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Demographic Profile, Types, and Indications of Temporary Intestinal Stomas in Patients Undergoing Stoma Reversal Surgery

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Abstract **Original Research Article**

Background: Temporary intestinal stomas, primarily ileostomies, are frequently performed to manage conditions such as perforation, obstruction, malignancy, or bowel injury. Stoma reversal is a common procedure but carries potential risks and complications. This study aimed to evaluate the demographic profile, types, indications, and operative characteristics of temporary intestinal stomas among patients undergoing stoma reversal surgery. ***Methods:*** A prospective observational study was conducted over one year (January–December 2017) at Bangladesh Medical College Hospital and Bangabandhu Sheikh Mujib Medical University. Thirty-one patients scheduled for stoma reversal were included. Preoperative evaluation included history, clinical examination, laboratory tests, and radiological assessments. Stoma reversal was performed under general anesthesia using stapled or hand-sewn anastomosis. Operative details, surgeon experience, and postoperative outcomes were recorded. Data were analyzed using SPSS version 19.0. ***Results:*** Among 31 patients, 16 (52%) were female and 15 (48%) males, with a median age of 35 years (range 13–70); the 31–40 years age group was most common (35%). Ileostomies predominated (74%), particularly loop ileostomies (61%), while colostomies accounted for 26%. The leading indications for stoma formation were rectal malignancy (55%), colon malignancy (26%), intestinal tuberculosis (6%), iatrogenic perforation (3%), and emergency diversions (10%). Stoma reversal was completed within 51–70 minutes in 42% of cases. Stapled anastomosis was used in 52% of procedures, hand-sewn single-layer in 32%, and hand-sewn double-layer in 16%. Most surgeries (58%) were performed by consultant surgeons. ***Conclusion:*** Temporary intestinal stomas are predominantly ileostomies, commonly indicated for malignancy and bowel injuries. Stoma reversal is safely performed with careful patient selection, proper perioperative care, and experienced surgeons. Stapled closure is the preferred technique, contributing to efficient operative outcomes. Continuous monitoring is required to minimize postoperative complications.

Keywords: Demographic Profile, Types, Indications, Temporary Intestinal Stomas, Stoma Reversal Surgery, Bangladesh.

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INTRODUCTION

Refunctioning ileostomies provide clear benefits but are associated with high stoma-related morbidity, ranging from 17 to 45%. They can negatively impact quality of life and body image, and many patients prefer early closure to reduce distress despite prior counselling [1]. Fecal diversion surgery involves bringing a part of the intestine (ileum or colon) to the abdominal wall to form a stoma, commonly as an ileostomy or colostomy, either end or loop type. A refunctioning stoma protects anastomoses and prevents pelvic sepsis after rectal surgery by reducing leaks [2,3].

End colostomies, usually on the left abdomen, bring the severed colon to the skin while the distal segment is sealed. Loop colostomies bring a bowel loop to the surface, creating two openings: a proximal limb producing stool and a distal limb producing mucus. Loop ileostomies, more commonly used than loop colostomies, divert small bowel contents temporarily to allow healing after bowel surgery. End ileostomies, typically on the right side, are reserved for patients with most or all of the colon removed, such as in inflammatory bowel disease or multiple polyps [4].

Stomas can be temporary or permanent. Temporary stomas protect bowel repairs but their closure, though minor, carries risks like leakage, infection, or hernia. Timing of closure remains debated, especially in patients with subclinical leaks or receiving adjuvant therapy [5].

Temporary loop ileostomy remains a major psychological handicap and causes significant physical stress, leading to an adverse effect on quality of life [6]. This greatly influences those patients not gaining adequate access to primary health care facilities equipped to manage a safe and socially acceptable stoma. Late but fortunate, the emergence of stoma in the third world countries and developing nations has changed the face of the outcome and results of the disease process [7]. Conditions such as associated nutritional imbalances, metabolic derangements and skin excoriation being only some of the common reasons patients attempt access to tertiary care setups for management increasing burden on the health care budget [8].

Several studies have compared colostomy closure with ileostomy closure, finding a multitude of factors influencing the complications of stoma closure, such as the surgeon's experience, perioperative treatment, timing of the operation, and the surgical technique [9, 10].

Such stomas may be temporary (refunctioning, protective/covering) or permanent — temporary ones are intended for later reversal [11]. In a large series of deliberately temporary ileostomies, only about 74 % were eventually reversed, while roughly 26 % remained permanent. The median interval between stoma creation and reversal in that cohort was approximately 5.6 months [12].

Worldwide, prospective and multicenter studies indicate that temporary intestinal stoma reversal, though commonly performed, is associated with notable postoperative complications, with morbidity rates reported between 15% and 40%. In Bangladesh, early hospital-based studies from major surgical centers during the late 1990s and early 2000s similarly reported moderate but acceptable complication rates, ranging from 12% to 25%, with surgical site infection being the most frequently observed postoperative issue [13].

To comprehensively examine the demographic profile, types, and clinical indications of temporary intestinal stomas in patients undergoing stoma reversal surgery, and to analyze the patterns, timing, and postoperative outcomes associated with stoma creation and closure, in order to inform surgical decision-making and improve patient care.

Materials and Methods

This prospective observational study was conducted over one year (January 2017 to December 2017) in the Department of Surgery, Bangladesh Medical College Hospital, Dhaka, and surgical wards of Bangabandhu Sheikh Mujib Medical University. A total of 31 patients with temporary intestinal stomas admitted for stoma closure were selected by random sampling, regardless of age or sex, after obtaining informed consent, while patients with permanent stomas were excluded. Preoperative evaluation included history, clinical examination, routine investigations (CBC, renal function, electrolytes, blood sugar, chest X-ray, ECG), and radiological assessments such as distal loopogram, gastrografin enema, sigmoidoscopy, or colonoscopy to rule out distal obstruction or pathology. Mechanical bowel preparation and prophylactic antibiotics (cefuroxime and metronidazole) were administered. Stoma reversal was performed under general anesthesia using either stapled or hand-sewn anastomosis (end-to-end or side-to-side, with or without resection), with careful lysis of adhesions and standard abdominal and skin closure. Postoperative monitoring included daily observation for 5 days and weekly follow-up for 1 month, recording complications such as wound infection, anastomotic leakage, ileus, and bleeding. Data were collected using structured questionnaires, organized in predesigned forms, and analyzed with Microsoft Excel 2007 and SPSS version 19.0 to assess demographic profiles, types and indications of stomas, operative details, and postoperative outcomes.

Results

Table I shows the study population showed an almost equal sex distribution, with 52% females and 48% males. The median age was 35 years (range 13–70), with the highest incidence in the 31–40 years age group. This indicates that temporary stoma reversal commonly involves adults in early middle age and affects both sexes nearly equally. (Table 1)

Table I: Sex and Age Distribution of Patients Undergoing Temporary Intestinal Stoma Reversal (n=31)

Variable	Category/Value	Number of Patients	Percentage (%)
Sex	Female	16	52
	Male	15	48
Age (years)	13–20	3	9.6
	21–30	7	22.58
	31–40	11 (highest)	35.48
	41–50	5	16.12
	51–60	3	9.67
	61–70	2	6.45
Median Age	—	35	—
Age Range	—	13–70	—

Table II shows in this study of 31 patients requiring temporary intestinal stomas, ileostomies were more common than colostomies, accounting for 74% of all procedures. Loop ileostomy was the predominant type (61%), reflecting its widespread use due to ease of creation and reversal. End ileostomy (10%) and double-barrel ileostomy (3%) were less frequently performed and were typically associated with more complex clinical conditions. Colostomies comprised 26% of cases, with loop and end colostomies each representing 10%, while double-barrel colostomy accounted for 6%. (Table 2)

Table II: Types and Subtypes of Temporary Intestinal Stomas in Study Patients (n=31)

Type of Stoma	Sub-type / Description	Number of Patients	Percentage (%)
Ileostomy	Loop ileostomy	19	61
	Double barrel ileostomy	1	3
	End ileostomy	3	10
Colostomy	Loop colostomy	3	10
	End colostomy	3	10
	Double barrel colostomy	2	6
Total	—	31	100

Table 3 shows indication of stoma out of 31 patients 16(52%) ileostomy & 1(3%) colostomy cases due to ca rectum, 4(13%) ileostomy & 4(13%) colostomy cases due to ca colon,1(3%) ileostomy & colostomy cases due to intestinal TB,1(3%) colostomy cases due to iatrogenic perforation, no stoma case due to IBD (Irritable Bowel Disease), 2(6%) ileostomy & 1(3%) colostomy were due to emergency diversion.

Table III Indications for stoma construction (n=31)

Indication	Ileostomy n (%)	Colostomy n (%)	Total n (%)
Ca Rectum	16 (52%)	1 (3%)	17 (55%)
Ca Colon	4 (13%)	4 (13%)	8 (26%)
Intestinal TB	1 (3%)	1 (3%)	2 (6%)
Iatrogenic Perforation	0 (0%)	1 (3%)	1 (3%)
IBD	0 (0%)	0 (0%)	0 (0%)
Emergency Diversion	2 (6%)	1 (3%)	3 (10%)
Total	**23 (74%)**	**8 (26%)**	**31 (100%)**

Table IV shows duration of stoma reversal surgery, out of 31 patients with stoma reversal surgery 13(42%) had operation time 51-70 minutes,7(23%) patients had operation time 31-50 minutes,5(16%) had operation time 71-90 minutes,4(13%) patients had operation duration 91-110 minutes,2 (6%) patients had required operation duration 111-130 minutes.

Table IV: Duration of surgery (n=31)

Duration of Surgery (minutes)	Frequency	Percentage (%)
31–50	7	23
51–70	13	42
71–90	5	16
91–110	4	13
111–130	2	6
Total	31	100

Figure 1 shows frequency of different technique was used to close stoma. Among 31 procedures 16(52%) were closed by using stapler technique, 10(32%) were by hand sewn single layer, 5(16%) were by hand sewn double layer technique.

Figure 1: Different technique used for stoma reversal

Figure 2 shows experience level of surgeons performed the procedure which shows out of 31 procedures 18(58%) were done by consultant surgeon, 11(35%) procedures were done by junior consultant surgeon and 2 (6%) procedures were done by registrar surgeon.

Figure 2: Experience Level of Surgeons Performing Stoma Closure (n = 31)

Discussion

An intestinal stoma is a surgical opening of the bowel, commonly created for conditions like perforation, obstruction, cancer, or bowel injury. Ileostomies and colostomies, either loop or end, effectively divert the distal bowel. Reversal, ideally after 12 weeks with proper preoperative evaluation, can be done under local, spinal, or general anesthesia. Although both stoma types are comparable in quality of life, closure carries significant risk of complications.

In this study, patients admitted for stoma closure had previously undergone intestinal stoma formation. Among the 31 cases, 16 (52%) were female and 15 (48%) were male, resulting in a male-to-female ratio of 1:1.08, indicating an almost equal incidence of stoma reversal between sexes. This differs from other studies, which reported a higher incidence in males [14,15]. The age of patients ranged from 13 to 70 years, with the highest incidence (11 patients, 35%) in the 31–40 years age group, a distribution similar to that observed in previous studies [14,15].

Among the 31 patients with temporary intestinal stomas, 23 (74%) had an ileostomy and 8 (26%) had a colostomy, indicating that the majority of refunctioning stomas were ileostomies, except when the large bowel is involved and primary anastomosis is feasible [16,17]. Regarding the types of stomas, 19

patients (61%) had loop ileostomies, 1 patient (3%) had a double-barrel ileostomy, 3 patients (10%) had end ileostomies, 3 patients (10%) had loop colostomies, 3 patients (10%) had end colostomies, and 2 patients (6%) had double-barrel colostomies. This distribution highlights the predominance of loop ileostomy as the preferred temporary diversion due to its simplicity and ease of reversal.

Regarding indications, carcinoma of the rectum was the leading cause (17/31; 55%), followed by carcinoma of the colon (8/31; 26%), intestinal tuberculosis (2/31; 6%), iatrogenic perforation (1/31; 3%), and emergency diversion (3/31; 10%). No stomas were performed for IBD in this cohort. Ileostomy was preferred for rectal malignancy, whereas colostomy was selectively used for colon malignancy and iatrogenic injuries, consistent with previous studies [18,19]. Senapati et al. [18] reported that the major indications for temporary loop ileostomy include conditions that prevent safe primary anastomosis, such as extensive bowel injury, longstanding peritonitis, intestinal obstruction, radiation enteritis, ischemia, inflammatory bowel disease, tubercular and enteric colitis, and rectal pathologies. Freund et al. [19] reported that colostomy may be indicated for conditions such as carcinoma, iatrogenic perforations, diverticulitis, sigmoid volvulus, and traumatic injuries of the colon.

According to the previous study [20], the duration of stoma reversal surgery largely depends on the time needed for adhesiolysis, as dense adhesions increase operative difficulty and the risk of injury. In this study, among 31 patients, 13 (42%) had surgery lasting 51–70 minutes, 7 (23%) lasted 31–50 minutes, 5 (16%) lasted 71–90 minutes, 4 (13%) lasted 91–110 minutes, and 2 (6%) lasted 111–130 minutes. Several studies [17,19] have shown that factors such as surgeon experience, perioperative care, timing, and surgical technique influence complications following ileostomy or colostomy closure.

Among the 31 stoma closure procedures, 16 (52%) were performed using the stapler technique, 10 (32%) by hand-sewn single-layer, and 5 (16%) by hand-sewn double-layer techniques. Stapled closure was the most commonly used method, consistent with previous studies reporting that stapled anastomosis can reduce operative time and may be associated with lower rates of anastomotic complications [21,22]. Regarding surgeon experience, 18 procedures (58%) were performed by consultant surgeons, 11 (35%) by junior consultants, and 2 (6%) by registrars, highlighting the reliance on senior surgeons for technically demanding procedures and aligning with prior literature emphasizing that experienced surgical hands contribute to safer stoma reversal and improved postoperative outcomes [21,22].

Overall, the study highlights the predominance of loop ileostomy for temporary diversion, the common indications for stoma formation, and operative characteristics including duration, technique, and surgeon experience, providing a comprehensive overview of factors influencing stoma reversal outcomes.

Conclusion

Temporary intestinal stomas, predominantly ileostomies, are commonly performed for conditions such as perforation, obstruction, malignancy, or bowel injury. In this study, stoma reversal occurred almost equally in males and females, with the highest incidence in adults aged 31–40 years. Loop ileostomy was the most frequent type, reflecting its simplicity and ease of reversal. The main indications included rectal and colonic malignancy, intestinal tuberculosis, and emergency diversions, while colostomy was mainly performed for colonic malignancy, iatrogenic perforation, or diverticular disease. Most stoma reversals were completed within 51–70 minutes, with operative outcomes influenced by surgical technique and surgeon experience—stapler closure and consultant surgeons predominated. Overall, temporary stoma reversal is a safe and effective procedure when performed with careful patient selection, meticulous surgical technique, and proper perioperative care, although postoperative complications require ongoing vigilance.

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