservative management⁹. 1970 onwards most surgeons favored surgical intervention in typhoid perforation.¹⁰ Various operative procedures were advocated by different authors such as simple repair of perforation, repair of perforation with ileo-transverse colostomy, primary ileostomy, single layer repair with Omentum patch and resection and anastomosis, two layer closure and tube ileostomy¹¹.

The present study was conducted aimed to compare the outcomes between primary repair and iliostomy in children with typhoid perforation.

MATERIALS AND METHODS

This randomized comparative observational study was conducted at Sohail Medical Centre Timergara duration from 1st January 2019 to 31st December 2019. A total 74 patients of both genders ages of 1 to 12 years presented with typhoid perforation were included. Patients detailed demographic including age, sex and symptoms were recorded. Patients with renal failure, Chronic liver disease, CVD and other than typhoid ileal perforation were excluded. All the patients were categorized into two equal groups. Each group contains 37 patients. Group I received primary repair and group II consist received ileostomy.

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Postoperative complications such as wound infection, wound dehiscence, intraabdominal collection and anastomotic leakage were examined. Mortality was examined at 12th postoperative day and compared the findings regarding outcomes between both groups. All the data was analyzed by SPSS 24. Chi-square test was used to compare the outcomes between both techniques. P-value <0.05 was considered as significant.

RESULTS

Forty eight (64.86%) were males and 26 (35.14%) were females with mean age 8.76±2.58 years. Regarding symptoms 74(100%) patients had abdominal pain, vomiting in 71 (95.95%), distension in 36 (48.65%), and fever in 62 [83.78%] (Table 1). Group II had significantly higher complications 20 (54.05%) as compared to group I 8 (21.62%) with p-value <0.05 (Fig, 1).

Table 1: Demographics of all the patients

Variable	No.	%
Age (Yrs)	8.76±2.58	
Gender		
Male	48	64.86
Female	26	35.14
Symptoms		
Abdominal pain	74	100.0
Distension	36	48.65
Vomiting	71	95.95
Fever	62	83.78

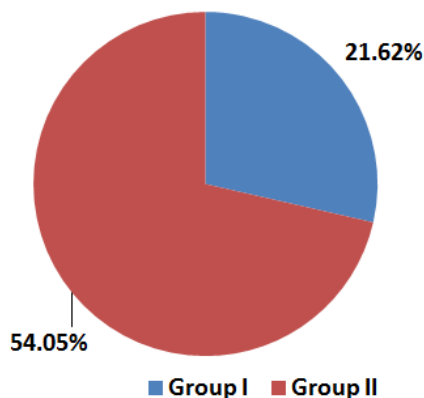
Table 2: Complications found in both groups

Complications	Group I	Group II	P-value
Wound Infection	4(10.81%)	9(24.32%)	0.026
Wound dehiscence	2 (5.41%)	(13.51%)	
Anastomotic leak	1 (2.70%)	3 (8.11%)	
Intra-abdominal collection	1 (2.70%)	3 (8.11%)	

Table 3: Hospital stay and mortality between both groups

Variable	Group I	Group II	P-value
Mortality			
Yes	5 (13.51%)	3 (8.11%)	>0.05
No	32 (86.49%)	34 (91.89%)	
Hospital stay	11.25±3.86	18.37±4.66	<0.001

Fig. 1: Frequency of complications between both groups



In group I 4 (10.81%) patients had wound infection while in group II 9 (24.32%) patients had wound infection. 2 (5.41%) patients in group I and 5 (13.51%) in group II had wound dehiscence. 1 (2.70%) and 3 (8.11%) patients had anastomotic leakage in Group I and II. 1 (2.70%) and 3 (8.11%) patients had intraabdominal collection in group I and II respectively (Table 2). Hospital stay was also longer in group II patients 18.37±4.66 days as compared to group I 11.25±3.86 days with p-value <0.001. According to the mortality 5 (13.51%) patients in group I and 3 (8.11%) patients in group II were died during hospital stay, no significant difference was observed regarding mortality between both groups (p=>0.05) (Table 3).

DISCUSSION

Typhoid ileal perforation is the commonest clinical life threatening disorder and associated with higher morbidity and mortality among children with age up-to 15 years.¹² Surgical treatment is considered a treatment of choice and many of techniques have been applied for the treatment of typhoid ileal perforation but primary repair and ileostomy are the most performing procedure due to less complications and higher success rate.^{13,14} In present study 74 patients were enrolled and equally divided into two groups, group I received primary repair while group II received ileostomy. Majority of patients 48 (64.86%) were males while 35.14% were females with mean age 8.76±2.58 years. These results showed similarity to many of previous studies in which male patients were predominant 60% to 80% as compared to females and average age of children was 8 year.^{15,16}

In our study we found that the overall complications rate was high in patients treated with ileostomy 20 (54.05%) as compared patients with primary repair 8 (21.62%). A study conducted by Khalil-ur-Rahman et al¹⁷ reported that primary repair for ileal perforation had more complications 32.14% as compared to ileostomy 17.85%. Caronna et al¹⁸ showed similarity to our study findings in which primary repair had fewer complications as compared to resection and anastomosis. Another study by Mittal et al¹⁹ reported that primary repair for ileal perforation had high rate of complication than ileostomy. Khan et al²⁰ reported that complications rate was high in ileostomy treated patients than primary repair with p-value <0.05.

In present study we found that wound infection was the commonest complication between both groups followed by wound dehiscence, anastomotic leakage, and intraabdominal collection. All the complications were more in ileostomy group as compared to primary repair. These results were comparable to many of previous studies^{18,20,21}.

Hospital stay was also longer in group II patients 18.37±4.66 days as compared to group I, 11.25±3.86 days with p-value <0.001. Mittal et al¹⁹ reported similarity to our findings in which primary repair had significantly shorter hospital stay than the ileostomy. According to the mortality 5 (13.51%) patients in group I and 3 (8.11%) patients in group II were died during hospital stay, no significant difference was observed regarding mortality between both groups (p=>0.05). A study by Kappikeriet al²² reported that ileostomy had higher mortality rate 20% as compared to

primary repair in 10%. Babuet al²³ reported that primary repair had higher mortality than ileostomy 21.4% Vs 6.25%.

CONCLUSION

Primary repair for typhoid ileal perforation in children was safe and effective treatment modality with fewer complications than compared to ileostomy. However, mortality was high in primary repair than the ileostomy treated patients but the difference was not statistically significant.

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