RESEARCH PAPER

Frequency of Morbidity and Mortality after Loop Ileostomy in Patients Presenting with Typhoid Ileal Perforation

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ABSTRACT

INTRODUCTION: Typhoid enteric perforation is a communal acute emergency of abdomen in our hospital settings.[1]

OBJECTIVE: To determine the frequency of morbidity and mortality after loop ileostomy in patients presenting with typhoid ileal perforation

STUDY SETTING: This Descriptive (Cross-sectional) Study was conducted at Surgical ward 2 JPMC Karachi.

METHODOLOGY: In our study on 105 patients aged 18 to 75 years of both gender who underwent ileostomy for ileal typhoid perforation and assessed the postoperative outcome in these patients in terms of wound infection, peristimal ulceration and intra abdominal abscess.

RESULTS: Mean age of the patients was 46.07±18.31 years. 51.7% patients were male while 48.3% were female patients. Postoperative complications were wound infection 25.8%, peristimal ulceration 20.2% and intra-abdominal abscess 11.2%.

CONCLUSION: In conclusion, the complications following ileostomy in patients with typhoid ileal perforation included wound infection in 25.8%, peristomal ulceration 20.2%, and intra-abdominal abscess 11.2%.

KEYWORDS: Ileostomy, Enteric Ileal Perforation, Postoperative Complications

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INTRODUCTION:

Typhoid enteric perforation is a communal acute emergency of abdomen in our hospital settings.[1] Maximum patients in Pakistan come from rural zones and have a serious illness when presented in the late final stages with an average delay of 2-3 days from the inception of acute ailment.[2] These cases are -associated with very high mortality. Typhoid fever, also called intestinal fever, is a life threatening multi-organ disease, mainly caused by Salmonella typhi, Salmonella Paratyphi and Salmonella enterica which may cause peritonitis and typhoid perforation.[3] Diagnosis is difficult because patients become ill some time before the perforation, which usually occurs in the second week of the disease. Typhoid intestinal perforation (TIP) mortality rate has been stated to be amid 6% and 63%. The mortality perioperatively rises to 80% in patients with delayed perforation.[4]

An ileostomy can decrease morbidity and mortality associated with anastomotic leakage in the colonic and small gut anastomosis. Ileostomies can prevent morbidity in septicemic patients of ileal perforation due to typhoid fever, tuberculosis, trauma, or ruptured appendix; however, complications (e.g., stomal obstruction, skin excoriation, dehydration due to high ileostomy output causing fluid and electrolyte loss) can occur in up to 16.9% of cases within 60 days.[5]. A diverting ileostomy created during surgical treatment is associated with morbidity but is also a life-saving procedure when indicated. A combination of fluid resuscitation or antimotility therapy and adjusted dietary regimen is indicated in patients with ileostomy complications [6]. The typical output from an ileostomy should not exceed 1500 ml per day.[7]

Ileostomy complications cause laceration from clotting, mucocutaneous suppuration, stoma separation from the skin, and peritonitis. Stoma necrosis can occur due to strangulation and low blood flow from the surgical procedure.[8] Stoma prolapse occurs when the stoma is displaced and proximal bowel slides through the side of the stoma orifice.[9]. Stoma retraction occurs when the stoma is reduced approximately 5 cm below the skin surface; this late complication occurs after weight gain. Stoma retraction may occur only in adhesion, sepsis, radiation of intestine and certain surgical technique.[10]. Bowel obstruction is a common complication and requires surgical intervention.[11]

There is a high rate of complication in loop ileostomies, but they are not life-threatening. An ileostomy can prevent life-threatening complications due to anastomotic leakage.[11] In one study carried out by Mishra M et al had reported that that the prevalence of morbidity was 63.6% and mortality was 15.8%.[12] More over the frequency of wound infection was 10.5%, followed by pneumonia 7.9% and abdominal wound dehiscence in 3.5%.[13]

Methodology

Research work was carried out after taking approval from the hospital ethical board. Patients meeting the inclusion criteria were enrolled. Goal, benefits, and risks of the study were clearly and briefly explained to all patients. Then patients were asked to sign the informed written consent forms, and then those consent form were collected from all patients. Demographic detail like age, gender, and address of each patient were documented, and patients were subjected for detail medical assessment and physical examination was conducted.

Patients diagnosed with typhoid ileal perforation undergone the ileostomy. After 15 days of the procedure, patients were evaluated for post-operative complications depending upon the indications as mentioned in the operational definition. Entire assessment was performed under the supervision of a consultant (fellow) with 5 years of experience.

The entry and analysis of the collected data were performed with the help of SPSS v.21 software. Mean + SDs were expressed for numerical data such as age, weight, height, and BMI. Frequencies and percentages were expressed for numerical data such as gender, post-operative complications (Wound Infection, Peristomal Ulceration andIntra-abdominal Abscess), number of perforation and history of fever. Effect modifiers like (age, BMI, gender, number of perforation, and history of fever) were controlled through stratification. Post-operative chi-square test was performed at 5% level of significance.

RESULTS

This study was conducted on eighty nine patients. Mean age of the patients was 46.07±18.31 years. Mean BMI of the patients was 25.20±1.22 Kg/m2 (Table 1). Table 2 presents the age distribution of the patients. In our study 51.7% patients were male while 48.3% were female patients. In our study single perforation was performed on 73% patients while multiple were performed on 27% patients. In our study 24.7% patients had history of fever.

In our study the postoperative complications were wound infection 25.8%, peristimal ulceration 20.2% and intra-abdominal abscess 11.2% Table 3-8.

Table 1 Descriptive statistics

Variables	Mean	Std. Deviation
Age (Years)	46.07	18.311
Height (Meter)	1.6749	.01501
Weight (Kg)	70.70	3.389
BMI (Kg/m2)	25.2029	1.22843

Table 2 Age distribution

Age distribution (Years)	Frequency	Percent
18 to 35	32	36.0
35 to 55	19	21.3
55 to 75	38	42.7
Gender		
Male	46	51.7
Female	43	48.3
Number of perforation		
Single	65	73.0
Multiple	24	27.0
History of fever		
Yes	22	24.7
No	67	75.3

Table 3 Postoperative complications

Postoperative complications		Frequency	Percentage
Wound infection	Yes	23	25.8%
	No	66	74.2%
Peristimal ulceration	Yes	18	20.2%
	No	71	79.8%
Intraabdominal abscess	Yes	10	11.2%
	No	79	88.8%

Table 4 Stratification of postoperative complications with age

Postoperative complications		Age distribution (Years)						P-value
		18 to 35		35 to 55		55 to 75		
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	
Wound infection	Yes	11	47.8%	3	13.0%	9	39.1%	0.31
	No	21	31.8%	16	24.2%	29	43.9%	
Peristimal ulceration	Yes	10	55.6%	2	11.1%	6	33.3%	0.13
	No	22	31.0%	17	23.9%	32	45.1%	
Intraabdominal abscess	Yes	5	50.0%	1	10.0%	4	40.0%	0.51
	No	27	34.2%	18	22.8%	34	43.0%	

Table 5 Stratification of postoperative complications with gender

Postoperative complications	Gender				P-value
	Male		Female		
	Frequency	Percentage	Frequency	Percentage	

Wound infection	Yes	11	47.8 %	12	52.2 %	0.66
	No	35	53.0 %	31	47.0 %	
Peristimal ulceration	Yes	8	44.4 %	10	55.6 %	0.49
	No	38	53.5 %	33	46.5 %	
Intraabdominal abscess	Yes	5	50.0 %	5	50.0 %	0.91
	No	41	51.9 %	38	48.1 %	

Table 6 Stratification of postoperative complications with number of perforation

Postoperative complications		Number of perforation				P-value
		Single		Multiple		
		Frequency	Percentage	Frequency	Percentage	
Wound infection	Yes	**13**	**39.1 %**	**18**	**60.9 %**	**0.001**
	No	**60**	**84.8 %**	**14**	**15.2 %**	
Peristimal ulceration	Yes	**11**	**38.9 %**	**15**	**61.1 %**	**0.0001**
	No	**62**	**81.7 %**	**17**	**18.3 %**	
Intraabdominal abscess	Yes	**8**	**40.0 %**	**10**	**60.0 %**	**0.0001**
	No	**65**	**77.2 %**	**22**	**22.8 %**	

Table 7 Stratification of postoperative complications with history of fever

Postoperative complications		History of fever				P-value
		Yes		No		
		Frequency	Percentage	Frequency	Percentage	
Wound infection	**Yes**	**7**	**13.0 %**	**24**	**87.0 %**	**0.13**
	No	**23**	**28.8 %**	**51**	**71.2 %**	
Peristimal ulceration	**Yes**	**6**	**11.1 %**	**20**	**88.9 %**	**0.13**
	No	**24**	**28.2 %**	**55**	**71.8 %**	
Intraabdominal abscess	**Yes**	**7**	**30.0 %**	**11**	**70.0 %**	**0.68**
	No	**23**	**24.1 %**	**64**	**75.9 %**	

Table 8 Stratification of postoperative complications with BMI

Postoperative complications		BMI (Kg/m^2)				P-value
		18 to 25		> 25		
		Frequency	Percentage	Frequency	Percentage	
Wound infection	**Yes**	**18**	**60.9 %**	**13**	**39.1 %**	**0.35**
	No	**51**	**71.2 %**	**23**	**28.8 %**	
Peristimal ulceration	**Yes**	**17**	**72.2 %**	**9**	**27.8 %**	**0.70**
	No	**52**	**67.6 %**	**27**	**32.4 %**	
Intraabdominal abscess	**Yes**	**12**	**80.0 %**	**6**	**20.0 %**	**0.40**
	No	**57**	**67.1 %**	**30**	**32.9 %**	

DISCUSSION

Ileostomy is a surgical procedure often required in patients with typhoid ileal perforation. Typhoid fever, caused by Salmonella enterica serotype Typhi, is a major cause of infectious enteritis in developing countries. In severe cases, the infection can lead to ileal perforation, a life-threatening condition that requires urgent surgical intervention. The surgical management typically involves ileostomy, which is the creation of an artificial opening in the ileum to divert fecal matter into an external bag, bypassing the affected portion of the intestine. While this procedure can save lives, it is not without complications. Postoperative complications of ileostomy in patients who have undergone surgery for typhoid ileal perforation include wound infection, peristomal ulceration, and intra-abdominal abscess, which can significantly impact the patient's recovery and overall prognosis.[9] Wound infection is one of the most common postoperative complications following ileostomy formation in these patients. The high mortality and morbidity associated with typhoid ileal perforation, especially in settings where access to healthcare is limited, often result in delays in seeking medical care. These delays, compounded by the patient's already compromised nutritional and immune status; make them highly susceptible to infections. The ileostomy site itself, being an external opening, is a direct route for potential microbial contamination. The presence of fecal matter, the disruption of normal skin integrity, and prolonged hospitalization further increase the risk of bacterial invasion at the surgical site. Infection at the stoma site may lead to redness, swelling, discharge, and fever, all of which are signs of wound infection. In severe cases, untreated wound infections can progress to sepsis, leading to multi-organ failure and death. Managing wound infections requires timely identification,

local wound care, and in some cases, systemic antibiotics tailored to the local microbiological flora.[10]

Peristomal ulceration is another significant complication following ileostomy creation in typhoid ileal perforation patients. Ulceration refers to the breakdown of the skin surrounding the stoma site. This condition is often due to the mechanical irritation caused by the constant contact of the stoma with the external bag, as well as the stool that comes into contact with the peristomal skin. For patients with ileal perforation, the stoma may need to be in place for an extended period, which increases the likelihood of skin breakdown. Furthermore, the constant presence of high-output ileostomy may exacerbate peristomal irritation, as the stool from the ileum is often more liquid and corrosive than that from other parts of the intestines.[11] Peristomal ulceration is characterized by the formation of open sores or lesions, causing significant discomfort for the patient. The ulcers can become infected, leading to further complications such as cellulitis or abscess formation. In severe cases, this condition can cause the patient to experience increased pain, difficulty with stoma bag management, and a decline in quality of life. Preventing and managing peristomal ulceration requires careful monitoring of the stoma site,the use of appropriate skin barriers, and prompt intervention if irritation or infection occurs. Changing the stoma bag frequently, using protective creams, and ensuring that the stoma is positioned correctly can help reduce the risk of ulceration.[12]

Intraabdominal abscess is another serious complication that can arise after the creation of an ileostomy in patients with typhoid ileal perforation. This complication is typically associated with the spread of infection within the peritoneal cavity. After surgical repair of an ileal perforation, there is a risk of bacteria being retained in the abdominal cavity, which can lead to localized collection of pus. An abscess may form as a result of an unresolved infection, such as a failure of the bowel anastomosis, or due to contamination of the surgical site during the procedure. In the context of typhoid fever, where there may be widespread bacterial dissemination, the likelihood of intra-abdominal abscess formation is heightened. Patients with intra-abdominal abscesses often present with fever, abdominal pain, and signs of systemic infection. The abscess may also lead to the development of a localized mass, which can be detected through imaging studies like CT scans or ultrasound. If not addressed promptly, intra-abdominal abscesses can cause sepsis, organ failure, and even death. Treatment typically involves drainage of the abscess, either through a percutaneous approach or via reoperation, and the administration of appropriate antibiotics to target the infecting organism.[13]

Similarly we found that the postoperative complications in our study were wound infection which was found in majority of the patients 23 (25.8%) followed by peristimal ulceration 18 (20.2%) and intraabdominal abscess 10 (11.2%). A study found that the post-operative complications following ileostomy in patients with enteric ileal perforation included wound infection in 30.43%, peristomal ulceration in 26.09%, and intraabdominal abscess in 13.04%.[8]

In addition to these complications, there are several other postoperative issues that may arise in patients who undergo ileostomy for typhoid ileal perforation. These include dehydration, electrolyte imbalances, and malnutrition, as the altered gastrointestinal function can disrupt normal digestion and absorption processes. Moreover, patients may experience psychological distress related to the presence of the stoma, which can negatively affect their mental health and recovery. Despite these potential complications, with appropriate management and monitoring, many patients can recover successfully and adapt to life with an ileostomy.[14]

CONCLUSION

In conclusion, the post-operative complications of ileostomy in patients presenting with typhoid ileal perforation were wound infection 23 (25.8%), peristimal ulceration 18 (20.2%) and intraabdominal abscess 10 (11.2%).

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