

A Comparative Study between the Outcome of Primary Repair versus Loop Ileostomy in Traumatic and Non traumatic Ileal Perforation

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Abstract

Introduction: Ileal perforation is a common surgical emergency in the Indian subcontinent and in tropical countries. It is reported to constitute the fifth common cause of abdominal emergencies due to high incidence of enteric fever and tuberculosis in these regions. **Methods:** The study was conducted in department of surgery LLR hospital, Kanpur. One hundred ten patients, fulfilling the including criteria, admitted to Surgical Emergency department were taken up for emergency surgery. The surgical management was done as primary repair (group A) and loop ileostomy (group B). The patients were assigned into two groups by even and odd method. **Results:** An increased rate of postoperative complications was seen in group B when compared with group A. In group A, 4 (9.09%) patients landed up in peritonitis secondary to leakage from primary repair requiring reoperation. In group B, 22 (39.29%) patients developed wound infection, 12 (21.43%) burst abdomen and 2 (3.57%) retraction of ileostomy. Mortality in primary repair was 3 (6.81%) and in loop ileostomy was 5 (8.9%). **Conclusion:** Patients presenting within 48 hours of ileal perforation, primary repair is better than loop ileostomy.

Key words: Ileal perforation, primary repair, loop ileostomy.

Introduction

Ileal perforation is a common surgical emergency in the Indian subcontinent and in tropical countries. It is reported to constitute the fifth common cause of abdominal emergencies due to high incidence of enteric fever and tuberculosis in these regions. In a significant number of cases the cause of perforation is not known and it is called nonspecific ileal perforation. The perforation causes gram-negative aerobic and anaerobic infection leading to peritonitis. Traumatic causes of ileal perforation include blunt trauma abdomen, fire arm injury, penetrating injury of abdomen. Trauma constitutes to be the most frequent reason for high morbidity and mortality.

Despite the availability of modern diagnostic facilities and advances in treatment regimes, this disease has an abrupt onset and a rapid downhill course with a high mortality if not treated.

The aim of our study is to evaluate the outcome of primary repair versus loop ileostomy in cases of ileal perforation by comparing them in terms of postoperative morbidity, mortality and complications and to find out the ideal procedure. The study will help to establish the criteria for instituting the management modality according to presentation and severity of the disease and the outcome of these procedures. Effective management of the disease will help in decreasing morbidity and mortality associated with the disease.

Methods

The study was conducted on the patients admitted in the emergency of general surgery department of LLR Hospital, GSVM Medical College, Kanpur with ileal perforation both traumatic and non traumatic from January 2018 to December 2019.

The Study was hospital based comparative prospective time bound in all those cases, which satisfied the inclusion criteria. Data was collected from the detailed

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history, clinical examination and investigations (both haematological and radiological) on a pre-set proforma.

Inclusion criteria- All traumatic and non traumatic ileal perforations coming in emergency with in 48 hours regardless of age and sex.

Exclusion criteria-

- Medical illness (severe debilitated patients, chronic liver diseases, severe ascitis, hepatorenal syndrome).
- Multiple perforations.
- Ileal perforations of more than 48 hours duration.
- Rare diseases causing perforation.
- Terminal patients who are in severe shock and/or are not fit for operative procedure

A written informed consent was taken for surgical procedure and for the possibility of stoma formation from all the patients. All the risks of surgery were explained. A thorough epidemiological data about patient was recorded. All the routine investigations and radiological investigations were preserved for the future reference. Patients were divided in to two groups based on the interventions. Group A included those patients in which primary repair of perforation was done and group B in which ileostomy

was made. The patients were assigned into two groups on even and odd method. Prior to surgery, all the patients were resuscitated with correction of fluid and electrolyte balance. Irrespective of the severity of the peritonitis, primary closure and ileostomy was done. Thorough peritoneal lavage was done in all the patients before closure. All the patients were followed up closely for post-operative complications. All the data was tabulated, graphical analysis was made and subjected to statistical analysis in the form of ratios, percentages and non-parametric tests like Chi square test were used for `p` values.

Results

From January 2018 to December 2019, 110 patients with ileal perforation were studied. Ileal perforations were most commonly observed in second and third decade of life. Among traumatic ileal perforations 21-40 years constituted the bulk of the analysis, particularly maximum being the age group 21-30 years (i.e. 38.63%). Similarly, among all non traumatic ileal perforations 21-40 years age group constituted the bulk of the analysis, maximum being in the age group 21-30years (i.e. 36.36%).(table 1)

Table 1: Age distribution

Age (yrs.)	Traumatic ileal perforation (44 cases)	Percentage	Non traumatic ileal perforation (66 cases)	Percentage
11-20	8	18.18	15	22.73
21-30	17	38.63	24	36.36
31-40	15	34.09	17	25.76
41-50	1	2.27	4	6.06
51-60	3	6.82	6	9.09

Among all the traumatic ileal perforations males constituted the bulk i.e. 32 (72.73%) as compared to females i.e. 12 (27.27%). Likewise among all non

traumatic ileal perforations males were more i.e. 52 (78.79%) as compared to females i.e. 14 (21.21%). Overall male to female ratio was 3.2:1. (table 2)

Table 2: Sex distribution

Patients	Traumatic ileal perforation (44 cases)	Percentage	Non traumatic ileal perforation (66 cases)	Percentage
Male	32	72.73	52	78.79
Female	12	27.27	14	21.21

Total 50 patients underwent primary repair of ileal perforation, out of which 26 (52%) were of traumatic ileal perforation and 24 (48%) were of non traumatic ileal perforation (fig.1), likewise in 18 (30%) of traumatic ileal perforations (fig.2) ileostomy was made and in 42 (70%) of non traumatic ileal perforations ileostomy was made. Chi-square test

applied P-value is 0.0190 at $p < 0.05$. Test is significant. All the patients who presented within 48 hours of perforation were taken and all cases were operated within 6-8 hours of presentation after adequate resuscitation. Primary repair and ileostomy is shown in fig.3&4.

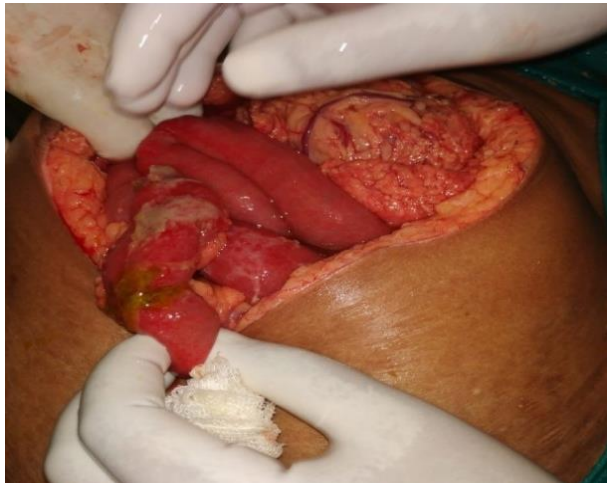


Fig 1: Non Traumatic ileal perforation



Fig 2: Traumatic ileal perforation



Fig 3: Non Traumatic ileal perforation with primary repair



Fig 4: Traumatic ileal perforation with ileostomy

Among patients with primary repair, leak from repair site was found in 8 % of patients. Wound infection was the most common complication and was found in 26% in primary repair patients and 36.67% in ileostomy patients followed by burst abdomen which was found in 16% in primary repair patients and 23.33% in ileostomy patients.(table 4)

Table 4: post op complication

Complication	Primary repair(50 cases)	Percentage	Ileostomy (60 cases)	Percentage
Leak from repair site	4	8	-	-
Wound infection	13	26	22	36.67
Burst abdomen	8	16	14	23.33
Septicemia and shock	4	8	10	16.67
Reexploration	4	8	-	-
Retraction	-	-	3	5
Herniation	-	-	4	6.67
Skin excoriation	-	-	8	13.33

Among patients with primary repair, leak from repair site was more in non traumatic ileal perforations (12.5%) than in traumatic ileal perforations (3.84%). Wound infection was the most common complication which was found in 19.23% in traumatic ileal perforations and 33.33% in non traumatic ileal perforations, burst abdomen was found in 11.54% in traumatic ileal perforations and 20.83% in non traumatic ileal perforations. (table 4)

Table 4: post op complication

Complication	Primary repair (50 cases)				Ileostomy (60 cases)			
	T	%	Nt	%	T%	%	Nt	%
Leak from repair site	1	3.84	3	12.5	-			-
Wound infection	5	19.23	8	33.33	5	27.77	17	40.48
Burst abdomen	3	11.54	5	20.83	2	11.11	12	28.57
Septicemia and shock	1	3.84	3	12.5	1	5.56	5	11.90
Reexploration	1	3.84	3	12.5	-	-	-	-
Retraction	-		-		-	-	2	4.76
Herniation	-		-		-	-	3	7.14
Skin excoriation	-		-		-	-	8	19.04

T= Traumatic, NT= Nontraumatic

Among patients with ileostomy formation wound infection was 27.77% in traumatic ileal perforations and 40.48% in non traumatic ileal perforations, burst abdomen was 11.11% in traumatic ileal perforations and 28.57% in non traumatic ileal perforations. (table 5)

Discussion

Among traumatic ileal perforations 21-40 years age group constituted bulk of the analysis, particularly maximum being the age group 21-30 years (i.e. 38.63%). Similarly among all non traumatic ileal perforations 21-40 years age group was constituting the bulk of the analysis, maximum in age group 21-30 years (i.e. 36.36%).

Talwar S et al (1997) reviewed the maximum no. of patients (42.7%) were in the 21-30-year age group[4]. Among all traumatic ileal perforations male were constituting the bulk i.e. 32 (72.73%) as compared to females i.e. 12 (27.27%). Likewise among all non traumatic ileal perforations males were more i.e. 52 (78.79%) as compared to females i.e. 14 (21.21%). Male to female ratio was 3.2:1 which is the almost similar of the ratio 3:1 reported by Wani et al[1], 3.5:1 reported by F C Eggleston et al[2] 4:1 reported by Adesunkanmi et al[3] and Talwar et al[4], 6.4:1 reported by Beniwal et al[5], and 6.5:1 reported by Prasad et al[6]. In our study 50 patients underwent primary repair of ileal perforation who presented with in 48 hrs of perforation and had single perforation while in 56 patients ileostomy was made. Enteric perforation is best managed surgically as it prevents further peritoneal contamination by intestinal contents. A wide variety of operative procedures are tried in enteric perforation cases but all have a high morbidity and mortality. Repair of perforation should be the choice of treatment in enteric perforation because this is a simple, quick and cost-effective procedure. Ileostomy is more expensive as all the patients have to undergo re-operation for closure of ileostomy and it

further needs specialized care prior to closure. Ileostomy should be considered as a secondary procedure in patients who have developed fecal fistula. Overall mortality in primary repair was 8%. Factors significantly affecting mortality were general status of the patient, virulence of the organism, duration of the disease before surgical treatment and the development of leak followed by fecal fistula.

In previously published studies mortality reported with repair of perforation was 48% by Bhansal I[7], 14.6% by Purohi T[8] and 28% by A.R.K. Adesunkanmi[3], K.P. Singh and Kohli[9] reported no mortality in 8 patients of enteric perforation treated with temporary ileostomy while overall mortality was 14.2%. Prasad et al reported 20% mortality with repair of perforation and ileo-transverse bypass[6]. Shah A.A., Wani and Wazir reported 37.5% mortality with resection anastomosis[1]. Thus in comparison with previous studies our mortality rates were lower, especially in patients treated with a repair of the perforation. Postoperative fecal fistula formation due to repair leak or new perforation was recorded in 8% of the total cases. Incidence of fecal fistula was reported as 16.6% by Olurin et al[10], 10% by Talwar S. and Sharma R.K[4], and 8% by A.R.K. Adesunkanmi[3] Beniwal et al (2003) in their comparative study of operative procedures in typhoid perforation found that repair of perforation is better procedure than temporary ileostomy[5]

Shukla et al (2004) A hundred cases of enteric perforation, treated surgically by single- or double-layer closure, were studied prospectively. Mortality and morbidity rates were 10-18 and 37-42% and comparable in the two groups[11]. Hence it is good closure of the perforation rather than single- or double-layer closure that determines the outcome in patients with enteric perforation.

Shyam Kumar Gupta et al (2010) conducted study on patients of perforation peritonitis and performed

Primary closure of the perforation as most commonly done procedure[12].

Postoperative complications and mortality

In present study, most common complication is surgical site infection (31.8%) followed by burst abdomen (20%), septicemia (12.72%) and mortality (9.09%) while enterocutaneous fistula and anastomotic leak is seen only in 8% patients.

Talwar Set al (1997) observed That the total of 79.1% of patients developed wound infection and 10% of patients developed faecal fistula. The overall mortality rate was 16.4%. [4].

Chatterjee Het al (2003) treated found Wound infection, wound dehiscence, enterocutaneous fistula and septicaemia were the principal postoperative complications[14].

Oheneh-Yeboah M (2007) highlighted the complications in his study. The most common postoperative complication was wound infection (52.4%) [15]. The most serious were persistent peritonitis (34.7%) and enterocutaneous fistula (10.0%) with a mortality of 33.3% and 22.2% respectively. The overall mortality was 10.9%.

Average hospital stay

Average duration of hospital stay for primary closure was 12.54+ 4.91 and for loop ileostomy was 17.02+ 5.00. Hospital stay for loop ileostomy was greater than primary repair patients.

Conclusion

Post-operative complications and mortality was compared in between primary repair group and ileostomy group. Early surgery and adequate resuscitation were the important factors for successful management of patients with ileal perforation. This study proposes that primary closure of perforation is a preferred technique in clinically stable patients with a single perforation with minimal soiling of the abdominal cavity. In this study it is found that primary repair of ileal perforation has less morbidity and mortality in comparison to loop ileostomy formation if primary repair is done within 48 hrs of perforation.

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