

## PAPER DETAILS

TITLE: TERMINAL ILEAL PERFORATION DUE TO ENTERIC FEVER; THE IDEAL SURGICAL MANAGEMENT.

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**TERMINAL ILEAL PERFORATION DUE TO ENTERIC FEVER; THE IDEAL SURGICAL MANAGEMENT****Tifoya bağlı terminal ileum perforasyonları; İdeal cerrahi tedavi****Pankaj K Sonar<sup>1</sup>, Purnendu Bhowmik<sup>2</sup>, Arkaprovo Roy<sup>2</sup>, Sandip Majumdar<sup>2</sup>, Nabankur Ghosh<sup>2</sup>, Pradip Mohanta<sup>2</sup>**IPGMER & SSKM Hospital<sup>1</sup>,  
Calcutta National Medical College<sup>2</sup> Kolkata, INDIAN**Cer San D (J Surg Arts), 2011;4(2):1-4.****ABSTRACT**

Ileal perforation is one of the most lethal complications of enteric fever particularly in a developing country like India. Surgical treatment is considered the treatment of choice. A total 31 patients was included in the study. There were 18 males and 13 females (M: F=1.38:1), mean age was 17.4 years. Simple repair was done in 9 patients, out of which 4 (44%) died. Patch repair was done in 9 patients, out of which 4 (44%) died. Seven patients underwent resection and anastomosis, among them 3 (42%) died. We did stoma ie exteriorisation of gut in 6 patients, and we lost only one (17%) from them. In conclusion, we advocate routine exteriorisation of the segment of bowel bearing the perforation and fashioning it as a loop ileostomy for all cases.

**Key words:** Terminal ileum, perforation, enteric fever, surgical management.**ÖZET**

İleum perforasyonları, özellikle Hindistan gibi gelişmekte olan ülkelerde, tifoya bağlı en ölümcül komplikasyonlardan birisidir. Tedavide başlıca yaklaşım cerrahi tedavidir. Bu çalışmaya 31 vaka alındı. Hastaların 18'i erkek, 13'ü kadın (M / F ratio: 1.38 / 1) ve ortalama yaşları 17.4 idi. Primer tamir yapılan 9 vakanın 4'ü öldü (%44). Patch (yama) tamiri uygulanan 9 vakanın 4'ü öldü. Rezeksiyon ve uc-uc anastomoz yapılan vakaların 3'ü öldü (%42). Stoma uygulaması yapılan 6 vakadan ise sadece bir tanesi öldü (%17). Sonuç olarak, perforasyonu kısmı taşıyan ansın rutin olarak dışarıya alınmasını ve loop ileostomi yapılmasını öneriyoruz.

**Anahtar kelimeler:** Terminal ileum, delinme, tifo, cerrahi tedavi.**INTRODUCTION**

Ileal perforation is a recognized and probably one of the most lethal complications of enteric fever particularly in a developing country like India. The reported overall frequency of intestinal perforation in typhoid fever is 3% with an overall mortality of 39.6%.<sup>1</sup> Surgical treatment is considered the treatment of choice in such a situation.<sup>2</sup> However, there are varying opinion regarding the optimum surgical treatment with options existing as simple repair, patch repair, resection anastomosis with or without exteriorisation of suture line and exteriorisation.<sup>3</sup> The issue is contentious and depends on decision of surgeon with no clear-cut guidelines for the best surgical procedure. Prognosis is based on variables

like age, duration of perforation, peritoneal contamination, and size of perforation among others. The results are as usual weighed in terms of morbidity and mortality and as for other emergency surgeries the prime goal is to salvage the life of the patient.

To compare between the various surgical procedures employed for tackling terminal ileal perforation with particular emphasis on exteriorisation.

**MATERIALS AND METHODS**

The study was conducted at Calcutta National Medical College and Hospital, Kolkata. Data was reviewed retrospectively over a period of 2 years from April, 2008 to April, 2010. Data was available for 31 patients. 28 patients were admitted in surgical ward

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through emergency and there were 3 referrals from paediatric medicine indoor. Investigations done pre-operatively were blood culture, serology (Widal test), and routine blood tests, Straight X-Ray Abdomen, USG (abdomen) and CECT. Blood culture was available for 1 patient only. Widal for 3 patients. 28 patients had Straight X-Ray abdomen of which 26 revealed free gas underneath the diaphragm. Most cases were however diagnosed on a clinical suspicion and relevant history of fever.<sup>4</sup> All 31 patients had surgical treatment of some form. 9 patients underwent simple repair, 9 had patch reinforcement either with a

tongue of greater omentum or serosal patch from adjoining ileal loop (Table 1). 10 patients had resection anastomosis; the extent of resection varied and was entirely based on decision of the operating surgeon. 6 patients underwent exteriorisation of loop bearing the perforation. It was fashioned as a loop ileostomy for better application of stoma bags. Biopsy specimen was collected in all cases. The exploratory laparotomy included a thorough peritoneal lavage with normal saline and placement of drain in the pelvis. 15 histopathology reports were traceable which showed non specific inflammation.

**Table 1:** Comparison between various surgical procedures and mortality

Procedure	n	Mortality	%
Simple repair *	9	4	44
Patch repair *	9	4	44
Resection anastomosis *	7	3	42
Exteriorisation	6	1	17
Total	31	12	36
* Taken together the mortality in repair, with or without patch and resection anastomosis is comparable and account for 44%.			

## RESULTS

A total 31 patients was included in the study. There were 18 males and 13 females (M:F=1.38:1), mean age was 17.4 years. Duration of illness is defined as the period for which symptoms of enteric fever were present. It ranged from 3-7 days with a mean of 4 days. Duration from suspected perforation is defined as the time when signs of perforation peritonitis appeared during the illness till the patient underwent exploratory laparotomy. It ranged from 10 hrs to 3.5 days with a mean of 2.3 days. Size of perforation ranged from 0.5 cm to 1.5 cm in greatest

axis and all were solitary and present at the anti-mesenteric border. They were located 15-25 cm from the IC junction.

Most of the patients had septicemia at presentation and were put on broad spectrum antibiotics. All 3 who died of septicemia died within 6-7 hours of surgery. The total no of deaths due to anastomotic / repair leak resulting in septicemia was 7 out of 12 (58.3%). One patient who underwent patch repair had pneumonia and died of it while one who underwent patch repair died of suspected DVT (Table 2 and 3).

**Table 2:** Cause of death of the different groups

Cause of death Simple	Repair	Patch Repair Resection	Anastomosis	Exteriorisation
Septicemia at presentation	Nil	1	1	1
Anastomotic / Repair Leak	3	2	2	Nil
Co morbidities	1	1	Nil	Nil

**Table 3:** Causes of morbidity in various groups

Morbidity	Simple repair	Patch repair	Resection / Anastomosis	Exteriorisation
Prolonged ileus	4	3	3	1
Wound infection	7	8	7	5
Stoma related problems	Nil	Nil	1	2
Controlled ECF treated TPN	1	Nil	1	Nil

Prolonged ileus is defined as delay in passing flatus and stool, allowing oral intake and taking off IV fluids. We considered all this parameters not returning to normal within 5 days as a definition of prolonged ileus. All most all the patients (27/31) had

wound collection the severity of which varied. It ranged from wound collection limited to superficial layers to deep infections. Wound dehiscence was noted in 5 patients who later required secondary

wound closure. Wound swab was sent for culture sensitivity for most of the patients.

Stoma related problems; 2 patients who had an ileostomy as primary surgery had electrolyte imbalance and high output from fistula for the first 5-7 days. The output gradually decreased as the effluent changed in consistency to semisolid and electrolyte levels normalized. Patient who had stoma following a leak also had similar problems and gradually improved.

Enterocutaneous fistula (ECF); Thus the total number of anastomotic / repair leaks was 9 out of 25 (36%).

The total number of anastomotic / repair leak was 9/25.2 patients developed a controlled fistula and were kept on TPN however 1 patient could not afford a TPN and ultimately required an exteriorisation. Out of the 7 patients who died as a result of the anastomotic / repair leak 4 underwent exteriorisation with intervention ranging from 3rd to 6th postoperative day. Secondary sutures including tension sutures were required for 13 patients. Ultimately 10 patients (32%) ended up having a stoma at the end of their index hospitalization (Table 4 and 5).

**Table 4:** Causes of reoperation excluding stoma closure.

Cause	n
Anastomotic leak	5
Secondary suture	13

**Table 5:** Patients ultimately requiring stoma

Patients requiring stoma	n
Index surgery	6
Second surgery	4 ?

Among 10 patients who ultimately required a stoma 3 died in the postoperative period. Among the 6 patients who had exteriorisation as their index procedure 1 was operated in the last week of March and is yet to get admitted for closure of stoma (Table 6).

**Table 6:** Results after stoma closure

Total number of patients who underwent stoma closure	n=6
Anastomotic leak	Nil
Sub acute intestinal obstruction	1
Wound infection	3

## DISCUSSION

Ileal perforation as a manifestation of enteric fever is not rare.<sup>1</sup> As a cause of non traumatic perforation peritonitis it is only superseded by peptic perforation in our setup. The disease is more prevalent in young males.<sup>1</sup> In our study the mean age was 17.4 years which varied from other reports.<sup>4,5</sup> We also noted an earlier onset of perforation (average 4 days)

as compared to other studies where it ranged from 7.9 days to 4 weeks.<sup>4,5</sup>

The surgical management offered varies from centre to centre with no clear cut set protocols.<sup>5</sup> There are proponents in favour of primary closure which has been considered as safe and effective treatment.<sup>2</sup> However there are other reports which discourage repair and consider resection anastomosis as the treatment of choice.<sup>6</sup>

The main concern is obviously to prevent mortality which varies from 7.2-55%.<sup>5, 6, 7</sup> Mortality rates vary in literature with some reports stressing on repair related to greater mortality<sup>6</sup> as compared to resection anastomosis. Another study advocates ileo-transverse anastomosis as the treatment of choice as it has lower morbidity with no difference in mortality.<sup>8</sup> In our study the mortality was 38% with significant difference between exteriorisation and rest taken together (18% vs. 44%).

In our setup patients typically present late when sepsis has already set in. The wrath of sepsis is so fulminant that it results in death no matter what procedure is chosen from the repertoire.<sup>2</sup> We had 3 deaths (9% mortality) where sepsis could not be overhauled. Broad spectrum antibiotics and aggressive resuscitation could contain the bugs and offer a ray of hope<sup>7</sup> but if a further assault in the form of fresh abdominal contamination occurs, the course of events take a turn towards worse and the worst could not be avoided.

The price paid for an error in surgical management can be too heavy for the patient to pay. There comes the need to set guidelines so that at least a chance can be offered for survival. A second surgery in a controlled condition is a far better option even if there is increased length of stay or disfigurement of body contours by a temporary stoma because life is priceless.<sup>5</sup>

Repair of anastomotic leak is guided by several factors notably local environment, preoperative albumin status and sepsis. The common factor is obviously the hostile abdomen which challenges all methods employed to seal the perforation. Exteriorisation as the index procedure eliminates this risk precisely. The question of a precarious repair or anastomosis does not arise and reconnection of bowel continuity can be performed later in a favourable condition.

In conclusion, exteriorisation in all cases of ileal perforation irrespective of the presentation eliminates the risk of fresh abdominal contamination should the repair or anastomosis give way in a hostile environment. The assault is too severe considering the already existing sepsis which is only aggravated. The results of simple repair, patch repair and resection anastomosis in terms of mortality are comparable and high (44%). The results following closure of stoma are good with no reported anastomotic leaks. We advocate routine exteriorisation of the segment of bowel bearing the perforation and fashioning it as a loop ile-

ostomy for all cases of terminal ileal perforation due to enteric fever.

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