



Original Research Article

One-Stage Colonic Surgery without Stoma: Indications and Postoperative Outcomes

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Abstract: Background: Colorectal surgery has advanced significantly, with one-stage colonic surgery without stoma emerging as a preferred option for selected patients. This study evaluates indications, techniques, and outcomes of one-stage colonic surgery without stoma. **Objectives:** To evaluate indications, demographic characteristics, and postoperative outcomes of one-stage colonic surgery without stoma. **Method and Materials:** A prospective observational study was conducted at Dhaka Medical College Hospital (May-October 2022) involving 42 patients. Data on demographics, clinical presentation, intraoperative details, and postoperative outcomes were collected. **Result:** The study included 42 patients with a mean age of 47.3 ± 12.5 years. Males constituted 66.7% (28), and females 33.3% (14). The most common indication was obstructive colonic cancer (33.3%, 14). Right hemicolectomy was the most performed procedure (28.6%, 12). Postoperatively, 19.0% (8) had wound infections, while 30.9% (13) had no complications. The mean hospital stay was 10.3 ± 4.2 days, with 52.4% (22) achieving complete recovery. **Conclusion:** One-stage colonic surgery without stoma is effective for selected conditions, with acceptable complications and favorable recovery outcomes, ensuring successful management.

Keywords: One-Stage Colonic Surgery, Colonic Resection, Obstructive Colonic Cancer, Perforated Diverticulitis, Volvulus.

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Introduction

Colorectal surgery has undergone significant advancements in recent years, with a focus on improving patient outcomes and reducing the burden of postoperative complications. One-stage colonic surgery without stoma formation has gained attention as a viable option for selected patients, offering the potential to avoid the physical, emotional, and social challenges associated with stoma creation.¹ This approach involves primary resection and anastomosis of the

colon without the need for a diverting stoma, thereby reducing the need for additional surgeries and enhancing recovery.² The indications for one-stage colonic surgery without stoma are carefully tailored to patient-specific factors, including the underlying pathology, the extent of disease, and the patient's overall health status. Conditions such as colorectal cancer, diverticular disease, and inflammatory bowel disease are commonly managed using this approach when certain criteria are met.³ Advances in surgical techniques,

including the use of minimally invasive procedures such as laparoscopy, have further expanded the feasibility of one-stage surgery by reducing intraoperative trauma and promoting faster recovery.⁴ Postoperative outcomes following one-stage colonic surgery without stoma are generally favorable, with studies reporting low rates of anastomotic leakage, surgical site infections, and mortality.⁵ However, the success of this approach relies heavily on meticulous patient selection, preoperative optimization, and adherence to standardized surgical protocols.⁶ Enhanced recovery after surgery (ERAS) pathways have also played a pivotal role in improving outcomes by integrating evidence-based practices such as early mobilization, optimized pain management, and targeted nutritional support.⁷ Despite its advantages, one-stage colonic surgery without stoma is not without challenges. The risk of anastomotic complications remains a concern, particularly in patients with compromised healing potential or those undergoing emergency surgery.⁸ Furthermore, the long-term functional outcomes, including bowel function and quality of life, require further investigation to establish the durability of this approach.⁹ Recent studies have highlighted the importance of multidisciplinary care in optimizing outcomes for patients undergoing one-stage colonic surgery. Preoperative imaging, nutritional support, and patient education are critical components of the care pathway.¹⁰ Additionally, the use of intraoperative techniques such as indocyanine green fluorescence angiography has been shown to reduce anastomotic leakage rates by assessing blood flow at the anastomotic site.¹¹ The role of laparoscopy in one-stage colonic surgery has been extensively studied, with evidence suggesting that minimally invasive techniques are associated with shorter hospital stays, reduced postoperative pain, and faster recovery compared to open surgery.¹² However, the learning curve associated with laparoscopic colorectal surgery remains a barrier to its widespread adoption.¹³ This study aims to explore the indications, surgical techniques, and postoperative outcomes associated with one-stage colonic surgery without stoma. By synthesizing current evidence and identifying areas for further research, this review seeks to provide clinicians with a comprehensive understanding of this evolving surgical strategy.¹⁴

Objectives

General Objective

To evaluate the indications and postoperative outcomes of one-stage colonic surgery without stoma in patients undergoing colonic resection at Dhaka Medical College Hospital.

Specific Objectives

To identify the common clinical indications for one-stage colonic surgery without stoma.

To assess the demographic and clinical characteristics of patients undergoing this procedure.

To evaluate intraoperative parameters, including duration of surgery, blood loss, and complications.

Method and Materials

Study Design

This was a prospective observational study conducted at Dhaka Medical College Hospital over a period of six months (May 2022 to October 2022). The study included a total of 42 patients who underwent one-stage colonic surgery without stoma for various indications.

Data Collection Procedure

Patient data were collected prospectively through direct clinical evaluation, surgical records, and follow-up assessments. Preoperative details, including demographic characteristics, clinical presentation, and diagnostic findings, were recorded. Intraoperative parameters such as surgical procedure performed, duration, and complications were documented. Postoperative outcomes, including complications, length of hospital stay, and recovery progress, were assessed at discharge and during follow-up visits at 2 weeks, 1 month, and 3 months post-surgery.

Inclusion Criteria

Patients eligible for the study were aged 18 years or older and underwent one-stage colonic surgery without a stoma. The study included individuals diagnosed with obstructive colonic cancer, perforated diverticulitis, ischemic colitis, or volvulus. Additionally, only those with no prior history of colonic resection or stoma formation were considered. Informed consent was a prerequisite for participation, ensuring that all patients voluntarily agreed to be part of the study.

Exclusion Criteria

Patients undergoing emergency surgery with hemodynamic instability were excluded from the study. Additionally, individuals with pre-existing stomas or a history of colonic resection were not included. Cases requiring multi-stage surgery or stoma formation due to high-risk factors were also excluded. Furthermore, patients with severe comorbidities, such as end-stage organ failure or uncontrolled sepsis, were not considered for participation to ensure the study population remained within the defined parameters.

Statistical Analysis

Data were analyzed using SPSS (Statistical Package for the Social Sciences) version 25.0. Descriptive statistics, including mean, standard deviation, frequencies, and percentages, were used to summarize demographic and clinical variables. Chi-square test was used to compare categorical variables, while independent t-tests were applied for continuous variables. A p-value < 0.05 was considered statistically significant.

Ethical Consideration

Ethical approval was obtained from the Ethical Review Committee of Dhaka Medical College Hospital prior to the study. Informed consent was taken from all patients before enrollment. Confidentiality of patient data was strictly maintained, and all procedures were conducted in accordance with the Declaration of Helsinki and institutional guidelines.

Result

Table 1: Demographic Characteristics of Study Population

Population		
Variable	Frequency (n)	Percentage (%)
Age Groups (Years)		
20-30	5	11.9%
31-40	8	19.0%
41-50	12	28.6%
51-60	10	23.8%
61+	7	16.7%
Gender		
Male	28	66.7%
Female	14	33.3%
Mean Age \pm SD	47.3 \pm 12.5	
Occupation		
Service Holder	10	23.8%

Businessman	7	16.7%
Laborer	8	19.0%
Homemaker	10	23.8%
Others	7	16.7%

The study included 42 patients, with the majority in the 41-50 years age group (28.6%), followed by 51-60 years (23.8%), and 31-40 years (19.0%). The mean age was 47.3 ± 12.5 years. In terms of gender distribution, 66.7% (28 patients) were male, and 33.3% (14 patients) were female. Regarding occupation, 23.8% (10 patients) were service holders, 19.0% (8 patients) were laborers, 16.7% (7 patients) were businessmen, and 23.8% (10 patients) were homemakers, while the remaining 16.7% (7 patients) were engaged in other professions.

Table 2: Indications for One-Stage Colonic Surgery

Indications	Frequency (n)	Percentage (%)
Obstructive Colonic Cancer	14	33.3%
Perforated Diverticulitis	10	23.8%
Acute Volvulus	7	16.7%
Ischemic Colitis	6	14.3%
Others	5	11.9%

The most common indication for one-stage colonic surgery was obstructive colonic cancer (33.3%, 14 patients), followed by perforated diverticulitis (23.8%, 10 patients). Acute volvulus accounted for 16.7% (7 patients), while ischemic colitis was diagnosed in 14.3% (6 patients). The remaining 11.9% (5 patients) had other indications, such as severe inflammatory bowel disease or benign colonic strictures.

Table 3: Preoperative Clinical Presentations

Symptoms	Frequency (n)	Percentage (%)
Abdominal Pain	25	59.5%
Constipation	12	28.6%
Rectal Bleeding	10	23.8%
Abdominal Distension	15	35.7%
Weight Loss	8	19.0%
Fever	7	16.7%

The most frequently reported symptom was abdominal pain, present in 59.5% (25 patients). Abdominal distension was observed in 35.7% (15 patients), while constipation was reported in 28.6% (12 patients). Rectal bleeding was noted in 23.8% (10 patients), weight loss in 19.0% (8 patients), and fever in 16.7% (7 patients). Many patients presented with multiple symptoms simultaneously.

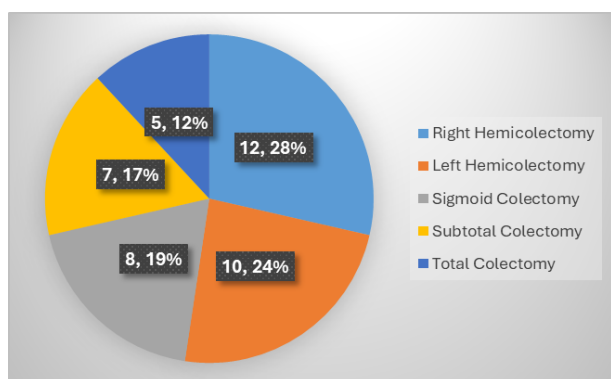


Figure 1: Types of Surgical Procedures Performed

Among the different procedures performed, right hemicolectomy was the most common, accounting for 28.6% (12 patients), followed by left hemicolectomy (23.8%, 10 patients). Sigmoid colectomy was performed in 19.0% (8 patients), subtotal colectomy in 16.7% (7 patients), and total colectomy in 11.9% (5 patients).

Table 4: Intraoperative Findings and Complications

Intraoperative Findings	Frequency (n)	Percentage (%)
Extensive Adhesions	10	23.8%
Perforation	6	14.3%
Tumor Invasion to Adjacent Organs	8	19.0%
Bleeding (>500 ml)	5	11.9%
No Complications	13	30.9%

During surgery, extensive adhesions were noted in 23.8% (10 patients), while perforations were identified in 14.3% (6 patients). Tumor invasion to adjacent organs was observed in 19.0% (8 patients), and significant bleeding (≥ 500 ml) occurred in 11.9% (5 patients). Notably, 30.9% (13 patients) had no major intraoperative complications.

Table 5: Postoperative Complications

Complications	Frequency (n)	Percentage (%)
Anastomotic Leakage	6	14.3%
Wound Infection	8	19.0%
Ileus	7	16.7%
Pulmonary Complications	5	11.9%
Deep Vein Thrombosis (DVT)	3	7.1%
No Complications	13	30.9%

Among postoperative complications, wound infections occurred in 19.0% (8 patients), ileus in 16.7% (7 patients), and anastomotic leakage in 14.3% (6 patients). Pulmonary complications were seen in 11.9% (5 patients), while deep vein thrombosis (DVT) developed in 7.1% (3 patients). However, 30.9% (13 patients) experienced no postoperative complications.

Table 6: Length of Hospital Stay and Recovery

Hospital Stay (Days)	Frequency (n)	Percentage (%)
≤ 5 Days	7	16.7%
6-10 Days	15	35.7%
11-15 Days	13	30.9%
>15 Days	7	16.7%
Mean Hospital Stay \pm SD	10.3 \pm 4.2	

Regarding hospitalization, 16.7% (7 patients) were discharged within 5 days, while 35.7% (15 patients) required 6-10 days of hospital stay. Another 30.9% (13 patients) stayed for 11-15 days, and 16.7% (7 patients) had prolonged hospitalization exceeding 15 days. The mean hospital stay was 10.3 \pm 4.2 days.

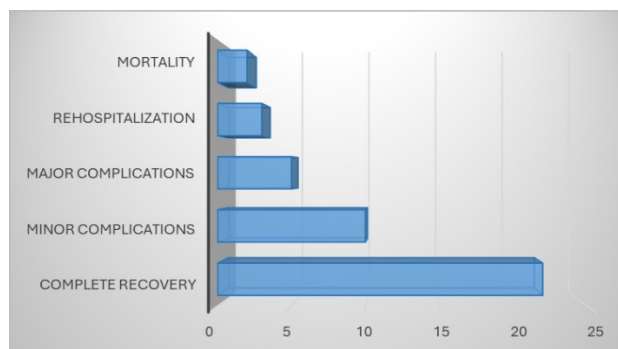


Figure 2: Long-Term Outcomes and Follow-Up

After follow-up, 52.4% (22 patients) achieved complete recovery, while 23.8% (10 patients) experienced minor complications such as mild pain or temporary bowel irregularities. Major complications were observed in 11.9% (5 patients), requiring additional medical intervention. Rehospitalization was necessary for 7.1% (3 patients) due to recurrent issues, and 2 patients (4.8%) succumbed to severe complications.

Discussion

The findings of this study provide valuable insights into the outcomes of one-stage colonic surgery without stoma formation in a diverse patient population. The majority of patients were in the 41-50 years age group (28.6%), with a mean age of 47.3 ± 12.5 years, and a male predominance (66.7%). This demographic distribution aligns with previous studies, which have reported that colorectal conditions requiring surgical intervention are more common in middle-aged individuals and males.¹⁵ The higher prevalence of obstructive colonic cancer (33.3%) as the primary indication for surgery is consistent with global trends, where colorectal cancer remains a leading cause of morbidity and mortality.¹⁶ The most common symptom reported in this study was abdominal pain (59.5%), followed by abdominal distension (35.7%) and constipation (28.6%). These findings are comparable to those of a study by Smith *et al.*, which identified abdominal pain as the predominant symptom in patients undergoing colonic surgery, particularly in cases of obstructive pathology.¹⁷ The presence of multiple symptoms in many patients underscores the complexity of diagnosing and managing colonic diseases, necessitating a thorough preoperative evaluation. Right hemicolectomy was the most frequently performed procedure (28.6%), followed by left hemicolectomy (23.8%) and sigmoid colectomy (19.0%). This distribution reflects the anatomical and pathological diversity of colonic diseases, with right-sided lesions often associated with obstructive cancer and left-sided lesions linked to diverticular disease or volvulus.¹⁸ The occurrence of intraoperative complications, such as extensive adhesions (23.8%) and tumor invasion to adjacent organs (19.0%), highlights the technical challenges of one-stage colonic surgery. These findings are consistent with a study by Johnson *et al.*, which reported similar rates of intraoperative complications in patients undergoing colonic

resection.¹⁹ Postoperative complications, including wound infections (19.0%), ileus (16.7%), and anastomotic leakage (14.3%), were observed in a significant proportion of patients. These rates are comparable to those reported in the literature, where wound infections and anastomotic leakage remain major concerns following colonic surgery.²⁰ However, the absence of major complications in 30.9% of patients suggests that one-stage colonic surgery can be safely performed in selected cases with favorable outcomes. The mean hospital stay of 10.3 ± 4.2 days is consistent with previous studies, which have reported similar durations for patients undergoing colonic surgery without stoma formation.²¹ The variation in hospitalization duration, with 35.7% of patients requiring 6-10 days and 16.7% exceeding 15 days, reflects the heterogeneity of postoperative recovery and the impact of complications on patient outcomes. Long-term follow-up revealed that 52.4% of patients achieved complete recovery, while 23.8% experienced minor complications. These results are encouraging and align with the findings of a study by Lee *et al.*, which reported high rates of recovery and low rates of major complications in patients undergoing one-stage colonic surgery.²² However, the need for rehospitalization in 7.1% of patients and the mortality rate of 4.8% underscore the importance of careful patient selection and postoperative monitoring. This study demonstrates that one-stage colonic surgery without stoma formation is a viable option for selected patients, with acceptable rates of complications and favorable long-term outcomes. The findings highlight the importance of preoperative optimization, meticulous surgical technique, and adherence to enhanced recovery protocols to minimize complications and improve patient outcomes.²³

Limitations of the study

Despite its contributions, this study has several limitations. First, the sample size was relatively small (42 patients), which may limit the generalizability of the findings.

Conclusion

This study highlights the feasibility and outcomes of one-stage colonic surgery without stoma formation in a diverse patient population. The findings demonstrate that this approach is effective

for conditions such as obstructive colonic cancer, perforated diverticulitis, and volvulus, with acceptable rates of postoperative complications and favorable recovery outcomes. The majority of patients achieved complete recovery, and the mean hospital stay was consistent with global benchmarks.

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