

Fate of de-functioning ileostomy after left colon and rectal cancer resection: observation from a single unit of a cancer hospital.

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Abstract

Background: De-functioning ileostomy (DS) has been shown to reduce rate of anastomotic leak after left colon and rectal cancer resection and can avoid consequences of leak with its morbidity and possible mortality. Externalisation of bowel is not easily appreciated; patients always inquire about the timing of closure and not all stomas are closed. The aim of the study is to assess the timing of stoma closure and the reasons for stoma becoming permanent. **Methods:** Patients who underwent surgery for left colon and rectal cancer with de-functioning stoma from April 2019 to May 2022 in single unit of Bhaktapur Cancer Hospital, were assessed regarding timing of stoma closure. We have made a policy of stoma closure after completion of adjuvant therapy. De-functioning stoma that was not reversed at follow up were assessed regarding reason for it becoming permanent. **Results:** Forty-two patients underwent de-functioning stoma during the study period; 30 after rectal resection, 2 after pouch creation, 6 after anterior resection and 4 after left hemicolectomy. Twenty-eight (77%) stomas were closed, 5 are receiving adjuvant treatment. Closure was not done in 8 patients; 5 due to recurrence of disease; 1 due to patient wish, 2 deaths occurred prior to closure, one due to COVID-19 and another due to acute myocardial infraction. One patient with multiorgan resection died within 30 days of surgery due to other medical cause. The median time of stoma closure after completion of adjuvant treatment is 8 weeks, IQR (7-10). Patients had to stay with stoma for a median period of 6months, IQR (5-8). The median time for discharge after stoma reversal is 9 days, IQR (7-10). There were 4 Grade II Clavien-Dindo complications after stoma closure. **Conclusion:** Seventy- seven percent of patients with DS underwent closure in our series. Recurrence was the most common cause for it becoming permanent.

Keywords: de-functioning stoma, low-anterior resection, stoma closure

Introduction

De-functioning ileostomy (DS) is frequently performed after rectal cancer and

left colon cancer surgery with an aim to protect anastomosis.¹ A patient with DS defunctions the anastomosis down streams which will theoretically lower the risk to

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suffer from anastomotic leak and subsequent peritonitis.²

These ileostomies are temporary with an aim for closure once the purpose is over. There is no strict recommendation for the optimal timing of ileostomy closure. Many options are available regarding timing of closure: early closure (within 2 weeks), before start of adjuvant therapy, during adjuvant therapy and after completion of adjuvant therapy.³

Diverting stoma has various problems like stoma related morbidity, physical stress, psychological handicap which affects quality of life.⁴ Patients and relatives are always eager to close the stoma early.

Studies have shown that stoma closure before or during adjuvant chemotherapy following rectal cancer surgery had similar outcomes to the closure of ileostomy after adjuvant chemotherapy.⁵ On the other end, some studies showed that a shorter interval between primary surgery and ileostomy closure may negatively affect the completeness of chemotherapy resulting from possible stoma related complications.⁶ Some studies have shown interruption of chemotherapy for stoma closure may alter the effects of chemotherapy.⁷ Seeing all these situation and local scenario of logistics, we made a policy of stoma closure after completion of adjuvant therapy. It has been shown that not all temporary stomas are closed and some become permanent.⁸ Stoma closure is sometimes performed later than planned and some studies have pointed out that stoma closure may be given low priority in routine surgical work.⁹

The aim of study is to determine the timing of stoma closure and identify proportion of patients whose stoma was not reversed and the reasons of it becoming permanent. The

secondary outcome was analysis of complications and length of stay after stoma closure.

Methods:

The study included patients who underwent surgery for left colon and rectal cancer with de-functioning ileostomy from April 2019 to May 2022 in single unit of department of surgical oncology at Bhaktapur Cancer Hospital, Nepal. Data was extracted from the prospectively maintained database of the unit. We have made a policy of stoma closure after completion of adjuvant therapy whenever it is indicated.

The de-functioning stoma that was not reversed at follow up were assessed regarding reason for it becoming permanent.

Patients were advised to follow- up in surgical clinic between 3-4 weeks after completion of adjuvant treatment, fitness for anaesthesia was assessed and relevant tests ordered. All patients are subjected to radiological tests to assess the patency of anastomosis by injecting contrast per-anus using foleys catheter and serial x-rays were taken. If there is a confusion on radiological tests and when radiological test was not possible, they were subjected to sigmoidoscopy to confirm the integrity of anastomosis.

Age, gender, timing of stoma reversal after completion of adjuvant, total duration of stoma, proportion of patients whose stoma was not reversed, site of disease and time of discharge was analysed. Microsoft office, *Excel* 2016 was used for maintaining data and for statistical analysis.

Results:

Forty-two patients underwent low anterior resection with diversion stoma during the study period. The median age of patients is 53 years, IQR (39-62). There were 9 patients with age less than 40 years, 33 patients were above 40 years of age. Twenty-four patients had neoadjuvant chemoradiotherapy and 18 patients underwent upfront resection.

Twenty-eight patients had rectal carcinoma followed by 12 patients with left colon cancer and 2 patients had carcinoma right colon with polyposis. The types of surgery performed during the study period is shown in table 1.

Table 1: Types of surgery

S No	Particulars: Surgery	(n=42)
1	Anterior resection	6
2	Low anterior resection (LAR)	30
3	Left hemicolectomy	4
4	Total colectomy with ileo-rectal pouch	2

Twenty-eight (77%) stomas were closed during the study period, 5 patients are on adjuvant treatment at the time of analysis. Closure was not done in 8 patients; reasons are shown in table 2. One patient with multiorgan resection died within 30 days of surgery due to medical illness.

Table 2: Reason for non-closure of stoma

S No	Reason for Non closure	n=8
1	Wish to stay with stoma	1
2	Death after COVID pneumonia	1
3	Acute Myocardial Infraction	1
4	Local recurrence	1
	Distant recurrence	4

The median time of stoma closure after completion of adjuvant treatment is 8 weeks, IQR (7-10). Patients had to stay with stoma for a median period of 6 months, IQR (5-8) in our study population. The median time for discharge after stoma reversal is 9 days, IQR (7-10). There were 4 Grade II Clavien-Dindo complications after stoma closure.

The main aim of de-functioning stoma is to protect anastomosis and minimize the clinically significant anastomotic leakage. Seventy seven percent of de-functioning stomas were closed during the study period. Not all stomas deemed temporary are closed, and some become permanent; in a study by David GG, 18-25% of stoma were never reversed.¹⁰ Lindgren et al, proposed that a temporary stoma should be deemed permanent, if a reversal procedure has not been scheduled within 12.5 months after the LAR surgery.¹¹

Discussion

We were not able to reverse stoma in nine patients including one post operative death. In our study, most common cause for not able to close stoma was recurrence of disease (n=5) followed by patient's wish to stay with stoma, death due to COVID pneumonia (after adjuvant therapy), acute myocardial infraction; one patient in each category. A study by Chiu et al, found that the risk for permanent stomas in patients with and without symptomatic anastomotic leakage were 56% and 11% respectively, and half of those patients with a permanent stoma had a previous symptomatic anastomotic leakage.¹² There was no clinically significant anastomotic leak detected in our study and it is known that the rate of anastomotic leak after LAR varies between 6.3% to 14%.^{13,14} The

intractable faecal incontinence, colo-anal anastomosis, local or distant recurrence, chronic ill health of patients are among other factors for non-closure of stoma.¹⁵ In a study by Lindgren et al, 1/3rd patients have stoma at 18 months follow-up, non-closure rate of 40%, median closure time of 7 months and 10% chance of death with non-reversed stoma.¹¹

It is accepted that neoadjuvant chemoradiotherapy (NACTRT) enhances possibility of R0 resection and decreases local recurrence in rectal cancers.¹⁶ We have used NACTRT in 75% of patients with rectal carcinoma; upfront surgery was offered to early lesion, with sarcoma on histology and unable to diagnose cancer even on repeated endoscopic biopsy. One of the factors that increases anastomotic leak and increases time for stoma closure or may become a reason for non-closure is NACTRT. We didn't encounter anastomotic leak in our study and our median time for stoma closure in whole cohort from initial surgery is 6 months, IQR (5-8); which is less than stated by Zhang et al at 20.5 months with NACTRT and 10 months without NACTRT.¹³

Several studies have reported the safety and feasibility of early stoma closure (within 2 weeks of LAR) with promising results.¹⁷ There is no consensus for ideal time of de-functioning ileostomy closure with regard to adjuvant treatment like; before, during or after adjuvant therapy.⁶ We made a policy in our unit to close all de-functioning stoma after completion of adjuvant therapy. One of the advantages of this uniformity is, it makes communication with patients, relatives and involved treating team easy and avoids misunderstanding while referring from one department to other. The complications of stoma closure were

significant with shorter interval between primary surgery and ileostomy closure.¹⁸ Second advantage of our protocol is to avoid possible complication of early stoma closure by delaying it till completion of adjuvant therapy. The balance is between the adequate healing of anastomosis, morbidity and quality of life (QoL) issues with prolonged stoma exposure, possible delay in adjuvant therapy in early reversal, questionable benefits of adjuvant if therapy is interrupted.¹⁹ Stoma closure after adjuvant therapy as in our protocol, seems a reasonable option to balance the morbidity due to stoma; to start and complete adjuvant therapy timely.

As mentioned earlier, we have made a policy of stoma closure after completion of adjuvant therapy. The median time of closure after completion of adjuvant treatment is 8 weeks, IQR (7-10) and the total median duration for a patient with a stoma is 6 months, IQR (5-8) which is less than as mentioned in most of the study.^{5,13,17}

Stoma reversal is not a very complicated procedure but sometimes comes with significant morbidity and even mortality.²⁰ Among many factors related to complications like primary disease, nutritional status, technical issues, course during primary surgery and co-morbidity; one important factor is timing of closure. In a study by Climent et al, closure after 10 months of primary surgery was associated with statistically significant complications (OR 1.52; 95% CI 1.00-2.33, $p=0.049$).²⁰ Our median time for closure is 6months, IQR (5-8), patients were discharged from hospital at a median time of 9 days, IQR (7.75-10) and only four patients had grade II Clavien-Dindo complications.

The results of this study helped us to counsel our patients in a better way and helped us to answer two important questions in pre-operative phase, first chances of closure of stoma and second is how long they have to stay with stoma before closing it. There are some limitations of our study; first is its retrospective nature, second is there is no comparison group with other timing of stoma closure, third is QoL and morbidity of stoma was not addressed, we intent to bring these issues in future. A well-planned prospective study to investigate how early stoma can be closed without negatively affecting benefits of chemotherapy and positively affecting QoL would be worthwhile.

Conclusion:

In this study, seventy-seven percent of patients with de-functioning ileostomy underwent closure and recurrence of disease was the most common cause for stoma to become permanent.

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