

# A Comparative Study of Ileostomy Versus Primary Repair of Enteric Perforation in Patients

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## ABSTRACT

**Objective:** To compare the outcome of primary repair of perforation with ileostomy in patients presenting with enteric perforation.

**Study Design:** Randomized control trial

**Place and Duration of Study:** This study was conducted at the Department of General Surgery, M. Islam Medical & Dental College, Gujranwala from March 2017 to February 2018.

**Methodology:** Eighty patients between 20-60 years of age and diagnosed as case of typhoid perforation. Patients were divided into two groups, Group A (Primary repair) and Group B (Ileostomy). The patients were observed for the development of complications during their hospital stay and follow up was done one week after discharge.

**Results:** The mean age was  $31.21 \pm 9.54$  years of patient in group A and in group B was  $32.42 \pm 10.25$ . Male to female ratio was 1.66:1 in group A and 2.07:1 in group B. The complications like wound infection was (25%) in group A and (45%) in group B, wound dehiscence was (10%) in group A and (17.5%) in group B and septicemia was (5%) in group A and (15%) in group B.

**Conclusion:** Primary 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.

**Key Words:** Perforation, Primary Closure, Ileostomy

**Citation of article:** Asif M, Razzaq MA, Shahab A. A Comparative Study of Ileostomy Versus Primary Repair of Enteric Perforation in Patients. Med Forum 2019;30(12):62-64.

## INTRODUCTION

Enteric fever is a severe febrile illness caused primarily by the *Salmonella typhi*. Every year 13-17 million people are affected internationally.<sup>1,2</sup> The perforation usually occurs in the terminal ileum and presents in the 2<sup>nd</sup> and 3<sup>rd</sup> week during the course of the disease. The most common reasons for peritonitis are perforated duodenal ulcer, small bowel tuberculosis and typhoid perforation. Early surgery is the best treatment option to contain the source of further faecal contamination of the peritoneal cavity.<sup>3-5</sup> A variety of surgical procedures have been practiced depending on the clinical setting but none proved to be satisfactory as each has its own pros and cons.<sup>6-8</sup>

Ileostomy should be considered as a treatment option in patients with unhealthy terminal ileum. It is a lifesaving procedure to be used judiciously accepting its inconvenience to patient.<sup>9</sup> Primary repair should be done in patients with short history of symptoms during course of disease, per-operatively minimal faecal contamination of the peritoneal cavity, acceptable edema of gut and general condition of patient without co-morbidities.<sup>10</sup> A previous study shows percentage of wound infection 27.45% in primary repair and 87.7% in ileostomy.<sup>11</sup> In cases with good reserves and early hospitalization, primary repair is certainly the procedure of choice. Basic repair of perforation in two layers is the decision of treatment for enteric perforation as the patient has to undergo surgery only once and the results are superior to that of ileostomy.<sup>7,12-13</sup>

## MATERIALS AND METHODS

This is a randomized control trial study was carried out at Department of General Surgery, M. Islam Medical & Dental College, Gujranwala from 1<sup>st</sup> March 2017 to 31<sup>st</sup> 28<sup>th</sup> February 2018, which includes 80 patients between 20-60 years of age. Patients were divided into two groups, Group A (Primary repair) and Group B (Ileostomy). Randomization was done by picking up card from both groups by some Senior Surgeon. All patients between 20-60 years of age presenting to the surgical emergency with acute abdomen who were

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Received: July, 2019

Accepted: September, 2019

Printed: December, 2019

diagnosed as case of typhoid perforation depending upon history, clinical examination, laboratory findings, x-ray abdomen erect with free gas under-diaphragm and intra-abdominal free fluid on Ultrasound abdomen were included in study. Patients were initially resuscitated, nasogastric tube and Foley catheter passed and informed consent was taken for surgery with possibility of stoma. Patients with diabetes mellitus, chronic liver disease, chronic renal failure and known case of abdominal tuberculosis were not part of study because all these diseases delay normal healing process. All patients with septicemia resulting in multi-organ failure were not part of study. Typhoid perforation is usually circular and on anti-mesenteric border of ileum. Biopsy was taken during surgery and sent for confirmation of diagnosis. The patients were observed for the development of complications during their hospital stay and follow up was done one week after discharge.

## RESULTS

The mean age was  $31.21 \pm 9.54$  years in group A while in group B was  $32.42 \pm 10.25$ . In group A 31 (77.7%) patients were in age group between 20-40 years and 34 (85%) patients were in group B. Most of the patients in group A and B were from 20-40 years of age. Statistically the difference was not significant ( $p = 0.71$ ) (Table 1).

Twenty five (62.5%) patients were male and 15 (37.5%) female in group A while in group B 27 (67.5%) patients were male and 13 (32.5%) were female with a male to female ratio of 1.66:1 and 2.07:1 respectively (Table 2).

In our study there were three following complications like wound infection, wound dehiscence and septicemia in both groups. Wound infection was in 10 (25%) patients in group A and 18 (45%) in group B. Statistically the difference was significant ( $P < 0.01$ ). Wound dehiscence was in 4 (10%) in group A while 7 (17.5%) in group B. Septicemia was in 2 (5%) patient in group A and 6 (15%) patients in group B. Statistically the difference was significant ( $P < 0.01$ ) (Table 3).

**Table No.1: Age Distribution of Patients (n=80)**

Age in Years	Group A (n=40)		Group B (n=40)	
	No.	%	No.	%
20 – 40	31	77.5	34	85.0
41 – 60	9	22.5	6	20.0
<b>Mean±SD</b>	$31.21 \pm 9.54$		$32.42 \pm 10.25$	

**Table No.2: Sex Distribution of Patients (n=80)**

Sex	Group A (n=40)		Group B (n=40)	
	No.	%	No.	%
Male	25	62.5	27	67.5
Female	15	37.5	13	32.5

M:F	1.66:1	2.07:1
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**Table No.3: Comparison of complications in both groups**

	Group A		Group B		P value
	No.	%	No.	%	
Wound infection	10	25.0	18	45.0	<0.01
Wound dehiscence	4	10.0	7	17.5	<0.01
Septicemia	2	5.0	6	15.0	<0.01

## DISCUSSION

Primary repair of enteric perforation is viewed as the best strategy as it is beneficial for patients in many ways. There were eighty patients in this study who were randomly allocated in two groups.

A study by Rahman showed age ranging from 10-75 years.<sup>2</sup> Ahmad et al reported mean age of 29.6 in group A and 31.5 in group B which is comparable with our study.<sup>14</sup> Khan reported, the mean age difference between patients mean±SD was  $30.2 \pm 8.4$  years versus  $28.9 \pm 12.0$  years, this difference was not statistically significant.<sup>15</sup> In another study the mean age was 32 years.<sup>5</sup> The age of patients ranged from 15 to 72 years with 80% of the patients being in age group of 17-70 years.<sup>12</sup> Patients of all ages were included in this study which is comparable with other national and international studies. In both groups most of our patients were young between 20-40 years of age.

In our study, there were 25 (62.5%) male patients in group A and 27 (67.5%) in group B, while 15 (37.5%) patients were female in group A and 13 (32.5%) in group B. Male to female ratio was 1.66:1 in group A and 2.07:1 in group B which is comparable with other studies. In a study reported by Rahman 47 (62.6%) were male and 28 (37.3%) were female patients with male to female ratio of 1.67:1.<sup>2</sup> Siddiqui et al reported 67 males and 41 females.<sup>12</sup>

In this study postoperative complications were observed in both groups, 10 (25%) patients had wound infection in group A while in group B 18 (45%) patients which is statistically significant ( $p < 0.01$ ). Other complications like wound dehiscence occurred in 4 (10%) in group A and 7 (17.5%) patients in group B which is statistically significant ( $p < 0.01$ ). Two (5%) patients had septicemia in group A and 6 (15%) patients had septicemia in group B which is statistically significant ( $p < 0.01$ ) and comparable with international studies. Wound infection was the most common postoperative complication (23%) followed by bleeding (5.5%), fecal fistula (16%), dehiscence of wound (6%) and peristomal skin excoriation (5.7%).<sup>16, 17</sup>

Primary repair should be the decision of treatment in enteric perforation in light of the fact that this is a simple, quick and financially less burdening surgery.

Ileostomy tends to be more costly as it requires specialized care and the patients need to be re-admitted for its closure. Ileostomy ought to be considered as a secondary option in patients who have developed fecal fistula.<sup>18</sup>

The current study demonstrated no mortality in primary repair of enteric perforation and ileostomy. It is because of proper preoperative management and execution of sound surgical technique by experienced specialist. Stoma related complications were also not observed owing to the surgical expertise involved and that all the patients underwent early reversal of stoma.<sup>19</sup>

## CONCLUSION

It is concluded that early surgery and adequate resuscitation is necessary for successful management of patients with typhoid perforation and 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 and shorter hospital stay.

### Author's Contribution:

Concept & Design of Study: Muhammad Asif  
 Drafting: Muhammad Aqil Razzaq  
 Data Analysis: Amna Shahab  
 Revisiting Critically: Muhammad Asif,  
 Muhammad Aqil Razzaq  
 Final Approval of version: Muhammad Asif

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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