

Role of Primary Closure in the Management of Early Cases of Typhoid Intestinal Perforation, in Our Set Up

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ABSTRACT

Objective: To see the benefits of primary closure in typhoid intestinal perforation in early cases, regarding morbidity and mortality in KPK.

Study Design: Prospective study

Duration and Place of Study: study was performed at teaching hospital of KMU-IMS, Kohat from March 2006 to March 2014.

Material and Method: In this prospective study, we included 76 cases of single perforation of less than 24 hours in terminal ileum in typhoid fever patients, these patients had primary closure in 2 layers. Data was collected on a structured proforma. Patients' data included demography, clinical features, investigation post-operative complications, hospital stay and follow up.

Results: 76 cases were included in the study over 8 years. Mean age was 24 ± 10.7 years with m:f ratio of 1:2.6. In 100 % cases pain abdomen, fever, tenderness in either right iliac fossa or generalised in the abdomen were observed. Widal test, Typhidot and blood culture was positive in 51, 54 and 58 out of 76 patients in same order.

Wound sepsis was a common post-operative complication 12/76(15%) other post-operative complications were pulmonary infection, abdominal dehiscence, intra peritoneal abscesses and Intestinal haemorrhage. Mean duration of hospital stay was 13.34 ± 4.20 days. Mortality was 1.3%

Conclusion: Two layer primary closure is an effective procedure having good results. Both morbidity and mortality are low and associated with reasonable length of hospital admission.

Key Words: Perforated Ileum, Primary Closure, Complication of typhoid

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INTRODUCTION

Typhoid fever is an infectious disease in tropical countries. It is caused by species of *Salmonella*. In fact it is one of most common febrile illnesses in developing countries¹. *Salmonella* species affects Peyer's patches in 2nd period of bacteraemia. These diseased Peyer's patches in terminal ileum may perforate and then adopt a horrible shape. Intestinal content with mixed bacterial flora is leaked into the peritoneal cavity. These bacteria, through stomata on the under surface of diaphragm have easy access to the circulation. Incidence of perforation may be up to 9-39 percent^{2,3}. Here it is associated with peritonitis, septicaemia and death. Mortality is reduced when operated⁴ and then conservative approach⁵. Even with surgical operation mortality varies. A number of procedures are tried to reduce the dreadful outcome. Primary closure⁶, primary closure with excision of margins, ileotransverse colon anastomosis, excision of disease segment with anastomosis^{7,8} and temporary ileostomy^{9,10}.

Primary closure and temporary ileostomy are commonly practised. Ileostomy has low mortality. But primary closure if tried judiciously, can give equally good results. Important factor is time since perforation.

Primary closure is a relatively simple procedure and it does not need 2nd surgery for its closure, but inflammation affected softening of the diseased gut i.e. friability may lead to re-perforation and enterocutaneous fistula. Ileostomy in typhoid perforation with inflamed soft gut has so many advantages, it diverts the infected faecal matter, relieves pressure on repair done. Therefore reduces the failure of repair. But there are disadvantages as well, 2nd surgery is mandatory in closing the ileostomy hence increases overall hospital stay, it can be associated with complications of ileostomy like, skin problems, prolapse of ileostomy and retraction of ileostomy¹¹.

In our country much work has been designed and performed on management of this condition, as it a common problem in our set up, with variable results. Primary closure if done in early case where the gut condition is good and patient's haemodynamic condition is stable, may be an appropriate procedure¹¹ and it seems that doing ileostomy randomly in all cases without selection probably is an over treatment.

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Keeping in view the merits of primary closure in highly selected cases this study was performed with the objective to determine the efficacy of the procedure under mentioned conditions, with reference to morbidity and mortality in KPK.

MATERIALS AND METHODS

This prospective study, approved by the ethical committee included 76 cases, during a period 8 years from March 2006 to March 2014. In DHQ teaching hospital of KMU-IMS Kohat. Convenient sampling technique was used for collection of cases. Clinical picture of peritonitis with prior history of fever, body aches and other toxic symptoms were considered as typhoid intestinal perforation. Confirmation by abdominal radiographs showing pneumo peritoneum was done. Other investigations were widal, typhidot, blood culture and biopsy of the margin of perforation in intestine to exclude tuberculosis. Single perforation in ileum and period of less than 24 hours since perforation were included in study.

More than 24 hours old since perforation, multiple perforations in intestine, friable gut and re perforations were excluded.

Fluoroquinolone and metronidazole were started as preoperative antibiotic and continued in the post-operative period. Crystalloids were given for rehydration. Through a midline incision abdomen was opened. Perforation in ileum was closed in two layers with polyglyctin 2/0 (vicryle) after debridement of the margin of perforation. Judicious debridement of the peritoneal surfaces, thorough lavage with normal saline was done and peritoneum mopped to dry with gauze. A peritoneal drain was left for 72 hours.

Post-operative analgesia was given and vitals were monitored. Patients were kept nil per oral for 72 hours or one day more. They were advised to take liquid and semi-solid diet for 14 post-operative days. At discharge it was ensured that these patients were afebrile.

Data was collected on pre-designed proforma with name of patient, demography, symptoms and signs, findings, investigation, complications and duration of stay in hospital. Data was analysed and recorded. Patients were followed for 8 weeks in outpatient department.

RESULTS

76 cases of typhoid perforation were selected on criteria already determined. Age range was 4-58 years. 47 patients presented in 2nd and 3rd decades. Mean age of presentation was 24 ± 10.32 years. Details in table 1. Male was the predominant gender. There were 54 male and 21 female with the ratio of 1:2.6

Clinical features are given in table 2. 76 out of 76 patients had fever. Pain abdomen was also found in 100% cases. Tenderness either generalized or in right iliac fossa was there in 76/76 patients..

Widal test was positive in 51/76 (67%). while blood culture and typhi dot were positive in 54/76 (71%) and 58/76 (76%) cases respectively.

Wound sepsis was the most frequent complication. It occurred in 12/76 (15.7%) cases. This was followed by pulmonary infection, abdominal dehiscence, intra peritoneal residual abscesses table-3.

There was no case of re perforation or entero-cutaneous fistula recorded in the study

Hospital stay for majority, 50/76 (65.7%), of these patients was 7-14 day. 21% had a hospital stay of more than 3 weeks mentioned in table-4 with an average stay of 13.34 ± 4.20 days.

Mortality: one patient (1.3%) died, his preoperative septicaemia continued and he could not come out of shock.

Table No.1: Age distribution of 76 cases typhoid perforation

1	Age in years	Number of patients	Percentage
2	0-10	7	9.2
3	10-20	22	28.9
4	20-30	27	35.5
5	30-40	10	13.1
6	40-50	8	10.5
7	50+	2	2.6

Mean age = 24 ± 10.32 years

Table No.2: Clinical features in 76 patient of typhoid intestinal perforation

Fever	76	100
Pain abdomen	76	100
Low blood pressure systolic below 90mm hg	50	65.7
Tender abdomen	76	100
Distended abdomen		80
Sluggish bowel sounds		90
Dehydrated	76	100

Table No.3: Post-operative Complications in 76 patient of typhoid intestinal perforation

S.No	Complications	No. of patients	Percentage
1	Wound sepsis	12	15.7
2	Pulmonary infection	17	3.5
3	Abdominal dehiscence	2	2.7
4	More than 24 hours Post-operative septicaemia	2	2.7
5	Intestinal haemorrhage	1	1.3
6	Mortality	1	1.3
7	Intra peritoneal abscesses	2	2.6
8	Reperforation	0	0
9	Mortality	1	1.3

Table No.4 Duration of Hospital Stay

S. No	Days	Number of patients	Percentage
1	0-7	10	13.1
2	7-14	50	65.7
3	14-21	12	15.7
4	21+	4	5.2

Mean hospital stay 13.34±4.20

DISCUSSION

Typhoid intestinal perforation, a complication of typhoid fever is basically a combination of typhoid fever, peritonitis due to perforation in the gut and systemic complications at clinical presentation. Diagnosis of enteric fever is done clinically in developing countries¹ we used fever body aches toxic symptoms, pain abdomen, either generalized abdominal tenderness or tenderness in right iliac fossa and sluggish bowel sound as clinical criterion in our patients. Widal test, blood culture, typhidot, pneumo peritoneum were used as confirmatory diagnosis like similar studies⁵.

Mean age of presentation was 24 ±10.32years, maximum number of patients presented in 2nd and 3rd decades of their lives males were the predominant gender^{12,13} with 3:2 ratio^{14,15}; in our study there were 21 female and 55 male patients.

A number of treatment strategies practised in history. High mortality is associated with conservative treatment. Conservative treatment is based on the idea that repair of gut in septic conditions is unjustified⁵, later surgical procedures like primary closure, temporary ileostomy and resection of disease segment of terminal ileum were tried in hope of better outcome. Primary closure and ileostomy were studied widely with various technical modifications. Like primary closure with wide excision of margins, debridement and closure, single layer, two layers closure and Loop ileostomy are worth mentioning. Suitability of any one procedure is based on post-operative morbidity and mortality. Which mainly depends apart from other factors on duration between perforation and surgery on one hand and peritoneal contamination and friability during surgery at the other.

Ileostomy is suitable in a sense that it is effective, with comparatively short post-operative hospital stay in the first phase.¹¹ But it is associated with troublesome peri-ileostomy erosion of skin. Furthermore it needs yet another surgery for ileostomy closure and for that matter another hospital stay equal to average hospitalization period of primary closure in the present study. So in case where conditions are favourable like short perforation –operation interval, comparatively good perforation margins and single perforation primary closure in two layers with peritoneal toilet are parts of ample treatment. It seems from the study that reperforation is rare.

The preoperative preparation is an important factor in management, as most of the patients were dehydrated,

toxic looking and in early stages of sepsis. They were managed by prompt resuscitation by giving intra venous fluid, decompression of gut and using urinary catheter for measuring urinary output. Combination of Flour quinolone and metronidazole was given to combat both aerobic and anaerobic infection. Delay in initiation of process of resuscitation leads to continued faecal soiling of peritoneum, and irreversible deterioration causing high mortality. Mean Hospital stay was 13.34±4.20 days ranging from 3-28 days. This seems a bit longer as compare to study on ileostomy for the same problem (mean of 7.53±4.9 days)¹¹. But considering 2nd admission for closure of ileostomy this is relatively short stay on the aggregate are correlates well with prevailing literature for similar study^{15,16}

Double closure of typhoid perforation in the ileum, in cases who present early, is an effective procedure as postoperative complications are low. The morbidity rate was 48.6% which is lower than other surveys^{16,17} wound sepsis (15.7%) was the most common complication followed by pulmonary infection (3.5%). All patients of Wound sepsis in our study were managed according to principles of surgery. Patients with pulmonary infection were treated with antibiotic and chest physiotherapy. Reason for low rate of complications may be the fact that these are highly selective case very much in the beginning of the pathogenesis of the disease process.

Mortality was 1 (1.3%) in the study. Mortality widely varies in literature ranging from 5-62%¹⁸

Probable explanation might be the selection criteria of the cases in study. Worth mentioning is very short interval between perforation and operation.

CONCLUSION

In early cases, presenting within 24 hour, Primary closure in two layers, is a satisfactory treatment in term of post-operative morbidity, mortality and tolerability by patients.

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