Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2017; 5(5C):1931-1937 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjams.2017.v05i05.044

Original Research Article

Temporary Loop Ileostomy for Ileal Perforation- A Surgical Experience of 56 Cases in a Resource Limited Setting

Dushyant Rohit[1], Sarvesh Jain[2], R S Verma[3], Grishmraj Pandey[4]
[1]Associate Professor, Department of Surgery, Bundelkhand Medical College, Sagar
[2]Associate Professor, Department of Anaesthesia, Bundelkhand Medical College, Sagar
[3]Professor, Department of Surgery, Bundelkhand Medical College, Sagar
[4]Intern, Bundelkhand Medical College, Sagar

***Corresponding author**
Dushyant Rohit
Email: rythmmakers@gmail.com

Abstract: Ileal perforation is a common surgical emergency in developing countries due to high incidence of enteric fever and tuberculosis in these regions. Despite the availability of modern diagnostic facilities and advanced treatment regime, this condition is still associated with high mortality and morbidity. Surgical approach is the standard treatment for ileal perforation and is the only successful modality. But the choice of procedure continues to be debated. This retrospective study is aimed at reviewing the role of temporary loop ileostomy in patients with ileal perforation. The study includes 56 cases of ileal perforation which were treated and underwent temporary loop ileostomy as a treatment modality from Jan 2015 to Feb 2017. Patients having ileal perforation but did not undergo ileostomy were excluded. In the study, the commonest cause of perforation was typhoid fever. Forty one (73.3%) patients were male and fifteen (26.7%) were female. Male to Female ratio is 3:1. Predominance of male patient noted. Most of the patient presented with abdominal pain, abdominal distension, nausea, vomiting, constipation and fever. Pneumoperitonium in chest and erect abdominal X-ray were seen in 52 cases (92.8%). Single ileal perforation was seen in 44 cases (78.5%). Of the cases the majority of ileal perforation located within 60cm of ileocaecal valve. Typhoid perforations are the most common cause of ileal perforation followed by tuberculosis. In case of ileal perforation temporary defunctioning loop ileostomy play important role. We recommended that defunctioning loop ileostomy should be preferred over other surgical procedures in case of ileal perforation where most of the patients present late with severe sepsis and generalised peritonitis.
Keywords: Ileal perforation, ileostomy, typhoid, peritonitis, stoma

I**NTRODUCTION**:

Ileal perforation has been seen as a common problem in tropical countries. Ileal perforation is an acute surgical emergency in developing countries [1]. where there is a release of intestinal content into peritoneal cavity. Ileal perforation can be described as either free or contained. Free perforations occur when bowel contents spill freely into abdominal cavity causing diffuse peritonitis. Contained perforation occurs when full thickness hole is created by ulcer but free spillage is prevented because omentum and contagious organ seal off the area. Typhoid fever is regarded as the most common cause of ileal perforation. The incidence of ileal perforation has been reported 0.8% to 18% [2]. Tuberculosis occurs 5% to 9% of all small intestinal perforation in India and it is the second commonest cause after typhoid fever [3]. These cases of ileal perforations often require ileostomy as a lifesaving procedure. Most of the patients of ileal perforation come from rural area and presented late after the onset of acute illness thereby leading to high mortality associated with these cases. The word ileostomy comes from the word ileum and stoma; ileum is the lowest part of the small bowel and stoma means opening. Temporary loop ileostomy is the surgical procedure frequently performed for ileal perforation to give rest to the part of the bowel and decrease the risk of intraabdominal sepsis. In loop ileostomy, a loop of small intestine is pulled out through abdomen. The section of the small intestine is then opened up and stitched to the skin to form a stoma.

The colon and the rectum are left in place. In these cases the stoma will have two opening, although they will be close together but you may not be able to see both. One of the openings is connected to the functioning part of the gut; this is where waste product leaves body. The other opening is connected to the inactive part of the bowel that leads down to rectum. The loop ileostomy is usually temporary and may be reversed during second operation. Ileostomies are usually sited above the groin on the right hand side of the abdomen. Since there is no muscle around the stoma there is no way to control when waste passes through it. The waste is in the form of thick liquid which collects in separate odour proof bag which is placed over the stoma which will need to be changed when it gets full. When you clean the stoma you may see a drop of blood which is normal. The stoma has many small vessels just like inside of mouth, it has no nerve ending so it is not painful. Patients with temporary loop ileostomy may have the sensation of their rectum wanting to open. Occasional leakage of mucus, blood, liquid through the anus is normal. Ileostomy bag empty about every 4-6 hours and always empty the bag when it is one third full. Do not let the pouch fill completely. Full pouches put the pressure and may cause leak. Ileostomy done as part of surgical process in patients with gross peritoneal contamination, oedematous bowel loop and multiple perforations of small bowel. Though ileostomy is a lifesaving procedure, in severe cases it may result in significant number of complications [4]. Complications related to stoma may occur early or late, intermittently or progressively and may be acute or chronic in nature. Complications of ileostomy are bleeding, ischemia, obstruction, prolapse, retraction, stenosis, parastomal herniation, fistula formation, wound infection and incisional hernia. Temporary loop ileostomy is found to be superior to other surgical procedure as far as morbidity and mortality are concerned especially in patients with severe illness. The creation of ileostomy reduced morbidity and mortality dramatically [5]. Enteric perforation presented late with specific shock due to peritonitis can be satisfactorily treated with exteriorization of perforation as an ileostomy with minimal complications [6]. Ileostomy is known to affect the quality of life due to physical restriction and psychological problems [7]. Despite the major advancement in the field of surgery construction of temporary loop ileostomy is still a common and frequently performed procedure. It is mandatory to apply meticulous sound surgical procedure in order to achieve good result and it should be performed by surgeon not only technically skilled but who also understand the potential metabolic and mechanical problem associated with ileostomy. The purpose of the study was to evaluate the efficacy of loop ileostomy for the treatment of ileal perforations based on our experience.

MATERIAL AND METHODS:

This retrospective study included 56 patients who were operated for ileal perforation at Bundelkhand Medical College and Associated Hospital, Sagar from Jan 2015 to Feb 2017. The details of the patients were retrieved retrospectically from patient case record kept in the Medical Record Department, Surgical wards and in Operation theatre register. The study was conducted on the basis of all patients admitted through emergency or as an elective case from outpatient department. Fifty six patients admitted with ileal perforation peritonitis and underwent emergency laparotomy with loop ileostomy were included in this study. The ileal perforation managed by primary repair or small gut resection and anastomosis were excluded from the study. Most of the patient had received no proper treatment for their illness and almost all the patients had sought initial medical attention from untrained medical practioner and only presented to us following a dramatic worsening of their symptoms of their peritonitis. The data of each patient was collected in a proforma form designed for the study and it includes the details of age, sex, duration of symptom prior to admission, clinical presentation and investigations. A detailed history and physical examination were carried out and routine investigations were done in all cases.

All the patients were resuscitated with intravenous fluids, nasogastric decompression of the stomach and urethra catheterisation for urinary output monitoring. Intravenous antibiotic consisting of third generation cephalosporin, metronidazole were started immediately. Investigations include complete blood count, Widal test, serum electrolyte, blood sugar, blood urea, HBsAg, HIV, chest and erect abdominal x-ray and abdominal pelvic ultrasound. The procedure was explained to the patients and written consent was taken regarding the stoma formation. Patient unfit for surgery were initially treated with abdominal drain under local anaesthesia as a temporary measure prior to definite laparotomy. Upon adequate resuscitation as shown by blood pressure greater than or equal to 100mmHg systolic and urinary output more than 30ml per hour underwent exploratory laparotomy under spinal anaesthesia. A midline incision was employed. At surgery operative findings were noted. The amount and the type of peritoneal contamination, condition of the gut, status of lymph node and mesentery, number, site and size of perforation were noted. Since all the cases in this study had gross peritoneal contamination, the

perforated bowel loop was isolated and brought out as an ileostomy. The patient had peritoneal lavage with copious volume of normal saline. All patients had mass closure of abdominal wall with proline number one suture with intraabdominal drain left in situ (pelvis and Para colic gutter). Post operatively all patients were put on broad spectrum antibiotics and oxygen through nasal prongs. Those patients requiring intensive care were shifted to surgical ICU. Patients were followed from admission to discharge during which complications (bleeding, respiratory complications, retraction and prolapse, wound infection, skin excoriation, burst abdomen, incisional hernia and mortality) were observed.

RESULTS:

A total of 56 patients who presented with ileal perforation and underwent temporary loop ileostomy were studied. Forty one (73.3%) patients were male and fifteen (26.7%) were female with male to female ratio 3:1. Predominance of male patients was noted. The age distribution is depicted in table 1. Most of the patients were in the third to fifth decade of life. Eighty percent of patients were from rural area.

Table 1: Age distribution of the patients

S. No	Age(Years)	Number	Percent
1.	10-19	03	05.3%
2.	20-29	07	12.5%
3.	30-39	24	42.8%
4.	40-49	13	23.2%
5.	50-59	09	16.2%

Majority of the patients had variable duration of symptoms prior to admission ranging from one to four weeks and twelve patients (21.4%) had been ill for less than one week before the onset of peritonitis. Most of the patients presented with abdominal pain, abdominal distension, nausea, vomiting, constipation and fever.

Table 2: Clinical symptoms recorded on admission

S.no	Symptoms	No. of Cases	Percent
1.	Abdominal pain	52	92.8%
2.	Nausea/Vomiting	44	78.5%
3.	Abdominal Distension	48	85.7%
4.	Constipation	35	62.5%
5.	Fever	29	51.7%

The predominant clinical signs on presentation were generalised abdominal distension, tenderness with guarding and rigidity and shocked state.

Table 3: Elicited clinical and findings

S.no	Findings	No. of cases	Percent
1.	Abdominal Distension	52	92.8%
2.	Abdominal tenderness and rigidity	41	73.3%
3.	Blood pressure less than 100mmHg systolic	43	76.7%
4.	Pulse rate more than 120 per minute	48	85%

Result of investigation before surgery, blood investigation showed 75% patients had total leucocyte count more than 11000 cu/mm^3. Widal test was positive in 57% cases. On erect abdominal x-ray 92.8% had gas under diaphragm suggestive of gut perforation. On chest X-ray six patients had patchy consolidation and two had pleural effusion. Twenty seven (48.2 %) patients had abdominal pelvic ultrasound showing free peritoneal fluid typical of peritonitis. Two patients had normal x-ray abdomen, in view of clinical suspicious of

perforation peritonitis computerised tomography (CECT) scan of abdomen was done that confirm the diagnosis. All the patients had HIV and HBsAg tests done routinely and none in our studies was positive. In our study indication of loop ileostomy are typhoid perforation, abdominal tuberculosis, acute intestinal obstruction and blunt trauma abdomen. Typhoid perforation has been the most common indication account for patient (67.8%). The next common indication was abdominal tuberculosis. Other less common indications are acute intestinal obstruction and blunt trauma abdomen.

Table 4: Indication of Loop Ileostomy

S. no	Indication	No. of cases	Percent
1.	Typhoid perforation	38	67.8%
2.	Tuberculosis	10	17.8%
3.	Blunt trauma abdomen	03	5.4%
4.	Acute intestinal obstruction	05	8.9%

On exploration all the patient had generalised peritonitis with varying amount of small bowel contents and pus in the peritoneal cavity. There was no tendency towards walling of the perforation by the omentum other than adherence of perforated ileal loops to adjacent loops of bowel. In a few cases ileum, caecum, ascending colon show patches of ischemia. Majority of ileal perforations were located within 60cm from ileocaecal valve. About eighty percent of perforations were less than 1cm while the rest were 1.5cm to 2.0cm in diameter. Most perforations were round or oval in shape and all were typically laid around the anti-mesenteric border of ileum. Single ileal perforations were seen in forty four (79%) cases while twelve cases (21.5%) had more than one perforation.

Table 5: Number of perforation

S. no	No. of perforation	No. of cases	Percent
1.	01	44	78.5%
2.	02	08	14.3%
3.	03	04	7.2%

In all cases the perforation site was brought out as stoma. In post-operative period, among various complications which were seen, three patients had superficial bleeding from the ileostomy site wound. Bleeding was controlled by local measures. Transient oedema of ileostomy was seen in eight patients. All these eight patients had distended oedematous bowel which subsequently decreased as the stoma started working. Four patients had retractions which were surgically corrected as a local procedure. Skin excoriation was the most common late complication observed in twenty six patients (46.4%). Other complications were wound infection (33.9%), burst abdomen (5.4%) and incisional hernia (8.9%). Five patients had post-operative septicaemia and expired (8.9%).

Table 6: Complications of loop ileostomy

S.no	Complications	No. of Cases	Percent
1.	Bleeding	03	5.3%
2.	Retraction of stoma	04	7.1%
3.	Wound infection	19	33.9%
4.	Burst abdomen	03	5.4%
5.	Skin problem	26	46.4%
6.	Incisional hernia	05	8.9%
7.	Mortality	05	8.9%

DISCUSSION:

Peritonitis due to perforation in the hollow viscera is commonly encountered in surgical practice.

Peritonitis is caused by introduction of infection into the sterile peritoneum through perforation of the bowel. Typhoid fever was found to be the most common cause of ileal perforation in our study followed by abdominal tuberculosis. This is similar to the above mentioned studies done in Indian subcontinent and also the one that have been done in African continent [7, 8]. Study from the western countries however show a difference in the perforation of ileum mostly due to diseases like crohn's disease, perforated diverticula, radiation enteritis, foreign body[9,10]. Present study confirms the typical age, sex distribution of ileal perforation with preponderance for male sex. This also has been confirmed by various studies conducted on Indian context [11, 12]. In the most of the studies from Asia mean age of presentation for ileal perforation is around 30 to 40 years and the finding in the present study were the same[13, 14]. The majority of the patients in the present study and previous studies presented with pain in abdomen, vomiting, constipation and fever. Delayed presentation, marked sepsis and poor nutritional status were the common factors in these patients with perforation peritonitis so preference was given to temporary loop ileostomy as a lifesaving procedure. The clinically stable patients underwent primary closure, resection anastomosis of the small gut were excluded from the present study. At laparotomy there was no tendency towards walling of the omentum and healing of perforation as in other reports [15]. Furthermore with paralytic ileus occurring in peritonitis of this magnitude there is continuous leak of small bowel content into the peritoneal cavity from the dilated bowel loops.

The above observations make non operative therapy illogical and invariably fatal. It is therefore now expected widely that treatment of ileal perforation should be surgical [16, 17]. However adequate resuscitation, correction of electrolyte and fluid imbalance, institution of appropriate intravenous broad spectrum antibiotic before surgery had proven to be essential for successful outcome [18]. Also early surgical intervention has been shown to clearly improve the outcome as documented in previous report [19]. Majority of the perforation was located within 60cm of the ileocaecal valve. A study by Badejo and Arigbabu in 1980 reported location of perforation within 20cm and 40cm from ileocaecal valve [20]. Wani *et al.;* in 2006 also reported operative findings are typical with most perforation being located on anti-mesenteric border of the terminal 60cm part of the ileum. A loop ileostomy has an adverse effect on the quality of life which get further enhanced if stoma related complication occur [21]. Complication rate of temporary loop ileostomy ranges between 20% and 60% were also reported [22, 23] and this difference may be related with different time points. In our study the complication rate was 46.4%. Skin excoriation was found to be the major late complication in this study as has been reported in the earlier local studies [24, 25]. Probable cause may be improper siting and in emergency situation it is often not possible to mark the stoma site in standing and sitting position as the patients who presents late are usually in shock at the time presentation. In such cases it is difficult to judge the skin folds and the waist line. On the other hand in patients who has thin built and poor nutritional status, bony prominence pose a problem in proper placement of stoma appliance and result in frequent leakage and skin excoriation. Skin excoriation was also seen in patients with abdominal tuberculosis due to generalised muscle wasting and weight loss which is the feature of this disease. Patient with abdominal tuberculosis had very prominent bony prominence due to significant weight loss before surgery so it becomes difficult to apply the stoma appliances properly in these patients which resulted in frequent leakage of bag and spillage of relatively watery effluent from the bag after initiation of the standard ATT and high protein diet, decrease peri stomal skin complications effectively. Most patients with ileal perforation have one or two perforations, sometimes there may be multiple perforations especially in immunocompromised patients [26]. In the present study all the patients had perforations with severe peritonitis and post-operative mortality occurred in five cases (8.9%). So the current study show slightly improved mortality rate in comparison to previous studies carried out in India [27-29].

CONCLUSION:

Typhoid perforations are the most common cause of ileal perforation followed by abdominal tuberculosis with male preponderance. Early surgery and adequate resuscitation is the key to success in full management of patient with ileal perforation. We recommended that temporary loop ileostomy should be performed over other surgical options in case of ileal perforations especially in those severe cases who present late in course of their illness, have more than one perforation with massive contamination of peritoneal cavity. This helps to reduce mortality in the patients undergoing surgery for ileal perforation. Ileostomy specific complications increase the stay of patients in hospitals. These complications can be reduced by proper fashioning and provision of adequate nursing care of stoma.

REFERENCES:

1. Jhobta RS, Attri AK, Kaushik R, Sharma R, Jhobta A. Spectrum of perforation peritonitis in India-review of 504 consecutive cases. World journal of Emergency surgery. 2006 Sep 5; 1(1):26.
2. Edino ST, Yakubu AA, Mohammed AZ, Abubakar IS. Prognostic factors in typhoid ileal perforation: a prospective study of 53 cases. Journal of the national medical association. 2007 Sep; 99(9):1042.
3. Kapoor VK. Abdominal tuberculosis: the Indian contribution. Indian Journal of Gastroenterology. 1998 Oct 31; 17:141-7.
4. Ajao OG. Typhoid perforation: factors affecting mortality and morbidity. International surgery. 1981 Dec; 67(4):317-9.
5. Chaudhary P, Ishaq Nabi GR, Tiwari AK, Kumar S, Kapur A, Arora MP. Prospective analysis of indications and early complications of emergency temporary loop ileostomies for perforation peritonitis. Annals of gastroenterology: quarterly publication of the Hellenic Society of Gastroenterology. 2015 Jan; 28(1):135.
6. Salvadalena GD. The incidence of stoma and peristomal complications during the first 3 months after ostomy creation. Journal of Wound Ostomy & Continence Nursing. 2013 Jul 1; 40(4):400-6.
7. Malik AM, Laghari AA, Mallah Q, Qureshi GA, Talpur AH, Effendi S, Memon JM. Different surgical options and ileostomy in typhoid perforation. World J Med Sci. 2006; 1(2):112-6.
8. Adesunkanmi AR, Ajao OG. The prognostic factors in typhoid ileal perforation: a prospective study of 50 patients. Journal of the Royal College of Surgeons of Edinburgh. 1997 Dec; 42(6):395-9.
9. Rajagopalan AE, Pickleman J. Free perforation of the small intestine. Annals of surgery. 1982 Nov; 196(5):576.
10. Meissner K. Late radiogenic small bowel damage: guidelines for the general surgeon. Digestive surgery. 1999 Jul 18; 16(3):169-74.
11. Mohan A, Bhaskaran A, Kumar S, Kumar U. Nontraumatic Ileal Perforation: Surgical Experience In Rural Population In Indian Scenario. International Journal of Biomedical and Advance Research. 2013 Feb 1; 4(1):47-55.
12. Beniwal US, Jindal D, Sharma J, Jain S, Shyam G. Comparative study of operative procedures in typhoid perforation.
13. Patil V, Vijayakumar A, Ajitha MB, Kumar L S. Comparison between tube ileostomy and loop ileostomy as a diversion procedure. ISRN surgery. 2012 Dec 18; 2012.
14. Batra PO, Gupta DI, Rao S, Narang R, Batra RA. Spectrum of gastrointestinal perforation peritonitis in rural central India. Journal of Mahatma Gandhi Institute of Medical Sciences. 2013; 18(1):44-8.
15. Dawson JH. Surgical management of typhoid perforation of the ileum. The American surgeon. 1970 Oct 1; 36(10):620-2.
16. Nuhu A, Dahwa S, Hamza A. Operative management of typhoid ileal perforation in children. African Journal of Paediatric Surgery. 2010 Jan 1; 7(1):9.
17. Saxe JM and Cropsey R: Is operative management efficient in the treatment of perforated typhoid Ann J surg. 2005, 189:342-344
18. Van Der Werf TS, Cameron FS. Typhoid perforations of the ileum. A review of 59 cases, seen at Agogo Hospital, Ghana, between 1982 and 1987. Tropical and geographical medicine. 1990 Oct; 42(4):330-6.
19. Mock CN, Amaral J, Visser LE. Improvement in survival from typhoid ileal perforation. Results of 221 operative cases. Annals of surgery. 1992 Mar; 215(3):244.
20. Badejo OA, Arigbabu AO. Operative treatment of typhoid perforation with peritoneal irrigation: a comparative study. Gut. 1980 Feb 1; 21(2):141-5.
21. Gooszen AW, Geelkerken RH, Hermans J, Lagaay MB, Gooszen HG. Quality of life with a temporary stoma. Diseases of the Colon & Rectum. 2000 May 1; 43(5):650-5.
22. Andivox T, Baul J, Chio et al. comparison of colostomies, follow up study of 500 colostomised patients. Ann Chir 1965, 50:252-57
23. Kaidar-Person O, Person B, Wexner SD. Complications of construction and closure of temporary loop ileostomy. Journal of the American College of Surgeons. 2005 Nov 30; 201(5):759-73.
24. Safirullah, Mumtaz N, Jan MA, Ahmed S. complication of intestinal stoma. J postgrad Med Inst. 2005; 19:407-11
25. Hussain T, Alam SN, Manzar S. Outcome of ileostomy in cases of small bowel perforation. Pak J Surg. 2005 Dec; 21(2):65-71.
26. Verma H, Pandey S, Sheoran KD, Marwah S. Surgical audit of patients with ileal perforations requiring ileostomy in a Tertiary Care Hospital in India. Surgery research and practice. 2015 Jul 13; 2015.
27. Roy HR, Basunia MA, Quayum MA. Complications of Protective Ileostomy in Emergency Surgery-A Study of 50 Cases. Journal of Bangladesh College of Physicians and Surgeons. 2012 Jul 21; 29(4):196-2067t0.
28. Purohit PG. Surgical treatment of typhoid perforations: Experience of 1976 Sangli epidemic. Indian J Surg. 1978; 40(5):227-38.

29. Prasad PB, Choudhury DK, Prakash O. Typhoid perforation treated by closure and proximal side to side ileotransverse colostomy.(A new operative approach.). Journal of the Indian Medical Association. 1975; 65(11):297-9.