

**A Clinical Study on Postoperative Complications of Intestinal Stomas**Srikant Patro<sup>1</sup>, Jyotirmaya Nayak<sup>2</sup>, Subhashree Mishra<sup>3</sup><sup>1</sup>Associate Professor, Department of General Surgery, PGIMER and CH, Bhubaneswar<sup>2</sup>Assistant Professor, Department of General Surgery, SCB Medical College, Cuttack<sup>3</sup>Assistant Professor, Department of Anaesthesiology, SJMCH, Puri

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**Abstract:****Background:** An intestinal stoma is a surgically generated or inadvertently formed opening of the intestinal or urinary system onto the abdominal wall. A colostomy is a connection between the colon and the skin of the abdominal wall, while an ileostomy occurs when the ileum is externalized on the skin of the abdomen.**Objectives:** 1) To study different types of intestinal stomas, their indications.

2) To study various complications that occurred after the construction of intestinal stomas.

3) To study the ways how these complications can be minimized and managed in a better way

**Material & Methods: Study Design:** A prospective observational study.**Sample size:** 30 cases were included in our study.**Sampling method:** Simple Random sampling method.**Study tools and Data collection procedure:** Patients with postoperative complications of intestinal stomas who had ileostomy or colostomy either electively or in an emergency scenario were included in the research. The indications for stomas, whether temporary or permanent, end or loop or double barrel, ileostomy or colostomy, and their consequences were documented. Patients were followed up on for roughly 6 months after surgery or until the stoma was revised for early and late postoperative problems and their complications were documented and analysed.**Results:** Ileostomy (76.66%) was the most common kind of stoma (23 out of 30), followed by colostomy (7 out of 30) (23.33%). Loop ileostomy was done on ten patients, end ileostomy on seven, and double barrel on six.The most common procedure was end colostomy, which was followed by descending loop colostomy in 1 patient. and return to regular activities, predict pouching system wear periods, and avoid surgical problems.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

An intestinal stoma is a surgically generated or inadvertently formed opening of the intestinal or urinary system onto the abdominal wall. A colostomy is a connection between the colon and the skin of the abdominal wall, while an ileostomy occurs when the ileum is externalized on the skin of the abdomen. A jejunostomy may externalize the proximal small bowel in rare cases.

The conduit may be an intestine segment or, in certain cases, a direct ureter or bladder implantation on the abdominal wall. Because the conditions for which stomas are produced are not designated as reportable in India, data on the kinds and frequency of stomas made, as well as stoma complications and the ensuing impairment of an individual's life, has been limited. Ileostomy and colostomy are both performed for a number of reasons. Decompressing colostomies, for example, are often utilized to treat distal obstructive lesions that result in considerable proximal colon dilatation but little ischemic necrosis. Because the distal segment of the colon

was completely removed as part of the APR for rectum cancer, a diverting colostomy was employed to redirect intestinal contents. Stomas have a lengthy history that dates back to ancient times, but the first purposeful stoma was just approximately 200 years ago. A stoma is a life-saving treatment, and as surgeons, we must recognize and address the functional and emotional deficits that a stoma patient faces, particularly in the early stages following surgery.

Patients and surgeons both value any suggestions for stoma maintenance or surgical technique adjustments that seem to be effective in decreasing the challenges of transitioning to a colostomy, demanding more study into the numerous stomas, their problems, and treatment. As a result, the current research was conducted to investigate the postoperative consequences of intestinal stomas in the study population.

**Objectives:**

1. To study different types of intestinal stomas, their indications.
2. To study various complications that occurred after the construction of intestinal stomas.
3. To study the ways how these complications can be minimized and managed in a better way

**Material & Methods:**

**Study Design:** A prospective observational study.

**Study area:** The study was done at surgery department, SCB Medical College and hospital, Cuttack.

**Study Period:** Sep.2022 – March 2023.

**Study population:** Patients who underwent intestinal stomas either ileostomy or colostomy either in elective or emergency setting with postoperative complications of intestinal stomas.

**Sample size:** 30 cases were included in our study.

**Sampling method:** Simple Random sampling method.

**Inclusion Criteria:**

1. Patients above 18 years of age.
2. Patients who underwent intestinal stoma either in emergency or elective settings with

postoperative complications of intestinal stomas.

3. Patients who have given informed consent.

**Exclusion criteria:**

1. Patients below 18 years.
2. Patients with intestinal stomas constructed outside the institute.
3. Patients undergoing the construction of a urinary stoma.
4. Patients who are having a stoma made as a result of a gynaecological disorder.
5. Patients who have not given consent.

**Study tools and Data collection procedure:**

Patients with postoperative complications of intestinal stomas who had ileostomy or colostomy either electively or in an emergency scenario were included in the research. The indications for stomas, whether temporary or permanent, end or loop or double barrel, ileostomy or colostomy, and their consequences were documented. Patients were followed up on for roughly 6 months after surgery or until the stoma was revised for early and late postoperative problems, and their complications were documented and analysed.

**Observations & Results:****Table 1: Age wise distribution of the study participants**

Age Groups	Frequency	Percentage
18 – 29	0	0
30 – 39	3	10
40 – 49	6	20
50 – 59	6	20
60 – 69	9	30
>70	6	20
TOTAL	30	100

The age range 60 to 69 had the highest number of cases. The study's youngest patient was 30 years old, while the oldest was 84 years old. Out of the 30 patients, 27 had stoma construction done as an elective procedure, whereas 3 had it done as an emergency procedure.

**Table 2: Elective vs emergency in the study group**

Elective	Emergency
27	3

Out of the 30 patients, 27 had stoma construction done as an elective procedure, whereas 3 had it done as an emergency procedure.

**Table 3: Proportion of participants based on gender**

Sex	Frequency	Percentage
Female	12	40
Male	18	60

**Table 4: Indication for stoma construction**

Indication	Frequency	Percentage
Intestinal Obstruction		
- Gangrenous Bowel	20	66.66%
- Rectal Carcinoma	5	16.66
- Carcinomacolon	5	16.66

- Tbadomen	4	13.33
- Adhesions	3	10
- Sigmoidvolvulus	1	3.33
- Intussusception	1	3.33
	1	3.33
Intestinal Perforation		
- Ilealperforation	<b>9</b>	<b>30%</b>
- Cecalperforation	5	16.66
- Ascending colon perforation	1	3.33
- Descending colon	1	3.33
- Sigmoid colon	1	3.33
	1	3.33
Enterocutaneous fistula	1	<b>3.33%</b>

The most prevalent reason for stoma formation in this research was intestinal blockage, followed by acute intestinal perforation and the enterocutaneous fistula.

**Table 5: Different types of stomas constructed.**

Procedure	Number	Percentage
Ileostomy		<b>76.66%</b>
- Endileostomy	<b>23</b>	
- Loopileostomy	7	
- Double barrel	10	
	6	
Colostomy		<b>23.33%</b>
- Endcolostomy		
- Loopcolostomy		

The most prevalent form of stoma (23 out of 30) was ileostomy (76.66%), followed by colostomy (7 out of 30) 23.33%. Loop ileostomy was performed on 10 patients, followed by end ileostomy on 7 patients, and double barrel on 6 patients. End colostomy was performed most often in 6 cases, followed by descending loop colostomy in 1 patient.

**Table 6: Various postoperative complications of stoma**

Complications	Numbers	Percentage
Peristomal skin irritation	18	60%
Ischemia and necrosis	6	20%
Retraction of stoma	4	13.33%
Stomal prolapse	1	3.33%
Parastomal hernia	1	3.33%

**Table 7: Specific complication in each stoma**

Complications Loop	Loop colostomy (n=1)	End colostomy (n=6)	Ileostomy (n=10)	End ileostomy (n=7)	Double barrel ileostomy (n=6)
Skin irritation	0	0	8(80%)	5(71.42%)	5(83.33%)
Ischemia and necrosis	0 Retraction	4(66.66%)	1(10%)	1(14.28%)	0
Retraction	0	1(16.66%)	1(10%)	1(14.28%)	1(16.66%)
Prolapse	1(100%)	0	0	0	0
Parastomal hernia	0	1(16.66%)	0	0	0

Peristomal skin irritation is the most prevalent consequence in all forms of stomas, accounting for 60% of all cases, followed by ischemia and necrosis. 6 out of 30 equals 20%, retraction 4 out of 30 is 13.33%, prolapse and parastomal hernia 1 each.

**Table 8: Various early and late complications**

	Early complication(n= 21)	Late complication (n=9)
Skin irritation	12	6
Ischemia and necrosis	6	0
Retraction	3	1
Prolapse	0	1
Parastomal hernia	0	1

Stoma-related problems may be classed as either early (before one month) or late (greater than one month after surgery).

Early problems were seen in 21 participants in this trial, with 12 patients experiencing peristomal skin irritation.

Six patients had ischemia and necrosis.

- Three patients had retraction.

Late problems were seen in 9 individuals, with 6 patients experiencing peristomal skin irritation.

- One patient had retraction.

- One patient had a parastomal hernia.

- Stomal prolapse was seen in one case.

The most frequent early problem in this research is peristomal skin irritation, and the most common late consequence is also skin irritation.

### Discussion:

Despite minor advancements in surgical technique and enterostomal treatment, problems following stoma placement remain highly prevalent. In the literature, the incidence of stoma-specific problems ranges from 10% to 70%, depending on the methodology of the research, the duration of follow-up, and the description of the complication [1,2].

Stoma-related complications were defined as either early (before one month after surgery) or late (after more than one month). The most generally documented early problems in the literature were peristomal skin irritation, leakage, excessive output, and ischemia, whereas the most usually described late complications were peristomal hernia, prolapse, blockage, and stenosis.

The greatest number of individuals with stomas among the 30 patients included in the research, 9 (30%), were between the ages of 60 and 69. The study's youngest patient was 30 years old, while the oldest was 84 years old. Patients between the ages of 0 and 18 were not included in the research.

A comparable research conducted by Waradamohayuddinet al [3] revealed that the majority of patients (50.65%) were between the ages of 60 and 80. Another research, Sumathiet al [4], found that 32% of patients were between the ages of 56 and 65.

Another research conducted by Pandirajaet al [5] revealed that the largest range is between the ages of 26 and 35, with a total of 50% between the ages of 46 and 55.

Among the 30 patients in the current research, 18 were male (60%) and 12 were female (40%), indicating that stoma and associated consequences

were more common in men than females. The current investigation supported the findings of Warada Mohayuddinet al [3], who discovered that men (60.52%) had more stomas than females (39.47%). A comparable research conducted by Pandirajaet al [5] revealed that men (61%) had more stomas than females (39%). A comparable research conducted by Zeeshanuddin ahmad et al [6] revealed that stomas were created more often in men (70%) than in females (30%). Sumathiet al [4] conducted a similar research and found that men (72%) had more stomas than females (28%). In the present research, 27 patients (90%) had an emergency stoma made, whereas only three patients (10%) had an elective stoma constructed. According to this research, the increased incidence of stoma forms during an emergency is due to hemodynamic instability and the difficulties of performing definitive surgery in the presence of peritoneal contamination. This research showed that well-planned procedures are less likely to result in a stoma. As a consequence, more preoperative planning reduces the frequency of stomas formed. In comparison to an emergency stoma, an elective stoma has fewer complications.

A comparable research conducted by Pandirajaet al [5] shown that stoma formation is higher in emergency settings (79% vs. 21%). Another research conducted by Zeeshanuddin ahmad et al [6] found that stoma was performed 97% of the time in an emergency environment rather than 3% of the time in an elective setting. Sumathiet al [4] made a similar discovery, finding that stomas were produced at a higher rate in emergency settings (54%), compared to elective settings (45%).

An ileostomy (76.66%) was the most common kind of stoma in this research, accounting for 23 of 30 patients. Loop ileostomy is the most common ileostomy in 10 patients (33.33%), followed by end ileostomy in 7 patients (23.33%), and double barrel ileostomy in 6 individuals (20%). End colostomy is the most prevalent kind of colostomy in 6 patients (20%), followed by loop transverse colostomy in 1 patient (3.33 percent). Similar data were reported by Pandirajaet al [5] who found ileostomy in 80% of patients and colostomy in 20% of patients, with loop ileostomy being the most prevalent, accounting for 60% of patients, and end ileostomy accounting for 20% of patients.

Similar findings were seen in a research conducted by Zeeshanuddin ahmad et al [6] which found ileostomy in 76% of patients, colostomy in 21% of patients, loop ileostomy in 64% of patients, and end ileostomy in 5% of patients. In contrast, Waradamohay et al [3] found a high frequency of colostomy (79.60%) and a low rate of ileostomy (20.39%). End colostomy is the most common, followed by loop ileostomy, then loop colostomy, then end ileostomy. Similarly, Sumathi et al [4]

found that, in contrast to the current research, colostomy was used in 82% of patients and ileostomy was used in 18% of patients, with loop colostomy being more often used than end colostomy.

In a similar study, WaradaMohay et al. [3] discovered that the most common causes of stoma formation were colorectal cancers 62(40.78%), colon cancer 30 (19.73%), intestinal obstruction 24 (15.78%), gangrenous sigmoid volvulus 13(8.55%), abdominal injuries 9 (5.92%), Rectal prolapsed 8 (5.26%), and colon obstruction 6 (3.94%). In a similar study, Pandiraja et al. [5] discovered that the most common causes of stoma formation were gastrointestinal malignancy (25.0%), abdominal trauma (22.0%), hollow viscus perforation (12.0%), enteric fever (8.0%), TB abdomen (6%) enterocutaneous fistula (4%) and intestinal obstruction due to adhesions (4%).

In this research, problems were more common in ileostomy patients than in colostomy patients. Loop ileostomy had the most problems (10), followed by end ileostomy (7), and double barrel ileostomy (6). End colostomy 6 is related with greater problems than loop 1. Peristomal skin irritation is the most prevalent consequence in all forms of stomas, accounting for 60% of all cases, followed by ischemia and necrosis. 6 out of 30 equals 20%, followed by retraction (4 out of 30 is 13.33%), prolapse, and parastomal hernia (1 each). A comparable research conducted by Waradamohay et al [3] revealed that skin issues linked with stoma were the most prevalent complication in all stomas, followed by parastomal hernia and wound infection, mucocutaneous separation, ischemia, and necrosis. According to a similar research done by Pandiraja et al. [5], skin excoriation is the most common consequence, followed by surgical site infections, stomal retraction, intestinal obstruction, ischemia and necrosis, and parastomal hernia.

According to a similar study conducted by Zeeshnauid et al [6], the most common complication reported in our study was peristomal skin irritation and erythema, followed by laparotomy wound infection and peristomal skin infection, abscess formation and fistula formation, stoma ischemia and necrosis, parastomal hernia, and stomal retraction. Sumathi et al [4] discovered that skin excoriation and dermatitis are the most common complications, followed by stomal prolapse, stomal retraction, parastomal hernia, and ischemia necrosis.

In contrast to the current study, Waradamohay et al [3] found that colostomy was associated with more complications than ileostomy, and Sumathi et al [4] found that colostomy was associated with more complications than ileostomy, with end colostomy being associated with the most complications,

followed by loop ileostomy, loop colostomy, and end ileostomy.

Preoperative education allows patients to remain in the hospital for less time following stoma surgery due to improved recovery after surgery (ERAS) (7).

### Conclusion

Stoma location prior to surgery WOC nurses will promote the patient's independence in stoma care and resumption of normal activities, estimate pouching system wear times, and minimise surgical problems by marking for optimum stoma site and providing sufficient preoperative education.

### References

1. Dinnick T. The origins and evolution of colostomy. *Journal of British Surgery*. 1934 Jul; 22(85):142-54.
2. Paul FT. A Method of Performing Inguinal Colotomy, with Cases. *British Medical Journal*. 1891 Jul 18; 2(1594):118.
3. Uddin WM, Ullah S, Iqbal Z, Jie W, Ullah I, Sun W, Dong TT, Daorong W. The prevention and treatment of stoma complications. a report of 152 cases. *IOSR J Dental Med Sci*. 2017; 16(3):86-90.
4. P Sumathi M.S et al. A clinical study of intestinal stomas, their complications and management. *IOSRJDMS*, December. 2016; 15(12): 39-42.
5. Arumugam PJ, Bevan L, Macdonald L, Watkins AJ, Morgan AR, Beynon J, Carr ND. A prospective audit of stomas- analysis of risk factors and complications and their management. *Colorectal Disease*. 2003 Jan; 5(1):49-52.
6. Ahmad, Zeeshanuddin et al. A clinical study of intestinal stomas: its indications and complications. *International Journal of Research in Medical Sciences*, Jan. 2017;1(4): 536-540.
7. Forsmo HM, Pfeffer F, Rasdal A, Sintonen H, Körner H, Erichsen C. Pre-and postoperative stoma education and guidance within an enhanced recovery after surgery (ERAS) programme reduces length of hospital stay in colorectal surgery. *International Journal of Surgery*. 2016 Dec 1; 36:121-6.
8. Jay N Shah, N. Subedi, S. Maharjan. Stoma Reversal, a hospital based study of 32 cases. *Internet journal of surgery* 2009; 22(1).
9. Muhammad Ahmad Ghazi, Amir Riaz Bhutia, Hafiz Muhammad, Asif Maqbool, Nauman Dawood, Nasir Mahmood. The trends and outcome of stoma procedures in abdominal surgery, *Pak Journal of Med and Health Sciences* 2009; 3(2):106.
10. Ratliff, Catherino R. *Journal of wound, Ostomy & Continence Nursing* 2010; 37(5): 505- 510.

11. Pearl RK, Prasad ML, Orsay CP, Abcarian H, Tan AB, Melze MT Early local complications from intestinal stomas, *Asch Surg.* 1985; 120 (10):1145- 47.
12. Ambreen Muneer, A. Razaque Shaikh, Gulshan Ara Shah, Ali Qureshi, Liaquat University of Medical & Health Sciences, Jamshoro, Sind Pakistan. *World Applied Sciences Journal.* 2007; 2(3):190-193.
13. Tsujinaka S, Tan KY, Miyakura Y, Fukano R, Oshima M, Konishi F, Rikiyama T. Current management of intestinal stomas and their complications. *Journal of the anus, rectum and colon.* 2020 Jan 30; 4(1):25-33.
14. Osborne W, North J, Williams J. Using a risk assessment tool for parastomal hernia prevention. *British Journal of Nursing.* 2018 Mar 8; 27(5):15-9.
15. Baker ML, Williams RN, Nightingale JM. Causes and management of a high-output stoma. *Colorectal disease.* 2011 Feb; 13(2):191-7.