

Ileostomy in Typhoid Perforation

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This is a prospective observational study carried out during last five years (Jan, 1998 to Nov, 2002) The purpose was to study guidelines of case selection for different available procedures to treat typhoid perforations. Ninety cases of typhoid perforation were treated by different procedures. The complete records were maintained and a designed protocol of management was observed. Male to Female ratio was 4 to 1. Average age 26 years (7 cases below 10 years and 6 cases above 40 years) Only 17 cases (18.88 %) presented within 24 hours, the largest group of 31 cases (34.44 %) presented after 72 hours. Although complication rate was very high in the late reporting, no significant mortality difference was noted. Primary ileostomy (group 1) 18 cases had no mortality, 53 cases of simple perforation closure had 5 mortalities (9.43%), resection anastomosis group that is 19 cases had 2 mortalities (10.5%), closure of the ileostomies (19 cases) had no mortality and a very low complication rate. In our study ileostomy is a good life saving procedure to be used judiciously, accepting its inconvenience to the patient.

Key words: Typhoid Perforation, Ileostomy.

Typhoid Ulceration of small bowel has been a challenge for us for a long time. Starting from a very high mortality of 30 to 50 percent in prechemotherapy¹ era, we have now reached 4 to 5 percent² mortality rate in spite of our very aggressive approach and improving medical care. Strategies keep on changing as the experience accumulates and the best option is still awaited. The treatment methods have to be tailored according to the requirement of each case and in management of typhoid perforation we have several choices like simple closure, ileal resection, ileostomy and right hemicolectomy³. The complication rate is quite high and the toxemia of sepsis is the main mortality factor⁴. In the present study, which started five years ago, we have been treating our cases according to latest recommendations and keeping proper record on the protocol Performa. We are actually auditing our experience of five year of management of typhoid perforation stressing the role of ileostomy as a very safe procedure⁵.

Patients and methods

All patients presented to our unit with small bowel perforation due to typhoid were included. Resuscitation with fluids (usu. Ringer Lactate) was initiated. Antibiotics (Ciprofloxacin, Metronidazole & Gentamycine) started. All patients had Hb, TLC, DLC, Blood Urea, X-ray Chest & Abdominal X-rays done. No special test to diagnose Salmonella infection was done. Blood transfusion was given if required. Intake-output chart maintained aiming at least 50 cc per hour urine output. After correction of serum electrolytes, Hb, hemodynamics and achieving 50 to 60cc urine output per hour patient was taken to theatre, and laparotomy performed through midline incision. Bowel eviscerated and studied for perforation. Single perforation with satisfactory state of rest of the ileum was closed with interrupted silk sutures. Two or more perforations or thinned out very fragile ileum needed either local resection or right hemicolectomy. High-risk cases like the one presenting very late, with established peritonitis, abscesses,

general condition not allowing more operation time or where we anticipated high incidence of anastomotic failure, end ileostomy was the treatment of choice. These cases we call group I ileostomy (the primary procedure). Whenever we had to re-explore our cases due to closure failure, second perforations (appearing late) or anastomotic breakdown we mostly resorted to ileostomy and this batch of cases are named group II. All post operative progress notes were well documented on protocol proforma.

Results

During the nearly 5 years (Jan, 1998 to Nov, 2002) we had 90 patients presenting with small bowel perforation due to typhoid enteritis. 7 cases were below 10 years of age and 6 cases were above 40 years of age. Mean age was 26 years. Male to Female ratio was 4 to 1.

Table 1. Risk factors in our cases (n=90)

Risk factor	n	Complications	Mortality	
			n=	%age
Age				
i. Below 10 years	7	20	1	14.28
ii. Above 40 years	6	30	1	16.66
Diabetes mellitus	4	12	-	-
Early presentation	17	11	1	5.88
Late presentation				
i) After 24 hrs	10	13	1	10
ii) After 48 hrs	17	30	1	5.88
iii) After 72 hrs	31	55	2	3.45
iv) After one week	15	28	2	13.33
Number of perforation				
One	62	88	4	6.45
Two	17	27	2	11.76
Three	7	17	1	14.28
More	4	5	0	0

To ascertain the outcome, different risk factors along with their morbidity and mortality figures are given in table 1. Surprisingly the number of perforation does not seem to influence the outcome perhaps because the procedure is

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changed according to the requirement. The various treatment options along with their complication rate and mortality is given in table 2. Ileostomy group I has the least morbidity and no mortality. Table 3 shows the complication rate in the two groups of ileostomy. Luckily there is no mortality of closure of ileostomy, which is strictly after 3 months. A low rate of minor complications is experienced. (no record)

Table 2. Procedures

Procedures	n	Compl ications	Mortality	Ave. hospital stay
Closure of perforation	53	98	5	13 days
Rt. Hemicolectomy	3	7	0	11 days
Ileal resection & anastomosis	16	21	2	13 days
Ileostomy (primary) 2 nd procedure	18	11	0	12 days
Re-exploration with the procedure	16	22	2	
i) Ileostomy	11	16	1	
ii) Reclosure of perf.	3	6	0	
iii) Drainage of abscess	7	13	1	
Closure of ileostomy	29	7	0	
Incisional hernia repair	3	3	0	

Note: 2nd procedure list does not include minor procedures.

Table 3. Complications of ileostomy

Complication	Group-I (n=18)	Group II (n=11)	%age	
			Group I	Group II
Wound abscess	5	7	27.77%	63.63%
Wound dehiscence	2	4	11.11%	36.33%
Residual intra- abdominal abscess	3	2	16.66	18.88
Technical fault requiring refashioning	3	1	16.66	9.09%
Mortality	0	1	0	9.09%

Discussion

We are actually talking about ileitis with ulcers, which presents with perforations. We in fact arbitrarily believe them typhoid ulcers without histological examinations and even without trying to prove the concomitant presence of *Salomonella* infection. It is merely for our convenience and an attempt to conserve our dwindling resources. As believed by several African and Indian authors it does not influence their management protocol^{6,7}. They also made the diagnosis of typhoid ileitis with perforation on the history and then on gross appearance of the bowel and by ruling out other causes of bowel ulceration.

Specificity and sensitivity of Widal test and multiple blood cultures are also not 100%, and there are so much expenses and fallacies that it is not worth the headache. Elisa and Typhoid dot are not available in our hospital^{3,7}.

The exact incidence of bowel perforation in established cases of typhoid septicemia is not known. It is probably nearly 3%. Even the half hearted treatment by our lazy practioners has reduced this incidence during the past 3 to 4 decades but the deteriorating socio economical conditions of the third world has helped maintaining the endemic status of this disease swarming our surgical wards with this complicated pathology. These cases present late on 2nd to 7th days after perforation further adding to our challenges¹. Once received these patients must be resuscitated to restore normal hemodynamics and adequate antibiotics levels. Quinolones³ have better coverage against salmonellosis but coverage against anaerobes (metronidazole) and gram -ve organisms (aminoglycosides) are also added. Renal function status should be known. Serum electrolytes should be corrected.

Other than concomitant systemic and metabolic disorders, disease related risk factors also influence the outcome. Severity of pathology as reflected by the number of perforations, state of ileum (severity of ileitis), length of bowel involved, extent and duration of peritonitis are also the factors to be considered in choosing the treatment option⁹. There is not controversy in the treatment. We have several procedures available and we need to pick up the most suitable for our cases. Simple closure with interrupted silk sutures (single layer) gives adequate seal and there is no need to put the second row of sutures, which might result in ischemia of margins. This closure along with thorough mopping followed by generous peritoneal toileting with copious amount of saline (warmed upto body temperature) is good enough when the rest of the ileum is not badly inflamed and fragile. Even two or three perforation with good ileum might be effectively treated this way¹⁰.

In a worse disease revealing a good length of fragile and grossly inflamed ileum with several areas of impending perforations it is worth doing resection of sick bowel and anastomosis. This might need right hemicolectomy if the perforations and/or very sick segment of ileum is close or at the ileocaecal junction. The choice between primary anastomosis or ileostomy depends upon the bowel wall and the amount of sepsis present in the peritoneal cavity. Ileostomy is a safe procedure and life saving. In almost all the series presented this option has been used quiet frequently primarily or at the time of re-exploration for the first procedure failures¹¹. This rules out the potential hazards of the closure or anastomotic breakdown and carries very low mortality as reflected in our present series of 18 primarily done ileostomies. Once

we operate the patient to treat the first procedure failure the patients are very sick due to recurrence of peritoneal insult there is nearly no place to take a chance of reclosure of perforation or redoing the anastomosis. Then the best option is ileostomy³. In our this second group we have 11 ileostomies and this group has one mortality (9.1 %). There is a second operation of closure of ileostomy these patients are facing but this has very low morbidity and mortality rate. Agreed that ileostomy care and job interference carry lot of meanings to the one who owns it but still nothing matches "the life". It is quiet clear from our result tables that simple closure and rescetion anastomosis has very high complication rates including mortality of 9.43 % and 10.5 % respectively. This is directly related to technique failure, the disease is being well taken care of by the effective drugs. "The peritoneum can take lot of insult but once", professor Rene Mengu used to say but the continuing contamination ends in septic syndrome. The complication rate in the group 2 of ileostomy is also higher than the group 1. The hospital stays is not very significantly different in the different procedures groups.

The primary ileostomy group did not require re-exploration or second operation for complications (except that they require closure of ileostomy). Other group needed second operation for complications in 16 cases (22.22 %). So we conclude that after proper resuscitation of these cases of typhoid perforation the decision of procedure should be case selective and there should be no hesitancy to judiciously use the option of ileostomy for very bad

cases while dealing with multiple perforations or very fragile or grossly inflamed bowel or very sick patients who will not stand the second insult of treatment failure.

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