

Original Research Article

Clinical study of stoma closure: its complications and management

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ABSTRACT

Background: A stoma is a surgically formed exteriorization of the ileum or colon to the anterior surface of wall of abdomen. There are various reasons for the formation of fecal stoma then the most common reasons comprise blunt abdominal trauma, carcinoma, inflammatory bowel disease. Formation of stoma can disturb the individual equally psychologically and physically. In accumulation, complications during stoma are very common.

Methods: The study was carried out in 50 patients between June 2021 to November 2022. 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 non-malignant condition were included in the study. Stoma closure of the patients who were operated for malignancy, tuberculosis and inflammatory bowel disease were not included in the study. This study population were observed for different complications, complications in different techniques and complications in different stoma closure interval.

Results: Less post operatively complications were seen in early stoma closure and Intraoperatively by using direct stoma closure technique. By using the subcutaneous drain placement, we can reduce chances of wound infection and wound dehiscence.

Conclusions: Postoperative complication in stoma closure can be reduced by adapting proper technique and doing closure at appropriate time interval.

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

INTRODUCTION

A stoma is a surgically formed exteriorization of the ileum or colon to the anterior surface of wall of abdomen. There are various reasons for the formation of fecal stoma then the most common reasons comprise blunt abdominal trauma, carcinoma, inflammatory bowel disease (For example- diverticulitis).¹

A decompression or diversion is the main purpose of stoma by means of elimination of whichever feces, urine or effluent of intestine. They are classified on the basis of need as it can be either Permanent or Temporary stoma.

In our study, we are examining Complications occurring after stoma closure and its management. Several Factors accountable for complications after closure of stoma- Like

Nourishing status of patient, Duration between closure of stoma, Type of stoma closure etc.² Complications are regularly considered as those develop earlier, within 30 days post closure of stoma and those which advance later, After 30 days of stoma closure. Formation of stoma can disturb the individual equally psychologically and physically.³ In accumulation, complications during stoma are very common. In this study We will study complications after closure of stoma.

Stoma complications and indications wide-ranging as per the environmental or socioeconomical features of different country or areas. Research regarding the indications of stoma formation, complications during stoma, complications after stoma closure and its management is deficient. The objective of the study is that after studying

different complications following stoma closure, observation based measures to reduce such complications.

METHODS

This is the clinical prospective observational study. This study was conducted at tertiary care center, Surat Municipal Institute of Medical Education and Research, Surat. Sample was collected from June 2021 to November 2022 according to inclusion criteria.

Study population

All the patients who undergone stoma closure and fulfilled inclusion criteria were taken as study population.

Inclusion criteria

Patients of all age groups undergone stoma closure for non malignant condition were included in the study.

Exclusion criteria

Stoma closure of the patients who were operated for malignancy, tuberculosis and inflammatory bowel disease were excluded.

Procedure

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, 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

Age wise distribution of study population was described in (Table 1).

Table 1: Age wise distribution of study population.

Age (years)	N	%
<25	11	22
26-50	25	50
51-100	14	28
Mean age (years) = 41.28		

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.

Genderwise distribution of study population is described in (Table 2).

Table 2: Gender wise distribution of study population.

Gender	N	%
Male	42	82
Female	08	16

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 3).

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

Complications	N	%
Postoperative	24	48
No complication	26	52

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 observed in study are described in (Table 4).

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

Complications	N	%
Obstruction	10	41.66
Wound infection	8	33.33
Wound dehiscence	6	25
Post stoma closure anastomotic leak	0	0

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 5). 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), Wound dehiscence (1). Interval between previous surgery and stoma closure is described in (Table 6). 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 7).

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

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%).

Table 6: Interval to stoma closure.

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

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.

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 oliva perez 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 Heruig pokory 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

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

Interval to stoma closure (days)	Number of closures	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	5	2	1	0	0	60

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)

Heruig et al reported stoma closure interval of 90 days.⁵ Asadullah khan et al reported 71% of stoma closure in <3 months 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

Limitations

The limitation of the study is that we have not evaluated stoma closure in chronic condition like Koch's, inflammatory bowel disease and malignancy.

CONCLUSION

In our study of 'Complication after stoma closure and its management', 50 patients were included after fulfilling inclusion and exclusion criteria. 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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