

ORIGINAL ARTICLE

DEMOGRAPHIC AND SURGICAL EVALUATION OF TYPHOID ILEAL PERFORATION

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Background: Typhoid perforation of small intestine is one of the most common causes of bowel perforation in the developing countries. The purpose of this study was to determine the prevalence, factors affecting prognosis, and optimal surgical management for typhoid perforation in Sindh. **Method:** One hundred and thirty patients with typhoid perforation were included in the study from July 2005 to June 2007 in the Department of Surgery, Liaquat University Hospital, Hyderabad. Patients were admitted as cases of acute abdomen. Detailed history, clinical examination and relevant investigations were carried out. Double layer primary closure, primary loop ileostomy and segmental resection with end-to-end anastomosis were performed according to the operative findings and condition of the patients. Attention was paid to postoperative complications and course of the morbid condition. **Results:** Majority of patients belonged to deserted areas of district Umerkot (n=35, 26.93%), and Mithi (n=20, 15.38%) followed by Dadu (n=17, 13.08%), Badin (n=15, 11.54%), Jamshoro (n=11, 8.46%), Hyderabad (n=10, 7.69%), Thatta (n=9, 6.92%), Mirpurkhas (n=7, 5.38%) and Sanghar (n=6, 4.62%). Double layer primary closure of single perforation was done in 50 (38.46%) patients, primary loop ileostomy was performed in 68 (52.30%) patients and primary resection and end-to-end anastomosis was performed in 12 (9.23%) patients. Postoperative complications were observed in 79 (60.76%) patients. Wound infection was the commonest complication seen in 70 (53.84%) patients followed by wound dehiscence in 10 (7.69%), faecal fistula in 9 (6.92%), septicaemia in 8 (6.15%), postoperative chest infection in 25 (19.23%), and intra abdominal abscess in 15 (11.53%) patients. Ten (7.69%) patients died due to septicaemia and other reasons. **Conclusion:** Typhoid perforation remains a frequently fatal illness with high prevalence in remote areas of Sindh. Primary loop ileostomy is the single most successful and life saving surgical procedure in terms of overall morbidity and mortality. **Keywords:** Typhoid perforation, demography, surgical procedure, end-to-end anastomosis, Sindh

INTRODUCTION

Typhoid fever is a systemic bacterial infection caused by the bacterium *Salmonella Typhi*. Rarely, non-typhoid *Salmonella* (NTS) like paratyphoid strains A, B and C may be the underlying pathogens.¹ Ileal perforation being the single most lethal complication secondary to typhoid fever is seen in 10–15% patients in tropical countries^{1,2} with a mortality rate of 9 to 43%.^{3,4} In Pakistan, typhoid perforation is the fourth leading cause of death.⁵ Important contributors to poor outcome include delayed arrival of patients in toxic state, poor general health in catabolic phase, inadequate preoperative resuscitation, delayed surgical intervention and gross faecal peritonitis. Appropriate therapy for typhoid perforations is virtually always surgery with the choice of several surgical procedures, depending upon the number of the perforations and patient's general condition. The aim of this study was to document the demographical distribution, prognostic factors and optimal surgical procedures for typhoid perforation.

MATERIAL AND METHOD

One hundred and thirty clinically diagnosed patients with typhoid perforation were admitted and managed from July 2005 to June 2007, in Surgical Emergency,

Liaquat University Hospital, Hyderabad. Detailed history and clinical examination were carried out and baseline investigations along with hepatic profile were done. X-ray chest and abdomen for free gas under diaphragm and ultrasound abdomen and pelvis for free fluid in peritoneal cavity, were carried out in all cases. Patients were adequately resuscitated with IV fluids and broad spectrum antibiotics before surgical intervention. Adequate urinary output and normal serum electrolytes and blood urea were considered good signs of adequate resuscitation.

At laparotomy, samples of peritoneal fluid were taken for culture and sensitivity. Site and number of perforations was noted and amount of pus and faecal material were estimated from the markings on drain bottles. Edge biopsy of perforation was taken for histopathology. Double layer primary closure, primary loop ileostomy and segmental resection with end-to-end anastomosis were the surgical procedures carried out depending upon the operative findings and patient's general status. The peritoneal cavity was irrigated with 4 litres of warm normal saline before putting a peritoneal drain. The abdomen was closed in layers. Any postoperative complications were recorded and managed.

Data of patients were collected on a performa that included demographic details, clinical features, interval between onset of symptoms and admission, interval between presentation and operation, operative findings, procedure performed and postoperative complications, and were analysed using SPSS-16.

RESULTS

Out of 130 patients, 79 (60.8%) were male and 51 (39.3%) were female. The age ranged from 8 to 50 years with majority of the patients in 31–40 years of age (Table-1). The district-wise distribution of patients is depicted in Table-2.

Table-1: Age distribution (n=130)

AGE (years)	Patients	%
8–10	7	5.38
11–20	23	17.69
21–30	27	20.76
31–40	53	40.76
41–50	20	15.38

Table-2: District wise distribution of the cases (n=130)

District	Patients	%
Umer Kot	35	26.93
Mithi	20	15.38
Dadu (Johi & Khaipur Nathan Shah)	17	13.08
Badin	15	11.54
Jamshoro (Kotri)	11	8.46
Hyderabad	10	7.69
Thatta	9	6.92
Mirpurkhas	7	5.38
Sanghar (Khipro)	6	4.62
Total	130	100

The interval between the onset of symptoms and admission for definite treatment was <10 days in 23.7% patients, 10–15 days in 64.1%, and >15 days in 40 (30.7%) patients. Eighty-seven (66.92%) patients were operated upon within 24 hours of presentation while 43 (33.07%) patients were operated between 24 and 48 hours of presentation.

Single perforation was seen in 99 (76.15%) while multiple perforations were observed in 31 (23.84%) patients. Abdominal cavity was found to be heavily contaminated in 78 (60%) patients.

Double layer primary closure of single perforation was done in 50 (38.46%) patients, primary loop ileostomy was performed in 68 (52.30%) patients, and in 12 (9.23%) patients segmental resection with end-to-end anastomosis was performed (Table-3).

Postoperative complications were observed in 79 (60.76%) patients with wound infection the most common complication observed in 70(53.84%) patients followed by wound dehiscence in 10 (7.69%) patients and faecal fistula in 9 (6.92%) patients, septicaemia 8 (6.15%) patients and postoperative chest infection in 25 (19.23%) patients while 15 (11.53%) patients developed intra abdominal abscess. Ten (7.69%) patients died due

to septicaemias and other reasons. The complication rate and mortality was directly proportion to general condition of patients and type of surgical procedure performed (Table-4).

Table-3: Surgical procedure (n = 130)

Procedure	Patients	%
Primary ileostomy	68	52.30
Primary closure in double layer	50	38.46
Resection anastomosis	12	9.23

Table-4: Complications (n=130)

COMPLICATION	Patients	%
Wound Infection	70	53.84
Intra Abdominal Abscess	15	11.53
Postoperative Chest Infection	25	19.23
Wound Dehiscence	10	7.69
Faecal Fistula	09	6.92
Septicaemia	08	6.15
Deaths	10	7.69

DISCUSSION

Typhoid fever is an acute systemic infection with lethal complications, remains a major health problem and a frequent killer in developing countries. Typhoid, especially due to emergence of multi-drug resistant (MDR) stains of *Salmonella typhi* is common.⁶ Intestinal perforation is the most common and dreadful complications of the typhoid fever carrying very high mortality and morbidity rate. We found typhoid perforation in younger and middle aged males in age range between 31 to 40 years which is consistent with other studies.⁷⁻¹¹ The incidence of typhoid perforation was most commonly seen in the desert areas of district Umerkot, Mithi, Mirpurkhas, Badin, and Dadu. Other studies suggests that high incidence is seen in South Asian countries like India, Nepal, Bangladesh, and African countries like Egypt and Nigeria.¹² The high incidence in remote areas reflects poverty, lack of education, inadequate infrastructure, lack of chlorinated water and poor sanitation as the cause of typhoid fever and its frequent complications.

In typhoid ileal perforation, early surgery is the best option after initial resuscitation as it stops source of further faecal contamination of peritoneal cavity.^{13,14} In our study the choice of surgical operation was determined by the number of perforations, general condition of patients and the degree of faecal contamination of the peritoneal cavity. Out of three procedures, primary loop ileostomy was the commonest operation, and was followed by double layer primary closure of perforation. Segmental resection and anastomosis was performed in patients having multiple perforations. Majority of patients had poor general condition with heavy contaminated peritoneal cavity, hence primary ileostomy was the commonest procedure in our study.

Primary ileostomy proved to be most successful procedure, also strongly supported by a

number of similar studies.¹⁵⁻¹⁷ However, Adesunkanmi AR *et al*⁷ have found two layer closure of perforation the most successful procedure.

The overall complication rate in our study was 60.76% with wound infection the most common complication seen in 60 (46.14%) patients. Wound dehiscence was seen in 10 (7.69%) cases. Faecal fistula was seen in 8 (6.15%) patients. Ten (7.69%) patients died due to postoperative complications, of which 8 (6.15%) died secondary to faecal fistula and 2 (1.53%) died due to pulmonary complications.

In this study, minimum complications and very low mortality (1.53%) was observed with loop ileostomy while maximum complications and mortality (8, 96.15%) were observed with primary closure of perforation. This observation is well consistent with other studies.^{9,15,17} The over all low mortality is in contrast to international studies who did not employ loop ileostomies as procedure of choice.^{7,18,19}

CONCLUSION

Typhoid ileal perforation remains a frequent and fatal illness in lower Sindh with a high prevalence in district Umerkot, Mithi, Dadu, and Badin. Adequate resuscitation and early surgery are the key to successful management. Loop ileostomy is the single, life saving procedure that can reduce the mortality and morbidity in the moribund patients of typhoid perforation.

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