

# A Study of Morbidity of Temporary Loop Ileostomy in Cases of Severe Peritonitis with Perforation of Bowel

Madhav R Santoki<sup>1</sup>, Alpesh B Amin<sup>2</sup>, Dipen K Kotwal<sup>3</sup>, Jayeshkumar B Bagada<sup>4</sup>

## ABSTRACT

**Background:** Even with significant advancements in surgery, creating an intestinal stoma is still routine and commonly done operation. To get good results, meticulously sound surgical principles must be followed, and the procedure should be carried out by a surgeon who is not only technically proficient but also aware of the potential metabolic (hypo-proteinemia, acid-base imbalance, electrolytes imbalance), and mechanical (stomal appliance-related, skin excoriation, stoma prolapse, peristomal herniation) issues connected to the loop ileostomy. This study emphasizes on quality of care of ileostomy patients. **Aim:** To analyse morbidities of temporary loop ileostomy in cases of severe peritonitis with bowel perforation. **Materials and Methodology:** This is a prospective observational study on 100 patients fulfilling inclusion and exclusion criteria undergoing emergency exploratory laparotomy with temporary loop ileostomy formation. In the post-operative period patients followed up daily for a week for local stoma complication and after discharge every 2 weekly for 8 weeks follow ups taken. **Result:** The greatest incidence is in the age groups of 41–50 years (20%), 51–60 years (22%), and 21–30 years (20%). Average hospital stay is 5.7 days. Systemic complication, the most common finding is prolonged ileus (20%) and Septicaemia (19%) followed by respiratory (11%) and urinary (9%) infection, wound dehiscence (7%), severe electrolyte imbalance (7%). **Conclusion:** Ileostomy is a commonly performed emergency operation for severe perforation peritonitis. Patients presenting with shock, acute renal failure, and acute respiratory distress are likely to have increased postoperative complications including Septicaemia, severe electrolyte imbalance, wound infection/dehiscence, and respiratory/urinary infection.

**KEY WORDS:** Perforation, Ileostomy, Complication.

## Introduction

An intestinal or urethral opening in the abdominal wall that was either surgically created or unintentionally developed is known as a stoma. An external passage is built between the distal portion of the small intestine-ileum and the abdominal wall during the surgical operation known as an ileostomy. It

is acceptable to do a temporary loop ileostomy to provide de-functioning in the case of potentially fatal anastomotic issues with a known mortality risk. The symptoms of an anastomotic leak and the frequency of operations associated with leaks may be lessened by faecal diversion utilizing a transient stoma.<sup>[1-4]</sup>

De-functioning loop ileostomy construction is often a simple and life-saving treatment, however, there is a noticeable morbidity and complication rate.<sup>[5,6]</sup> Because the disorders for which the stomas are made are not required to be reported as in India, information on the kinds and quantity of stomas formed, complications of stomas, and resulting impairment of an individual's life has been restricted. After a temporary loop ileostomy, the majority of problems are brought on by advanced pathology,

Access this article online

Quick Response Code:



Website: [www.jmsh.ac.in](http://www.jmsh.ac.in)

Doi: 10.46347/jmsh.v10.i3.23.270

<sup>1</sup>Senior resident, Department of General Surgery, B. J. Medical College, Civil Hospital, Asarwa, Ahmedabad, 380016, Gujarat, India, <sup>2</sup>Assistant Professor, Department of General Surgery, B. J. Medical College, Civil Hospital, Asarwa, Ahmedabad, 380016, Gujarat, India, <sup>3</sup>Assistant Professor, Department of General Surgery, GMERS Medical College, Dharpur, Patan, 384290, Gujarat, India, <sup>4</sup>Assistant Professor, Department of General Surgery, GMERS Medical College, Himmatnagar, Sabarkantha, 383001, Gujarat, India

### Address for correspondence:

Jayeshkumar B Bagada, Assistant Professor, Department of General Surgery, GMERS Medical College, Himmatnagar, Sabarkantha, 383001, Gujarat, India. E-mail: [jbagada@yahoo.in](mailto:jbagada@yahoo.in)

acute sepsis, and the relative inexperience of the residents in an emergency surgery. Emergency abdominal procedures are associated with high rates of unfavourable postoperative outcomes.<sup>[7]</sup> Complications may be easily prevented by using an appropriate surgical technique and enhanced rehabilitation by a multidisciplinary team. The leading sites of perforation vary by geographic location.<sup>[8]</sup> Stoma-related complications may happen early or late, randomly, or gradually, and they can be acute or chronic in character. Ileostomy is a life-saving surgery, especially in situations of fulminant enteritis and prolonged peritonitis.

Therefore, for a successful result, a thorough evaluation of the requirement for a stoma, cautious surgical technique, and expert entero-stomal caring is essential. Prior to surgery, a patient with a stoma must be managed, and prevention is the key to managing postoperative problems.

### Materials and Methodology

This prospective observational study comprises 100 patients in Tertiary Care Centre from June 2020 to November 2021 after Ethical approval was taken from the institute’s ethical committee, Registration number: ECR/72/Inst/GJ/2013/RR-2019 Reference number: 274/2021. This number of patients could be enrolled due to high volume of patients with perforation peritonitis in this centre. Inclusion criteria were patients of age between 16 to 72 years, patient willing to participate in the study and giving informed and written consent, patients undergoing emergency exploratory laparotomy with loop ileostomy for severe perforated peritonitis. Exclusion criteria were biopsy or histopathology reports suggestive of malignancy, pregnant females. Patients presented with clinical features of shock (SBP<90mmhg) acute renal failure (decrease urine output, altered serum creatine and serum urea), acute respiratory distress (tachypnoea, Spo2 not maintaining on room air) managed with intravenous fluids, nasogastric decompression of the stomach and urethra catheterization for urinary output monitoring. Intravenous antibiotics were started. Investigations included widal test, complete blood count, blood sugar, serum electrolyte, HBsAg, HIV, blood urea, chest and erect abdominal x-ray with free gas under the diaphragm, and abdominal pelvic ultrasound showing moderate free fluid with echoes. The patients were informed of the process, and written authorization was obtained for the stoma creation. In the post-operative period patients

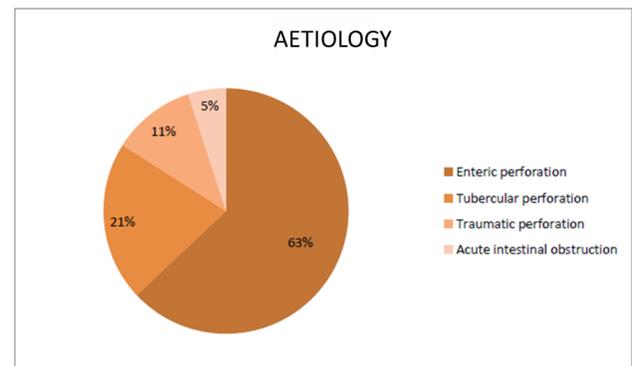
followed up daily for a week for local stoma complication and after discharge every 2 weekly for 8 weeks follow up taken after surgery. Local and systemic complications were noted.

### Result

In this study, 100 patients who satisfied the inclusion criteria throughout the research period were enrolled. There were 30 female patients and 70 male participants in this research.

**Table 1: Age Distribution**

Age group (Year)	No. of Patients	Percentage
11 to 20	5	5%
21 to 30	20	20%
31 to 40	15	15%
41 to 50	20	20%
51 to 60	22	22%
61 to 70	17	17%
71 to 80	1	1%



**Figure 1: Aetiology of perforation in percentage**

Most common preoperative complication is acute renal failure 50%, followed by shock 29%, and acute respiratory distress 11%. In present study, 16% patients had required Intensive care unit care and 3% patients had mortality. The common systemic complication includes prolong ileus 20% septicaemia 19%, respiratory infection 11%, Urinary tract infections 9%, and wound dehiscence 7%. In present study, patients with enteric perforation required shorter hospital stay compared to other (Table 2).

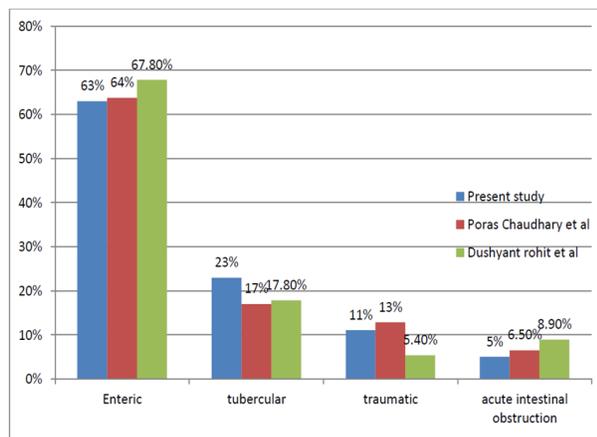
### Discussion

Ileostomy is a commonly perform lifesaving procedure done in an emergency setting. Although loop

**Table 2: Duration of stay**

Diagnosis	Days
Enteric Perforation	5.53
Tubercular Perforation	6.38
Traumatic perforation	6.27
Acute Intestinal Obstruction	6.20

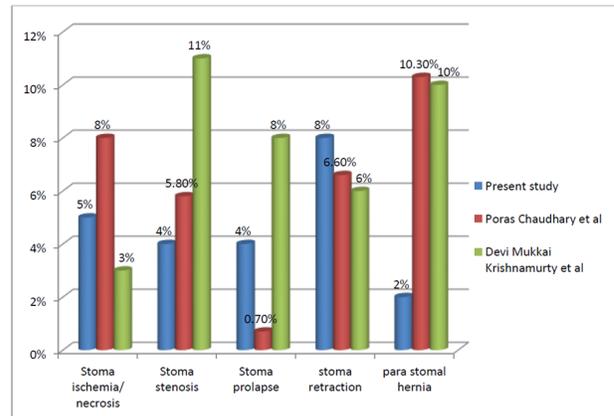
ileostomy can be made at any age, this clinical study's age span included patients from 11 to 80 years old. According to the research, the greatest incidence is in the age groups of 41–50 years (20%), 51–60 years (22%), and 21–30 years (20%), which is similar to the previous study groups [Table 1]. Poras Chaudhary *et al.*<sup>[9]</sup>, Dushyant Rohit *et al.*<sup>[10]</sup> which are almost similar to this clinical study of morbidity of loop ileostomy. This study's mean age is 43 years, compared to Poras Chaudhary *et al.*<sup>[9]</sup>, which shows mean age of 34 years, Dushyant Rohit *et al.*<sup>[10]</sup> shows mean age is 45 years. In Poras Chaudhary *et al.*<sup>[9]</sup>, study male to female ratio was 2.7:1. In Dushyant Rohit *et al.*<sup>[10]</sup> study male to female ratio was 2.8:1. The male predominance aligns with published findings from other studies investigating perforation peritonitis.<sup>[11–14]</sup>



**Figure 2: Comparison of aetiology from various studies**

In the current research male to female ratio is 2.3:1 which is the same as previous studies. Out of 100 cases of loop ileostomy for perforation peritonitis most common 63% of the cases are due to enteric perforation followed by 21% tubercular, 12% traumatic, and 5% acute intestinal obstruction causing small bowel perforation [Figure 1]. These findings are almost comparable with Poras Chaudhary *et al.*<sup>[9]</sup> and Dushyant Rohit *et al.*<sup>[10]</sup> studies [Figure 2].

In the present study average hospital stay is 5.7 days which is significantly lower in comparison to 9 days in Poras Chaudhary *et al.*<sup>[9]</sup>. Patients who required readmission had a prior higher hospital stay of average of 8.5 days.



**Figure 3: Post-operative peri-stomal complication**

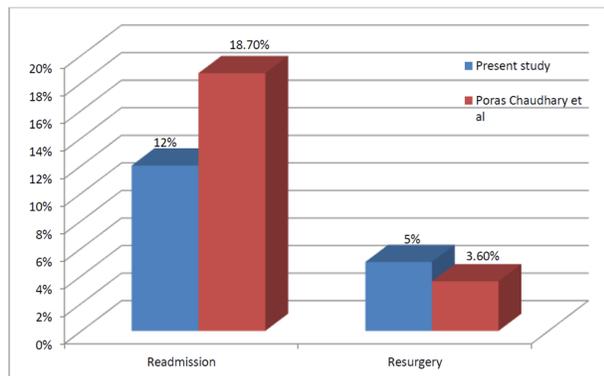
Muneer *et al.*<sup>[16]</sup> showed skin excoriation 17.6%, stoma prolapse 2.94%, retraction 3.5%, stoma stenosis 1.1%, parastomal hernia 2.9% which are comparable to this present study [Figure 3]. Another study, Aziz *et al.*<sup>[17]</sup> showed skin excoriation at 21.4%, retraction at 5.3%, parastomal hernia at 0.94% which are comparable to present study [Table 3]. Primary Surgery for Stoma creation has much impact on Stoma reversal as technique used, any local muscle damage, cautery burns on skin, poor suture techniques can matter while putting stoma in. In the current research, in systemic complications the most common finding is prolonged ileus (20%) and septicaemia (19%) followed by respiratory (11%) and urinary (9%) infection, wound dehiscence (7%), severe electrolyte imbalance (7%). These findings are comparable with Poras Chaudhary *et al.*<sup>[9]</sup> study findings. Prolonged ileus seen may be due to improper post-operative mobilisation, hypokalaemia, patient incomppliance and accordingly measures were taken thereafter which are active patient-resident doctor and faculty involvement in counselling, infusion of potassium injections wherever needed and enthusiastic bedside-nursing Due to large number of patients in a ward and hospital, even after stringent measures from hospital authority, Hospital acquired infections could not be avoided which included respiratory, urinary tract, surgical site infections. For these, proper aseptic precautions were taught to resident doctors and regular seminars on this type of topics were kept for skill and patient benefits.

**Table 3: Local complication**

Local complication	Present study	Poras Chaudhary et al. [9]	Devki Mukkai Krishna-murthy et al. [15]	Dushyant Rohit et al. [10]
Skin irritation/excoriation	40 (40%)	127 (20%)	-	26 (46.4%)
Mucocutaneous separation	13 (13%)	2 (3.6%)	-	-
High output	13 (13%)	78 (12.3%)	-	-
Obstruction/ loop rotation	6 (6%)	32 (5.1%)	-	-
Stoma necrosis	5 (5%)	51 (8%)	6 (3%)	-
Stoma stenosis	4 (4%)	37 (5.8%)	22 (11%)	-
Stoma Prolapse	4 (4%)	4 (0.7%)	16 (8%)	-
Stoma retraction	8 (4%)	42 (6.6%)	12 (6%)	4 (7.2%)
Parastomal hernia	2 (2%)	65 (10.3%)	20 (10%)	-

Electrolyte imbalances vary patient to patient and to the extent were treated accordingly.

Intensive care unit stoma patient with patient's relatives counselling about systemic complications.



**Figure 4: Patient requiring re-admission and re-surgery**

In Dushyant Rohit et al. [10] study, shows there was wound dehiscence (burst abdomen) in 5.4% which is similar to present study showing wound dehiscence (7%) in postoperative patients. In another study, Jhobta et al. [18] showed severe electrolyte imbalance (17%), and wound infection (25%), Muneer et al. [16] showed severe electrolyte imbalance (6%), and wound infection (6%), Patil et al. [19] showed severe electrolyte imbalance (6%), and wound infection in (20%). In the present study, there is a 12% readmission with a 5% re-surgery rate in comparison with Poras Chaudhary et al. [9] show 18% readmission with 5% re-surgery [Figure 4]. Every institution must have an appointed qualified stoma nursing care staff who would look exclusively for stoma patients only, in addition to care provided by surgeons. These would reduce the burden on Resident doctors and faculties. Combined approach from anaesthetists, physicians and surgeons must be there for every

### Limitations

There is higher mortality in patients with shock, septicaemia, acute renal failure, and delayed presentation. Average hospital stay is 5.7 days in the present study, with a highest hospital stay of 8.5 days in a patient who requires readmission. In this study, readmission with or without re-surgery is required for complications like wound dehiscence, severe electrolyte imbalance, and retracted stoma. The study did not aim to measure the time elapsed from bowel perforation to emergency surgery, and this information were never noted. However, it was observed that the interval before hospital admission following an intra-abdominal bowel perforation could impact patient's post-operative outcomes.

### Conclusion

A common reason for temporary loop ileostomy is enteric perforation and tubercular perforation. Almost all the complications were managed conservatively but stoma retraction and stoma ischemia/necrosis are dreadful complications that may require stoma refashioning or stoma relocation. Rotation of surgeons in these types of surgeries and monitoring of techniques of stoma formations are must. Patients presented with shock, comorbidities, Acute Renal Failure and delayed presentation have an increased risk of complication and Intensive care unit requirements. Proper stoma care and Stoma bag application demonstrations and presentations must be arranged to enhance the skills and recent advances for surgeons to mitigate the standard of patient recovery and patient satisfaction.

## References

- Fontes B, Fontes W, Utiyama EM, Birolini D. The efficacy of loop colostomy for complete fecal diversion. *Diseases of the Colon & Rectum*. 1988;31(4):298–302. Available from: <https://doi.org/10.1007/bf02554364>.
- Wexner SD, Taranow DA, Johanson OB, Itzkowitz F, Daniel N, Noguera JJ, et al. Loop ileostomy is a safe option for fecal diversion. *Loop ileostomy Diseases of Colon and Rectum*. 1993;36(4):349–354. Available from: <https://doi.org/10.1007/bf02053937>.
- Khoo REH, Cohen MM, Chapman GM, Jenken DA, Langevin JM. Loop ileostomy for temporary faecal diversion. *The American Journal of Surgery*. 1994;167(5):519–522. Available from: [https://doi.org/10.1016/0002-9610\(94\)90249-6](https://doi.org/10.1016/0002-9610(94)90249-6).
- Winslet MC, Drolc Z, Allan A, Keighley MR. Assessment of the de-functioning efficiency of the loop ileostomy. *Diseases of Colon & Rectum*. 1991;34(8):699–703. Available from: <https://doi.org/10.1007/bf02050354>.
- Feinberg SM, McLeod RS, Cohen Z. Complications of loop ileostomy. *The American Journal of Surgery*. 1987;153(1):102–107. Available from: [https://doi.org/10.1016/0002-9610\(87\)90209-1](https://doi.org/10.1016/0002-9610(87)90209-1).
- Tang CL, Yunos A, Leong AP, Seow-Choen F, Goh HS. Ileostomy output in the early postoperative period. *British Journal of Surgery*. 1995;82(5):607. Available from: <https://doi.org/10.1002/bjs.1800820510>.
- Watt DG, Wilson MSJ, Shapter OC, Patil P. 30-Day and 1-year mortality in emergency general surgery laparotomies: an area of concern and need for improvement? *European Journal of Trauma and Emergency Surgery*. 2015;41(4):369–374. Available from: <https://doi.org/10.1007/s00068-014-0450-3>.
- Samuel JC, Qureshi JS, Mulima G, Shores CG, Cairns BA, Charles AG. An observational study of the aetiology, clinical presentation and outcomes associated with peritonitis in Lilongwe, Malawi. *World Journal of Emergency Surgery*. 2011;6(1):1–5. Available from: <https://doi.org/10.1186/1749-7922-6-37>.
- Chaudhary P, Nabi I, Ranjan G, Tiwari AK, Kumar S, Kapur A, et al. Prospective analysis of indications and early complications of emergency temporary loop ileostomies for perforation peritonitis. *Annals of Gastroenterology*. 2015;28(1):135–140. Available from: <https://pubmed.ncbi.nlm.nih.gov/25609137/>.
- Rohit D, Jain S, Verma RS, Pandey G. Temporary Loop Ileostomy for Ileal Perforation- A Surgical Experience of 56 Cases in a Resource Limited Setting. *Scholars Journal of Applied Medical Sciences*. 2017;5(5C):1931–1937. Available from: <https://www.saspublishers.com/article/12296/download/>.
- Das K, Ozdogan M, Karateke F, Uzun AS, Sozen S, Ozdas S. Comparison of APACHE II, P-POSSUM and SAPS II scoring systems in patients underwent planned laparotomies due to secondary peritonitis. *Annali Italiani di Chirurgia*. 2014;85(1):16–21. Available from: <https://pubmed.ncbi.nlm.nih.gov/24755836/>.
- Ayandipo OO, Afuwape OO, Irabor DO, Abdurrazzaq AI, Nwafulume NA. Outcome of laparotomy for peritonitis in 302 consecutive patients in Ibadan Nigeria. *Annals of Ibadan Postgraduate Medicine*. 2016;14(1):30–34. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5049599/>.
- Wabwire B, Saidi H. Stratified outcome evaluation of peritonitis. *Annals of African Surgery*. 2014;11(2):29–34. Available from: <https://www.ajol.info/index.php/aas/article/view/114660>.
- Batra P, Batra R, Utaal MS. Possum scoring system for predicting prognosis in patients of perforation peritonitis. *International Surgery Journal*. 2016;3(4):2115–2119. Available from: <https://doi.org/10.18203/2349-2902.isj20163584>.
- Krishnamurthy DM, Blatnik J, Mutch M. Stoma Complications. *Clinics in Colon and Rectal Surgery*. 2017;30(3):193–200. Available from: <https://doi.org/10.1055/s-0037-1598160>.
- Muneer A, Shaikh AR, Shaikh GA, Qureshi GA. Various Complications in Ileostomy Construction. *World Applied Sciences Journal*. 2007;2(3):190–193. Available from: [https://idosi.org/wasj/wasj2\(3\)/7.pdf](https://idosi.org/wasj/wasj2(3)/7.pdf).
- Aziz A, Sheikh I, Jawid M, Alam SN, Saleem M. Indications and complications of loop ileostomy. *Journal of Surgery Pakistan*. 2009;14(3):128–131. Available from: [https://old.jsp.org.pk/Issues/JSP%2014-3%20July%20-%20September%202009/Adnan%20Aziz%20\(R\).pdf](https://old.jsp.org.pk/Issues/JSP%2014-3%20July%20-%20September%202009/Adnan%20Aziz%20(R).pdf).
- 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;1:1–4. Available from: <https://doi.org/10.1186/1749-7922-1-26>.
- Patil V, Vijayakumar A, Ajitha MB, Kumar LS. Comparison between Tube Ileostomy and Loop Ileostomy as a Diversion Procedure. *ISRN surgery*. 2012;2012:1–5. Available from: <https://doi.org/10.5402/2012/547523>.

**How to cite this article:** Santoki MR, Amin AB, Kotwal DK, Bagada JB. A Study of Morbidity of Temporary Loop Ileostomy in Cases of Severe Peritonitis with Perforation of Bowel. *J Med Sci Health* 2024; 10(3):284-288

Date of submission: 05.08.2023

Date of review: 02.09.2023

Date of acceptance: 10.09.2024

Date of publication: 30.09.2024