ROLE OF ILEOSTOMY IN THE MANAGEMENT OF LATE CASES OF TYPHOID INTESTINAL PERFORATION

Mohammad Tahir[1], Qazi Tahir Uddin[1], Fazal Ahmed[1], Sohail Aziz Paracha,[2] Nafeesa Batool[3]

ABSTRACT

Objective: *To evaluate the outcome of loop illestomy in late cases of illeal typhoid perforation in terms of duration of hospital stay, morbidity and mortality in our set up.*

Methodology: *This prospective study was conducted at Khyber medical University (KMU), Institute of Medical Sciences, Kohat from January 2005 to January 2011. We studied 58 consecutive cases having ileal typhoid perforation of more than 24 hours duration who underwent surgery followed by loop ileostomy. Data was collected on a structured proforma including patient's demographics, clinical features with relevant investigations, operative findings, postoperative complications and length of hospital stay. Patients were regularly followed up for complications.*

Results: *A total of 58 cases were studied over 6 years duration. Fever, abdominal pain, guarding and tenderness in either right iliac fossa or whole abdomen was observed in all 58/58 (100%) cases. Widal test and blood culture was found positive in 25 (43.1%) and 30 (51.72%) of the cases respectively and gas under Rt hemidiaphram was seen in (79.31%) of cases. A single perforation of <1 cm size was found on the anti- mesenteric border of terminal ileum in 51/58 (87.9%) cases. Wound infection (n=15, 26.3%) and peristomal excoriation of skin (n=11, 19.2%) were common postoperative complications. Mean hospital stay was 7.53±4.9 days and median hospital stay was 6 days. Mortality rate was 3.45 % in our study.*

Conclusion: *Loop Ileostomy is a safe procedure having good outcome in terms of low morbidity, mortality and hospital stay in properly selected cases of illeal typhoid perforation.*

Key Words: *Typhoid complication, intestinal perforation, loop ileostomy.*

This article may be cited as: Tahir M, Uddin QT, Ahmed F, Paracha SA, Batool N. Role of ileostomy in the management of late cases of typhoid intestinal perforation. Khyber Med Univ J 2012;4(3):110-114.

INTRODUCTION

Typhoid fever is a severe febrile and life threatening disease caused by gram negative bacillus salmonella typhi transmitted by the oro-faecal route. Typhoid fever is a global health problem having a devastating socio-economic impact but the developing countries are particularly the victims due to improper sanitation and waste disposal system[1] with an incidence of >100 /100000 cases per year[2]. It is endemic in many developing countries where disease occurs the entire year.

1 Assistant Professor Surgery, Khyber medical University (KMU), Institute of Medical Sciences KIMS (KIMS) Kohat, Pakistan.

2 Assistant professor Anatomy, Khyber medical University (KMU), Institute of Medical Sciences KIMS (KIMS) Kohat, Pakistan

3 Assistant professor Medicine, KIMS Kohat, Pakistan.

Address for Correspondence:
Dr Mohammad Tahir
Assistant professor in surgery
KMU Institute of Medical Sciences,
DHQH KDA Kohat, Pakistan
Email: tahirbangash@yahoo.com
Date submitted: March 13, 2012
Date revised: September 26, 2012
Date Accepted: September 28, 2012

Typhoid fever has many complications and intestinal hemorrhage is the commonest one but perforation in terminal ileum is the most lethal one leading to high morbidity and mortality[3,4]. There are longitudinal ulcers on anti mesenteric border of terminal ileum due to abundance of Payer's patches leading to perforation with a reported incidence of 9-39%[5,6]. Short duration of symptoms, inadequate antimicrobial therapy, male sex, and leucopenia are independent risk factors for enteric perforation in patients with typhoid fever[3]. Multiple factors affect overall prognosis adversely in typhoid perforation like delayed presentation, state of shock, inadequate preoperative resuscitation, delay in surgery, number of perforations and degree of fecal contamination of the peritoneal cavity. The reported mortality rate of typhoid related intestinal perforation is from 5% to 62% but the perioperative mortality in such cases rises up to 80% who present late[7].

Various surgical treatments have been tried but the best and widely acceptable surgical option in typhoid ileal perforation has still not yet been established. A wide variety of surgical procedures currently available to treat typhoid perforation include primary double layered closure,[8] segmental resection with end- to- end anastomosis[9] and primary ileostomy[10,11]. However various researchers worldwide have recommended loop ileostomy in

cases of typhoid perforation who presents late to be the most successful procedure in terms of overall mortality, morbidity, hospital stay and return to work as compared to primary anastomosis alone[11,12]. Doing ileostomy in late cases of typhoid perforation with friable gut defuntions the diseased gut, diverts the infected fecal matter, protects the intestinal repair done in septic tissues and hence reduces the anastomotic dehiscence[10]. But the main disadvantage of doing ileostomy is that it needs further surgery for its closure, leads to ileostomy related complications like ileostomy diarrhea leading to nutritional disturbances, excoriation of skin, ileostomy prolapse or ileostomy retraction. In Pakistan various studies have been conducted on typhoidal ileal perforation with variable results. Keeping in view the merits of loop ileostomy a study was conducted with the objective to evaluate the outcome of illestomy in late cases of illeal typhoid perforation in terms of duration of hospital stay, morbidity and mortality in our set up.

METHODOLOGY

This descriptive hospital based study was carried out in department of surgery, DHQ teaching hospital, Khyber Medical University (KMU), Institute of Medical Sciences, Kohat from 2005 to 2011. It comprised of 58 clinically diagnosed patients of typhoid ileal perforation who underwent surgery followed by loop ileostomy. Inclusion criteria included patients of either gender with proven typhoid perforation of more than 24 hours of presentation (onset of abdominal pain with enteric fever), having gross peritoneal soiling with friable gut on laparatomy and cases in which loop ileostomy was performed.

All those cases with doubtful history plus clinical examination and operative findings of ileal perforation other than typhoid, patients with primary closure complicating to re-perforation who were subsequently managed by ileostomy, patients who had been operated upon elsewhere for typhoid ileal perforation and patients with co-morbid diseases were excluded from the study. Convenient sampling technique was used for the collection of sample and the study had been priorly approved by ethical committee of hospital.

Diagnosis of ileal typhoid perforation was based upon clinical features (history of fever followed by pain abdomen with other features of peritonitis) with relevant investigations (Patients with proven typhoid had either positive blood culture or positive widal reaction defined as either 'H' or 'O' titer above 1 in 160 or both titers above 1 in 80) or positive peroperative findings i.e., perforation seen at anti-mesenteric border of the terminal ileum within two feet of the ileocaecal junction along with inflamed swollen Peyer's patches and usually normal looking rest of the gut. Investigations were also carried out to assess the cardiopulmonary and renal functions.

All these patients were preoperatively actively resuscitated and started on intravenous fluids including colloids and crystalloid combination, antibiotics like fluoroquinolone (ciproxin) plus metronizazole (flagyl). All the cases had been catheterized to monitor urine output and nasogastric tube was put in for gastric aspiration. When the patients became stable, laparatomy was performed within 24 hours after admission in all the cases under general anesthesia by giving midline incision. The operative findings were noted and double layered closure of perforation /perforations with vicryl 0 was done after refreshening of edges followed by proximal defunctioning ileostomy. Peritoneal toilet was done with 3-4 liters of normal saline and abdomen was closed in mass after putting a drain in. Loop Ileostomy was closed in all the cases within 6–8 weeks by standard technique of closure after doing preoperative distil loopogram to detect distil patency. Five patients had been shifted to the ICU postoperatively in view of their moribund condition while the rest of them were nursed in the surgical ward. Postoperatively all the patients were maintained on intravenous injection of above mentioned antibiotics for 10 days.

Data was collected from the patients on a structured proforma including patient's demographics, detailed history with clinical examination and relevant investigations, operative findings, postoperative complications and length of hospital stay. Written consent for the operation and permission for using the data for scientific research was obtained before surgery. All the operated patients were followed up postoperatively for 8 weeks in surgical OPD for any complications. All the findings were documented on proforma and subjected to statistical analysis by using software SPSS version 14.0.

RESULTS

Age of the studied patients ranged from 5 to 56 years with mean of 26.67±11.58 years. Majority (58.61%) presented in 2nd and 3rd decade of their lives. Male was

PROFILE OF CLINICAL FEATURES AT THE TIME OF ADMISSION SEEN IN TYPHOID INTESTINAL PERFORATION (N=58)

Clinical features	No. of cases	Percentage
Pain abdomen	58	100
Fever	58	99.5
Dehydration	34	58.62
Hypotension	20	44.8
Tenderness	58	100
Guarding	58	100
Abdominal distension	35	60.34
Rose spot	6	10.34
Bowel sounds absent or sluggish	52	89.6

Table I

OPERATIVE FINDINGS OBSERVED IN TYPHOID ILEAL PERFORATION (N=58)

Operative finding		Frequency (n=58)	%age
Severity of peritoneal cavity contamination	Moderate	13	22.41
	Severe	45	77.59
Number of perforations	Single	51	87.93
	Multiple	07	12.07
Size of perforation	< 1cm	48	82.76
	>1cm	10	17.24
Distance from ileocaeccal junction	0-15 cm	20	34.48
	16-30 cm	28	48.28
	31-45 cm	10	17.24
Location of perforation on terminal ileum	Antimesenteric border of ileum	50	86.21
	Mesenteric border of ileum	08	13.79

Table II

MORBIDITY AND MORTALITY SEEN IN 56 CASES OF TYPHOID INTESTINAL PERFORATION

Complications	No. of patients	Percentage
Wound infection	15	26.3
Peristomal Skin excoriation	11	19.2
Septicaemia	5	8.77
Broncho-pneumonia	2	3.45
Burst abdomen	1	1.75
Mortality	2	3.45

Table III

the predominant sex (39 males versus19 females) with male to female ratio of 2:1.

Pain abdomen (58/100%), fever (58/95%), tenderness with guarding (58/100%) right iliac fossa or whole abdomen were the most common observed symptoms and signs (Table I).

Widal test and blood culture was found positive in 25 (43.1%) and 30(51.72%) of the cases respectively and gas under right hemidiaphram was seen in 79.31% of cases. Serum electrolytes were found deranged in 85% 0f the cases.

A single perforation was found in on antimesenteric border of terminal ileum in more than 51(87%) cases while the rest of the peroperative findings noted are depicted in Table II.

Wound infection and peristomal excoriation of skin was observed in 15(26.3%) and 11 (19.2%) of the cases respectively. Table III shows the other less common early postoperative complications. None of the patients with proximal defunctioning ileostomy developed fecal fistula or Ileostomy related complications like ileostomy diarrhea, ileostomy prolapse or ileostomy retraction.

Mean hospital stay was 7.53±4.9 days and median hospital stay was 6 days. Majority (n=43/57) of patients remained in the hospital from 3-7 days as their ileostomy started working efficiently within 1-2 days. The hospital stay was prolonged in rest of the patients (25.86%) and ranged from 8-18 days due postoperative complications like major wound infection, peristomal excoriation of skin and burst abdomen.

Two patients (3.45%) died during hospital stay. One patient died due to severe septicemia at the time of presentation that was operated after effective resuscitation but developed multi organ failure postoperatively leading to death. One patient developed severe peri-stomal excoriation of skin leading to progressive malnutrition resulting in septicemia and death.

DISCUSSION

There is a worldwide consensus that the ileal perforation due to typhoid is best managed surgically, contrary to the former belief of their best conservative management as the later carries a high morbidity and mortality[12,13]. Various surgical modalities have been tried but found unsatisfactory as primarily the outcome of typhoid ileal perforation does not depend upon the surgical procedure alone, but rather on the general status of the patient, the virulence of salmonella typhi and the duration

between onset of illness and commencement of surgery[14].

Variety of adverse factors affect overall prognosis including outcome of surgical treatment like late presentation, inadequate pre-operative resuscitation, delay in surgery, degree of fecal contamination of abdominal cavity, number of perforations[15]. So in order to achieve the best result all contributory factors need to be addressed. Primary double layered closure of the perforation is a preferred technique in clinically stable patients with a single perforation with minimal soiling of the abdominal cavity but patients with gross peritoneal contamination, who present late or are severely ill, should be managed by loop ileostomy as sepsis and bowel oedema make suturing hazardous[16].

Critical analysis of the findings of our study shows that good results were achieved in late cases of typhoid ileal perforation treated by proximal defunctioning ileostomy in terms of mean hospital stay, postoperative complications and mortality. This survey was conducted on 58 cases of typhoid ileal perforation showing mean hospital stay of 7.53±4.9 days, morbidity rate of 58.62% and mortality rate of 3.45%.

Typhoid ileal perforation is common in second and third decade of life[17,18]. Our study also supports this fact as 58.61% of our patients were < 30 years of age. There was a clear male predominance of males seen in our study (39/58 males versus19 females males versus19/58 females) which is in accordance with other similar national and international studies reporting higher frequency of typhoid ileal perforation in males[19,20]. The reason for this male preponderance may be that men spend more time in consuming foods outdoor so have an increased risk of exposure to typhoid fever as compared to women.

The preoperative resuscitation plays an important role in management of typhoid ileal perforation and it is of great value in cases who present late. Any delay in resuscitation leads to increased peritoneal contamination, sepsis and multiorgan damage leading to high mortality. In current study majority of patients presented with adverse prognostic factors like dehydration, hypotension, electrolytes disturbance and sepsis so a standard protocol was adopted including gut decompression, correction of fluid loss and electrolytes imbalance and regular start of antibiotics to combat sepsis. Duration of Hospital stay in our study was ranging from 3-28 days with (mean of 7.53±4.9 days). The reason behind the short postoperative hospital stay is the low rate of complication associated with loop ileostomy. These figures correlate well with the prevailing literature[21,22] .

Double closure of typhoidal perforation with proximal defunctiong illeostomy in cases who presents late is safe procedure as it is associated with low rate of postoperative complications. In our study the morbidity rate was 58.62% which is in consistent with other similar surveys[21,22]. The most common complication seen in our study was wound infection (26.3%) followed by peristomal excoriation of skin (19.2%). All patients of wound infection in our study were managed conservatively by stitch removal, regular dressings and antibiotics according to culture and sensitivity. Patients with peristomal excoriation of skin were treated calamine lotion. Ulceration provokes some awful skin pain, inducing the patient to self-limitation of food intake. This can result in malnutrition, cachexia and death. One patient (1.78%) died from this complication in current series. It is an ileostomy related complication which can be minimized by exteriorizing ample nipple of proximal ileum at the time of operation, application of well fitted appliance and good ileostomy care by a stoma care specialist. The results of these two complications are comparable with findings of others[21,22].

The reported mortality rate of typhoid ileal perforation after surgery with loop ileostomy is 5%-57%[23]. The mortality rate in our study was 3.45% which is in accordance with other similar studies[24,25]. Late presentation, peritonitis leading to sepsis, skin excoriation resulting in nutritional disturbance and lack of well equipped ICU were the main contributors responsible for mortality in this series. The low mortality rate in our study might be secondary to factors such as proper case selection, early and appropriate surgical intervention, adequate and aggressive perioperative resuscitation, safe anesthesia, and delivery of wide-spectrum antibiotics with low resistance.

Limitations of our study were the limited number of cases in study and non availability of well equipped intensive care unit in our hospital. It is recommended that preventive measures of typhoid fever should be taken at government and public sector levels to create public awareness and a system may be developed for early referral of the cases of typhoid ileal perforation in order to achieve good outcome.

CONCLUSION

It is concluded that proximal defunctiong illeostomy in late cases of illeal typhoid perforation is a safe procedure with good outcome in terms of duration of hospital stay, morbidity, and mortality. However large scale comparative studies are required to compare the outcome of this procedure with other available procedures in the management of typhoid ileal perforation.

REFERENCES

1. Sumer A, Kemik O, Dülger AC, Olmez A, Hasirci I, Kisli E et al. Outcome of surgical treatment of intestinal perforation in typhoid fever. World J Gastroenterol 2010; 16(33): 4164-8.

2. Crump JA, Luby SP, Mintz ED. The global burden of typhoid fever. Bull World Health Organ Genebra 2004; 82(5): 346-53.

3. Hosoglu S, Aldemir M, Akalin S, Geyik MK, Ibrahim H, Tacyildiz, et al. Risk factors for enteric perforation

in patients with typhoid fever. Am J Epidemiol 2004; 160: 46-50.

4. Saxe JM, Cropsey R. Is operative management effective in treatment of perforated typhoid? Am J Surg 2005; 189: 342-3.

5. Singh A, Sing K, Grover AS. Two layer closure of typhoid ileal perforations: A prospective study of 46 cases. *Br J Surg*1995; 82: 1253-5.

6. Karmacharya B, Sharma VK. Results of typhoid perforation management:Our experience in Bir Hospital, Nepal. Kathmandu Univ Med J 2006; 4: 22-4.

7. 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. p. 2287-903.

8. Athie CG, Guizar CB, Alcántara AV, Alcaraz GH, Montalvo EJ.25 years experience in the surgical treatment of perforation of ileum caused by salmonella typhi at the general hospital of Mexico City. Surgery 1998; 23: 632-6.

9. Kaul Bk. Operative management of typhoid perforation in children. Int Surg 1975; 60: 407.

10. Singh KP, Singh K, Kohli JS. Choice of surgical procedure in typhoid perforation. Experience in 42 cases. Indian Med Assoc1991; 89: 255-6.

11. Khalid S, Irfan A. Outcome of ileostomy in cases of typhoid perforation presenting after 48 hours. J Rawalpindi Med Coll 2000; 4: 7-19.

12. Meh EA, Dogo P, Attah MM, Nmadu PT. Comparison of three operations for typhoid perforation. Br J Surg 1997; 84: 558-9.

13. Ellis BW, Brown SP. Gastrointestinal and hepatobilliary emergencies in the tropics. In: Waters D (Editor). Hamilton Baileys emergency surgery.13th edition. London: Hodder Arnold; 2000. p 772-73.

14. Agkun Y, Bac B, Boylu S, Aban N, Tacyildiz I. Typhoid enteric perforation. Br J Surg 1995; 82: 1512-15.

15. Gibney EL. Typhoid enteric perforation in rural Ghana. Int J Coll Physicians Surg 1988; 17: 105.

16. Gupta S, Kaushik R. Peritonitis– the Eastern experience. World J Emerg Surg 2006; 1: 1-13.

17. Bhopal FG , Azhar F, Naseer-Ud-Din, Fatima T. Selective Management of Typhoid Perforation of Bowel. Pak J Surg 2011; 16(3): 123-6.

18. Beniwal VD, Jindal J, Sharma S, Jain S, Shayam G. Comparative study of operative procedures in typhoid perforation. Ind J Surg 2003; 65: 172-7.

19. Khan JS, Hassan H, Bhopal FG, Mehmood N, Taj N, Khan JA, et al. Typhoid perforation: A ten years experience in a surgical unit. J Rawalpindi Med Coll 2002; 6(2): 70-3.

20. Talwar S, Sharma RK, Mittal DK, Parsad P. Typhoid enteric perforation. Aust NZ J Surg 1997; 67: 351-3.

21. Farooq T, Rashid MU, Lodhi MF, Farooq A, Ahmad S. Enteric ileal perforation primary repair versus loop ileostomy. Annals Punjab Med Coll 2011; 5(1): 15-7.

22. Malik AM, Laghari AA, Mallah Q, Qureshi GA, Talpur AH, Effendi S et al. Different Surgical Options and Ileostomy in Typhoid Perforation. World J Med Sci 2006; 1(2): 112-6.

23. Stoner MC, Forsythe R, Mills AS, Ivatur RR, Broderick TJ. Intestinal perforation secondary to Salmonella typhi: Case report and review of the literature. Am Surg 2000; 66: 219-22.

24. Siddiqui FG, Shaikh JM, Soomro AG, Bux K, Memon AS, Ali SA. Outcome of ileostomy in the management of ileal perforation. J Liaquat Uni Med Health Sci 2008; 7: 168-72.

25. Hassan F, Sinha RK, Sinha CP, Pratap V, Sinha DK. Ileostomy in management of typhoid enteric perforation presenting late: an experience at tertiary-care hospital, Jharkhand, India. Pak J Surg 2010; 26(2): 108-10.

AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

MT: Conception and design, acquisition of data, Critical revision, Final Approval of the manuscript

QTU: Acquisition of data, Analysis and interpretation of data,

FA: Acquisition of data

SAP, NB: Drafting the manuscript

CONFLICT OF INTEREST

Authors declare no conflict of interest

GRANT SUPPORT AND FINANCIAL DISCLOSURE

NONE DECLARED

KMUJ web address: www.kmuj.kmu.edu.pk

Email address: kmuj@kmu.edu.pk