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Original Research Article

Complications and Management Stoma Closure: An Observational Study

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Abstract:

Background: A stoma is an exteriorization of the colon or ileum to the front aspect of the abdominal wall that develops surgically. Fecal stomas can develop for a number of reasons, but the most frequent ones are inflammatory bowel disease, carcinoma, and blunt abdominal trauma. A stoma can cause both physical and psychological discomfort to the person. Complications during stoma are extremely common in accumulation.

Methods: 50 patients participated in the study, which was conducted at the Department of General Surgery, SKMCH, Muzaffarpur, Bihar, from March 2023 to February 2024. The study population consisted of all patients who had stoma closure and met the inclusion criteria. The study covered patients of all ages who had stoma closure for a non-malignant disease. The study did not cover stoma closure for patients who had surgery for TB, inflammatory bowel illness, or cancer. Various problems, complications in various procedures, and complications in various stoma closure intervals were found in this study group.

Results: Early stoma closure and intraoperative use of the direct stoma closure approach were associated with fewer postoperative problems. We can lower the risk of wound infection and wound dehiscence by employing the subcutaneous drain implantation.

Conclusion: By using the right procedure and closing the stoma at the right time, postoperative complications can be minimized.

Keywords: Ileostomy, Colostomy, Stoma closure, Stoma closure complications.

Introduction

A medically created exteriorization of the colon or ileum to the front surface of the abdominal wall is called a stoma. The most frequent causes of fecal stomas include inflammatory bowel disease (such diverticulitis), cancer, and acute abdominal trauma. [1]By removing any feces, urine, or intestinal effluent, a stoma serves the primary function of decompression or diversion. They are categorized according to necessity because they might be either temporary or permanent stomas. Our study looks at the management of complications that arise following stoma closure. Numerous factors, such as the patient's nutritional state, the time between stoma closures, the type of stoma closure, etc., are responsible for difficulties following stoma closure. [2] Complications are typically categorized as those that appear sooner, within 30 days following the stoma closing, and those that appear later, after 30 days. A stoma can cause both physical and psychological discomfort to the person. [3] Complications during stoma are extremely common in accumulation. Complications following stoma closure will be examined in this study. According to the socioeconomic or environmental characteristics of various nations or regions, stoma problems and symptoms can vary greatly. There is insufficient research on the signs of stoma formation, stoma problems, stoma closure issues, and how to manage them. After examining various difficulties that arise after stoma closure, the study aims to reduce these complications using observation-based methods.

Material and Methods

This clinical prospective observational study was conducted at Department of General Surgery, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar from March 2023 to February 2024. Sample was collected according to inclusion criteria. All the patients who undergone stoma closure and fulfilled inclusion criteria were taken as study population. Patients of all age groups undergone stoma closure for nonmalignant condition were included in the study. Stoma closure of the patients who were operated for malignancy, tuberculosis and inflammatory bowel disease were excluded.

Selection of patients as per inclusion criteria (total sample size is 50).

Age, sex, socio economic status, causes of stoma formation, time from creation to closure of stoma, anastomotic technique, comorbidities, and duration of post-operative observation/follow up. Routine investigations like complete hemogram, Total Protein, S. Albumin, loopogram were noted. Operative procedure for stoma closure was either Stoma closure done by resection and anastomosis or by direct stoma closure. Patients followed up for complication of stoma for 30 days and managed. Descriptive data was analysed by frequency and percentage.

Results

Our study of 50 patients who had been operated for stoma closure showed that the maximum number of patients were in the groups of 26-50 years (n=25). Total 25 patients (50%) of 26-50years of age underwent for stoma closure. (Table 1)

Table 1: Age wise distribution of study population

Age (years)	No. of cases	Percentage
<25	11	22%
26-50	25	50%
51-100	14	28%
Mean age (years) = 41.28		

In our study, 42(82%) were male patients and 8 (16%) were female patients. Total number of population having postoperative complication is described in (Table 2).

Table 2: Sex wise distribution of study population

Sex	No. of cases	Percentage
Male	42	84%
Female	8	16%

In our study, total 50 patients in which 24 (48%) patients have shown post-operative complications and 26 (52%) patients didn’t have any complications post operatively. Different types of complications obsreverd in study are described in (Table 3).

Table 3:Total number of populations having post-operative complication (n=50)

Complications	No. of cases	Percentage
Postoperative	24	48%
No Complication	26	52%

The most common complications observed in stoma closure were obstruction (41.66%), wound infection (33.33%), wound dehiscence (25%) and post stoma closure anastomotic leak was not present in any of the patients. Post-operative complication in different stoma closure technique is described in (Table 4).

Table 4:Post-operative complications noted in study population (n=50)

Complications	No. of cases	Percentage
Obstruction	10	41.66%
Wound infection	8	33.33%
Wound dehiscence	6	25.0%
Post stoma closure anastomotic leak	0	0

Out of 50 patients 26 (52%) patients underwent for stoma closure with direct stoma closure technique and 24 (48%) patients underwent for resection and anastomosis.

In my study post-operative complications were more seen with resection and anastomosis those were total 15 in numbers, and with direct stoma closure 8 in number post- operative complications noted. Trend of post-operative complications following stoma closure with resection and anastomosis were Obstruction (6), Wound infection (4), Wound dehiscence (5) and in direct stoma closure post-operative complications are Obstruction (4), Wound infection (4), and Wound dehiscence (1).

Interval between previous surgery and stoma closure is described in (Table 5).

Table 5: Post-operative complications noted in study participants depending on type of surgery (n=50)

Type of surgery	Complications			
	Obstruction	**Wound infection**	**Wound dehiscence**	**Post stoma closure anastomotic leak**
Resection and anastomosis	6	4	5	0
Direct stoma closure	4	4	1	0

In our study maximum number of closure have occurred in 25 (50%). Post-operative complication in different interval period stoma closure is described in (Table 6,7).

Table 6: Interval to stoma closure

Interval to stoma closure (days)	No. of cases	Percentage
31-40	25	50%
41-50	12	24%
51-60	6	12%
61-70	2	4%
>70 days	5	10%
Median time for closure : 46.64 days		

Table 7: Post-operative complications in study population depending upon interval to stoma closure (n=50)

Interval to stoma closure (days)	No. of closure	Obstruction	Wound infection	Wound dehiscence	Post stoma closure anastomotic leak	Percentage of complications
31-40	25	3	4	2	0	36%
41-50	12	2	1	3	0	50%
51-60	6	2	2	0	0	66%
61-70	2	1	0	1	0	100%
>70 days	5	2	1	0	0	60%

Management of post-operative complication is described in (Table 8). In total of 24 post-operative complication patient, 18 (75%) patients were managed conservatively while 6 (25%) of patients were managed surgically. Number of patients with and without drain placement is described in (Table 9). In our study of total 50 patients, those with Subcutaneous drain incidence of Wound infection (N=2) (4%) and wound dehiscence (N=2) (4%) were less, whereas those without subcutaneous drain incidence of wound infection (N=6) (12%) and (N=4) (8%) were more.

Table 8: Post-operative complication management in study population (n=50)

Management of Complications	Number
Conservative Management	18
Surgical Management	6

Table 9: Study output in population with drain placement (n=50)

Parameters	Wound Infection n(%)	Wound dehiscence n(%)	No surgical site complications n(%)
With drain	2 (4%)	2 (4%)	19 (38%)
Without drain	6 (12%)	4 (8%)	17 (34%)

Discussion

This study is a prospective observational study, which was done from July 2020 to November 2022 which was conducted amongst 50 cases who had underwent for stoma closure.

The aim of this study was to study different complications occurring after stoma closure and its management. Our study of 50 patients who had been operated for stoma closure showed that the maximum number of patients were in the groups of 26-50 years (n=25). Total 25 patients (50%) of 26-50years of age underwent for stoma closure. Mean age of my study was 41.28 years Study done by Poskus et al showed mean age of 61.5 years. [4] Study done by Pokory et al showed mean age of 56 years. [5] Study done by orlado baba yllan et al showed mean age of 46 years. [6]Study done by Rodrigues olivaPerez et al showed mean age of 56 years.7 Study done by Asadullah Khan et al showed mean age of 41.5 years. [8] In this study, total 50 patients have been grouped according to sex male and female %. In our study, 42(82%) were male patients and 8 (16%) were female patients. Eligijus et al reported Male-64.4%, Female-35.6%. [4] Heruigpokory et al reported Male-58% Female-42%.5 Paula et al study reported Male-56%, Female- 44%.9 Rubio perez et al reported Male-58% female-42. [7].

In our study, total 50 patients in which 24 (48%) patients have shown post-operative complications and 26 (52%) patients didn't have any complications post operatively. Eligijus et al reported 18.2% over all complications rate. [4]Pokory et al reported 20% over all complication rate. [5] Rodrigo et al reported 17.2% over all complication rate. [7] The most common complications observed in our study of stoma closure were obstruction (41.66%), wound infection (33.33%), wound dehiscence (25%) and post stoma closure anastomotic leak was not present in any of the patients. Eligijus et al reported 18.2% over all complications rate out of which bowel obstruction seen in 6.8%, Wound infection seen in 3%, Anastomotic leak seen in 2.3%. Kaidar et al study detected 18.3% of wound infection, 15% bowel obstruction. Asadullah et al study reported 8% of Wound infection, 6% Wound dehiscence, 5% of obstruction, 1% of anastomotic leak. Rubio perez et al reported 13% Obstruction, 13% Wound infection. According to various studies Wound infection is most commonly reposted complications whereas in our study it belongs to obstruction.8 de Paula study reported most common complication of wound infection of 3.1%. [9]

Out of 50 patients 26(52%) patients underwent for stoma closure with direct stoma closure technique and 24(48%) patients underwent for resection and anastomosis. In my study post-operative complications were more seen with resection and anastomosis those were total 15 in numbers, and with direct stoma closure 8 in number post- operative complications noted. Trend of post-operative complications following stoma closure with resection and anastomosis were Obstruction (N=6), Wound infection (N=4), Wound dehiscence (N=5) and In direct stoma closure post-operative complications are Obstruction (N=4), Wound infection (N=4), Wound dehiscence (N=1). Mustafa et al study reported post-operative obstruction are seen more with resection and anastomosis than direct stoma closure with statistical difference of p value of 0.037 and 0.046 respectively.[10]

In our study maximum number of closure have occurred in 31-40 days interval 25 (50%) and median time for closure in our study was 46.64 days. Eligijus et al study reported median time for closure 4 months. [4]Heruig et al reported stoma closure interval of 90 days. [5]Asadullah khan et al reported 71% of stoma closure in <3nmonths and 29% of stoma closure in >3 months. [8] Chow et al study reported median time of stoma closure is 109 days. [11] Depending upon interval to stoma closure more complications were seen with late stoma closure in 61-70 days interval (100%) and less complications were seen with early stoma closure in 31-40 days (36%). Menahem et al study reported more complication in late closure. [12] Thirugnanasambandam Nelson et al study reported 18% wound infection and 36% wound infection risk in early stoma closure and late closure respectively. [13] Sala et al study reported less complication (33%) in early closure and more complication (61%) in late closure. [14] In total of 24 post-operative complication patient, 18 (75%) patients were managed conservatively with medical management while 6 (25%) of patients were managed surgically. Rodrigo et al reported total complication rate after stoma closure is 17.2% out of which 14% are managed with medical management and 3.2% are managed surgically. [7]

In our study of total 50 patients, those with Subcutaneous drain incidence of Wound infection (N=2) (4%) and wound dehiscence (N=2) (4%) were less, whereas those without subcutaneous drain incidence of wound infection (N=6) (12%) and wound dehiscence (N=4) (8%) were more. Phillip et al study reported 17.1% complication with wound drain and 28.9% complication without wound drain. [15]Lauscher et al study reported 14% of wound infection in patient with drain and 17% of wound infection in without drain. Turki et al study reported lower incidence of wound infection 20.6% with drain and higher incidence of wound infection 26.7% without drain. [16]Takkaki et al study reported incidence of wound infection (14.3%) without drain and incidence of wound infection (38.6%) without drain. [17]

Conclusion

Post operatively list of complications can occur in stoma closure patients such as Obstruction, Wound infection, Wound dehiscence, Post stoma closure anastomotic leak. Less post operatively complications were seen in early stoma closure. Intraoperatively by using direct stoma closure technique chances of post-operative obstruction were seen less. By using the subcutaneous drain placement, we can reduce chances of wound infection and wound dehiscence. Due to no any disadvantage of placing subcutaneous drain except patient discomfort and mild drain site pain in post-operative days, this method of closed subcutaneous suction drainage is very strongly recommended for the prevention of wound infection. Most of the complications can be managed conservatively with medical management than surgical management in stoma closure patients.

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