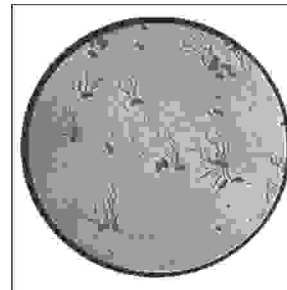


ORIGINAL

PROF-1003

## TYPHOID PERFORATION; PRIMARY CLOSURE VS ILEOSTOMY



### DR. SHAUKAT ALI, FCPS

Assistant Professor of Surgery,  
Nishtar Medical College/Hospital, Multan.

### DR. MUHAMMAD AMJAD AMIN, FRCS

Associate Professor of Surgery,  
Nishtar Medical College/Hospital, Multan.

### DR. ABDUL SATTAR

Department of General Surgery,  
Nishtar Hospital,  
Multan.

**ABSTRACT... Introduction:-** Typhoid fever is an infectious disease caused by a bacterium salmonella typhi. The spread of infection is usually by an oro-fecal route. Food handlers are a major source of spread in developed countries. In undeveloped countries like ours, contamination of drinking water and edibles are the major source. Infected shellfish are occasionally a source of an outbreak. **Objectives** To review the present practice of managing patients with typhoid perforation and comparison between the primary closure and exteriorization. **Setting** Surgical Unit-II, Nishtar Hospital, Multan. **Duration** Two years. **Patients and methods** Sample size 50 patients. **Results:-** A total of 50 patients were finalized for the analysis. There were 14 females and 36 males (1:2.5). The age ranged from 18 years to 35 years, the mean age was 28 years. In patient who underwent ileostomy, death occurred in 3 cases (10%). Most of the patients belonged to low socioeconomic class. Delay in reaching the hospital was significant for several reasons including transportation and pretreatment at peripheral private hospitals. 46 patients presented after 48 hours of perforation (92%). **Conclusion:-** In cases with good reserves and earlier hospitalization primary repair is certainly the procedure of choice

**Key words:** Typhoid perforation, Primary closure, Exteriorization, Ileostomy.

## INTRODUCTION

Typhoid fever is an infectious disease caused by a bacterium salmonella typhi. The spread of infection is usually by an oro-fecal route. Food handlers are a major source of spread in developed countries<sup>1</sup>. In undeveloped countries like ours, contamination of drinking water and edibles are the major source. Infected shellfish are occasionally a source of an outbreak<sup>2</sup>. The bacilli may remain in the gallbladder of carriers for months or years

even after the clinical cure and pass intermittently in the stool and less commonly in urine. The incubation period of typhoid fever is about 10 to 15 days. Complications like perforation of intestine occurs usually after 10 to 14 days of fever. Risk factors for perforation were determined using logistic modeling<sup>3</sup>.

The onset may be insidious with fever, which rises in a stepladder pattern for 4 to 5 days. There is malaise with

increasing headache, drowsiness and aching in the limbs. The pulse is often slower than would be expected from the temperature; a term 'relative bradycardia' is frequently used to describe it. At the end of first week a typical rash may appear on the abdomen and chest. At about the same time spleen becomes palpably enlarged. Abdomen may be distended and tender in the right iliac fossa. By the second week if the course of illness is not modified by medical treatment, perforation of the inflamed intestine may occur<sup>4</sup>. Other complications include hemorrhage from the ulcerated peyer's patches of intestine. Septicemia, cholecystitis, myocarditis, pneumonia, arthritis, osteomyelitis and meningitis represent the wide spectrum of organ involvement.

Diagnosis in early stages of disease is difficult because symptoms often represent a generalized infection. White blood cell count may be particularly helpful as there is characteristically leucopenia in typhoid fever. Typhoid perforation is the most important surgical complication of typhoid enteritis and is associated with high morbidity and mortality<sup>5</sup>. Blood culture is the most important diagnostic method. Feces may also contain organisms, which can be cultured. A serological test, widal reaction detects antibodies formed against bacteria.

Treatment depends upon the nature of complication. Surgery remains the treatment of choice in patients with typhoid perforation<sup>6</sup>. Various modalities of surgical options are available, these include primary closure, resection and anastomosis, resection and ileostomy, wedge resection, application of serosal or omental patch and exteriorization of the perforation. Prognosis depends upon many factors including age of the patient, duration of fever and perforation, presence of fecal peritonitis and concomitant other illnesses. On the whole patients managed with surgery, either primary repair or ileostomy do well than those kept in conservative treatments. Primary repair carries with it a significant risk of re-perforation<sup>7</sup> and peritonitis, which may endanger the life of patients. On the other hand ileostomy while avoiding this risk carries with it problems of ileostomy and its care. Availability of second line antibiotic therapy in these third world countries would likely improve outcomes. Prospective studies on appropriate antibiotic therapy

along with management in endemic areas are necessary until resources are available for preventive measurements<sup>8</sup>.

## PURPOSE OF STUDY

To review the present practice of managing patients with typhoid perforation and comparison between the primary closure and exteriorization.

## PATIENTS AND METHODS

### Criteria For Inclusion

Patients suspected of having typhoid perforation on strong clinical grounds and Widal test positive.

X-ray demonstration of air-fluid levels and gas under diaphragm.

Patients with typhoid and development of severe abdominal pain and features of perforation i.e. acute peritonitis.

### Criteria For Exclusion

Refusal by the patient to participate in the study.

Refusal by the patient for construction of the ileostomy, when randomization indicates the patient belonging to that group.

Operative findings not supportive of typhoid perforation, i.e. perforated appendix, perforated duodenal ulcer, tuberculous ulcers, primary bacterial peritonitis, perforated Meckle's diverticulum etc.

Very high-risk patients with ischemic heart disease or diabetes or renal failure who were postponed for anesthetic reasons.

Patients who left against medical advice at any stage of the study.

Patients who failed for follow up for three consecutive visits when they were called for by a letter.

## METHOD

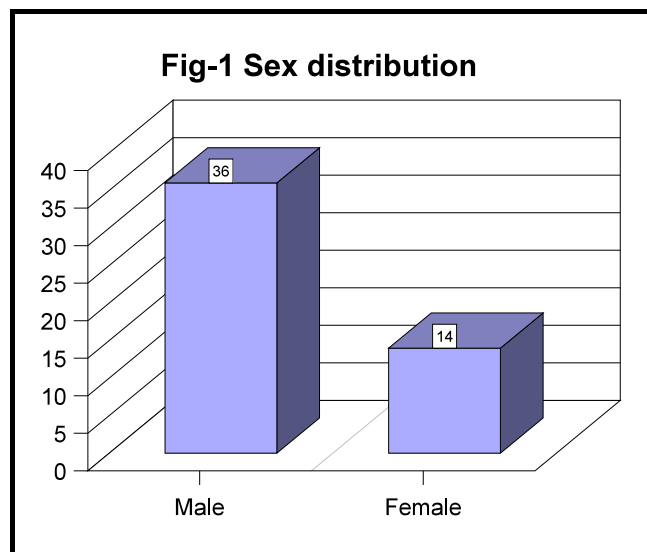
Fifty patients with typhoid perforation attending the

surgical emergency department during a period of two years, were included in the study. All patients were recorded on a predefined proforma, which was later on used for analysis. Patients undergoing operation were randomized between two groups, one dealt with by primary closure and the other by exteriorization of the gut. The two groups were comparable for other variables. All patients were informed about the nature of study and a written informed consent obtained.

All patients were subjected to a battery of investigations and an extensive resuscitation like complete blood examination (Hb, TLC, DLC, ESR), complete urine examination, serum electrolytes, blood urea and creatinine, liver function tests, blood glucose level, widal test and X-ray chest and abdomen in erect posture.

**RESULTS**

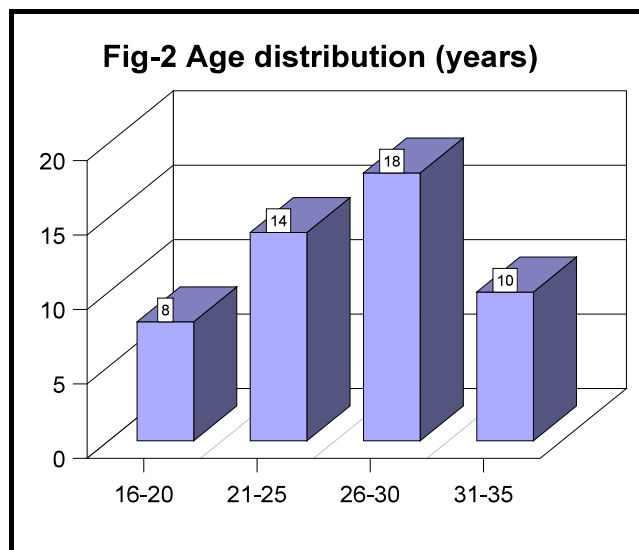
A total of 50 patients were finalized for the analysis. There were 14 females and 36 males (1:2.5) (Fig-1).



The age ranged from 18 years to 35 years, the mean age was 28 years (Fig-2).

In patient who underwent ileostomy, death occurred in 3 cases (10%). two patients expired out of uncontrolled severe septicemia and 1 patient had cardiac arrest. The complications of ileostomy included postoperative electrolytes disturbance in 5 cases (16%). Excoriation of

skin occurred in 6 cases (20%). Prolapse of ileostomy in 3 cases (10%). Retraction of ileostomy, which needed refashioning in 1 case (3.3%). None of the patients with primary repair had postoperative electrolyte imbalance (Table-I).



Complication	Primary closure (n=20)	Ileostomy (n=30)
Mortality	25%	10%
Faecal fistula	30%	-
Postoperative electrolyte imbalance	-	16%
Skin excoriation	NA	20%
Ileostomy prolapse	NA	10%
Ileostomy retraction	NA	3.3%

Most of the patients belonged to low socioeconomic class. Delay in reaching the hospital was significant for several reasons including transportation and pretreatment at peripheral private hospitals. 46 patients presented after 48 hours of perforation (92%). Most of the patients were in poor general condition as assessed by the state of hydration, renal output and haemodynamic parameters, 20 patients were in the state

of severe dehydration. The total duration of illness from onset of fever to development of peritonitis ranged from 2 to 4 weeks, with an average of 3 weeks. The white blood cell count was in the range of 8000 to 12500. Widal test was positive in 32 cases. X-ray abdomen in erect posture was the most useful investigation revealing free gas in the peritoneum in 44 cases (Table-II).

Duration in weeks	No of case	%age
Less than	2	4%
1 to 05	4	8%
1.5 to 2	8	16%
2 to 2.5	10	20%
2.5 to 3	15	30%
3 to 3.5	6	12%
3.5 to 4	4	8%
More than 4	1	2%

Although number of patients in this study is small as compared to other studies cited in literature, yet the results are very much comparable as shown in table-III.

## DISCUSSION

Widal reaction, once considered to be very reliable, is no longer considered so<sup>9</sup>. In this study widal reaction was significantly suggestive of typhoid in only 64% of the cases.

Still it is used to strengthen the suspicion of typhoid. X-ray examination reveals gas in the peritoneum in about 60- 70% of the cases reported in literatures. In this study free peritoneal gas was demonstrated in 88% of the cases.

In most of the cases the perforation is single and located in the terminal ileum<sup>10</sup>. This study supports this finding and in 42 cases (84%) the perforation was single and located within 30 cm of the terminal ileum.

Parameter	International literature	Present study
Mean age	30 years	28 years
Sex ration	3:2	2.5:1
Time elapsed before perforation	2-4 weeks	2.7 weeks
White cell count	About 6000/mm <sup>3</sup>	7000/mm <sup>3</sup>
Widal test	Significant	Positive in 64% cases
X ray helpful	60.70%	88%
Site of perforation	Terminal ileum	Terminal 30 cm
No of perforations	Single	Single(84%)
Mortality after primary closure	7.9 to 31%	25%

Primary closure of the perforation is the preferred surgical management reported by most authors<sup>11,12</sup>. The reported mortality after primary closure ranges from 7.9% to 31%. An older study of 1950 reports this to be about 57%. However most authors report a mortality of about 25%. In this study mortality after primary closure was 25%.

Early surgery in enteric perforation is the only accepted form of treatment in modern day medicine and gives excellent results. Exploratory laparotomy continues to be mainstay of surgical treatment and several different procedures are recommended in literature<sup>13</sup>. Intestinal complications of typhoid fever are quite common in developing countries. In order to contribute to the improvement of the prognosis of typhoid ileal perforation, the authors report their own surgical experience<sup>14</sup>.

Ileostomy is not very much favored in literature. In this study ileostomy has shown to be better than primary closure as far as mortality is concerned, mortality after ileostomy in this study was 10% and the incidence of complications after ileostomy is not very significant as to justify discarding this procedure. Although the literature

is full of complications and management problems of ileostomy, it should be remembered that ileostomy in these cases is only temporary and the extra cost and cost of management is not more than the price of life. Ileostomy is a safe and quicker procedure, which reduces the mortality (10% mortality compared with 25% in present study).

## CONCLUSION

Although the literature is full of complications and management problems of ileostomy, it should be recommended that ileostomy in these cases is only temporary and the extra cost and cost of management is not more than the price of life. It is therefore, recommended that every effort should be made to prevent the disease in first place and then to educate the local masses to bring the patients for proper care to hospital as soon as the symptoms begin. In cases where the general condition is not good, patient has been partially treated and has lost many hours of precious time, has developed renal shut down and metabolic and hemodynamic instability, these patients should certainly be managed with temporary ileostomy.

## REFERENCES

1. Birkhead GF. **Typhoid fever at a resort hotel in New York.** J Infect Dis 1993; 167(5): 1228-32.
2. Manson P. **Mansons tropical diseases.** 18<sup>th</sup> ed. Baillere Tindal. London. 2001: 380-87.
3. Hosoglu S, Aldemir M, Akalin S, Gevik MF, Tachildiz IH, Loeb M. **Risk factors for enteric perforation in patients with typhoid fever.** Am J epidemiol 2004; 160: 46-50.
4. Weatherall DJ. Oxford textbook of medicine. 2<sup>nd</sup> ed. Oxford University Press. 2003: 218-23.
5. Edino ST, Mohammed AZ, Uba AF, Sheshe AA, Anumah M, Ochicha O et al. **Typhoid enteric perforation in North Western Nigria.** Niger J Med 2004; 13: 345-9.
6. Nguyen VS. **Typhoid perforation in the tropics.** A prospective study of 83 cases. J Chir Paris 1994; 13(2): 92-95.
7. Meir DE, Imediogwu OO, Tarpley JL. **Perforated typhoid enteritis, operative experience with 108 cases.** Am J Surg 1989; 157(4): 423-27.
8. Saxe JM, Cropsey B. **Is operative management effective in treatment of perforated typhoid?** Am J Surg 2005; 189: 342-4.
9. Boomsma IJ. **Clinical aspects of typhoid fever in two rural Nigerian hospitals;** a prospective study. Trop Geogrg 1988; 40(2): 97-12.
10. Akoh JA. **Prognostic factors in typhoid perforation.** E Afr Med J 1992; 70(1): 18-21.
11. Tahir AA. **Primary closure compared with ileostomy in cases of typhoid perforation.** J A M A Pak 1993; 201-5.
12. Sitaram V. **Typhoid ileal perforations;** a retrospective study. Ann R Coll Surg Eng 1990; 72(6): 347-49.
13. Ramachandran CS, Agarwal S, DipDG, Arora V. **Laparoscopic surgical management of perforative peritonitis in enteric fever: a preliminary study.**
14. Kouame J, Kouadio L, Turquin HT. **Typhoid ileal perforation: surgical experience of 64 cases.** Acta Chir Belg 2004; 104: 445-7.