

## Original Research Article

# Analysis of factors influencing colostomy closure after low anterior resection for cancer rectum

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### ABSTRACT

**Background:** De-functioning colostomy or ileostomy is a procedure known worldwide as a protection measure to the rectal anatomies in low anterior resections and even some of anterior resections. Though the primary intention is a temporary one, many a times they end up in a permanent stoma. As the patients with stomas with attached bag appliances to their abdominal wall go through a lot of stress related to the quality of life and body image, they are always keen to get it closed as early as possible. Unfortunately, many factors come into play during and after the indexed surgery till the closure of stoma without any complication, prohibiting their early or even delayed closure.

**Methods:** Authors here conducted a cohort study with retrospective data analysis and a prospective follow up patients in a tertiary care regional cancer centre from April 2011 to mid-June 2017. Statistical analysis was used by mean and percentage method.

**Results:** Temporary colostomy was required in 88.37% of low anterior resections and some anterior resections. Most of those (92.11%) were transverse colostomy. Only 36.86% of those stomata were reversed. Four (10.83%) patients were dead by the end of the study. Twenty patients of stoma (52.63%) were not yet reversed and were deemed to continue with a permanent colostomy. This was found to be a very high figure as opposed to the literature of 9-25%. The reason behind this high figure was probably due to low general condition, lower socio-economic status, and low literacy prevailing in our patient population group. Moreover, the patient attendants and the surgeon himself also had played some role responsible for this situation.

**Conclusions:** Patients should be told before initial rectal surgery that there is a risk of non-closure and possible complications associated with permanent stoma.

**Keywords:** Carcinoma rectum, Factors influencing reversal, Permanent stoma, Temporary colostomy

### INTRODUCTION

Carcinoma rectum especially in the lower and some of middle third poses a special problem in its management as many of those need a temporary de-functioning transverse colostomy or ileostomy during a low anterior resection (LAR) or anterior resection (AR). The primary aim is to protect the anastomotic site from leakage and peritonitis ending with morbidity and mortality.<sup>1</sup> Recent

literature shows the overall stoma-related morbidity in such patients, may vary between 17 and 45 %.<sup>1-2</sup> It also reflects adversely with body image and quality of life.<sup>3</sup> The intension of the stoma creation is primarily a temporary one. In spite of such prior counselling, many patients remain stressed having a stoma and a bag attached to his or her abdominal wall and are always keen to get it closed as early as possible. Hence, both patients and surgeons look forward to an early closure of the

stoma. The aim is always to reverse it after 6-12 weeks.<sup>1,4</sup> Nowhere in the literature, there is a guideline and protocol set for stoma closure.<sup>4</sup>

Hence, the timing of closure of such stoma varies from hospital to hospital. In some hospital, it is as long as 13-37 weeks. Reasons may not be only because of prolonged recovery from initial surgery or any complication arising out of stoma creation, but also due to adjuvant therapy. Administrative delay for waiting list of other cancer surgery or emergency operations may be another factor. Literature further says that about 9-25% of stomas become permanent.<sup>1,5,6,8</sup> The other major issue here is that closure of stomas itself carries a morbidity rate as high as 45% which may directly have a deleterious effect on quality of life.<sup>1,7</sup>

These are the backgrounds of current study which entails why this study was conducted. The aim and purpose of this study is to analyse the various factors influencing the closure of the stoma with regards to time interval, frequency of closure, morbidity during postoperative period of closure, factors delaying or prohibiting the closure, in order to arrive at a conclusion as to any further necessity of counselling regarding possibility of stoma becoming a deemed permanent one at the time of indexed surgery.

**METHODS**

This is a retrospective patient cohort study, where all the stomas constructed between April 2011 to December 2016 in a tertiary referral regional cancer center hospital of south east India were studied and were prospectively

followed up to mid-June 2017. The Author searched the hospital record for all the patients who had undergone a protective loop or end ileostomy or transverse colostomy during the indexed surgery of LAR and AR for carcinoma rectum of lower one third and some of middle thirds. The stomas were performed with an intension of temporary one and would be closed after a certain period of weeks.

The hospital records were the operation theatre register, the stoma clinic register, the histopathology register and the indoor ticket files. He registered the age, sex, body mass index (BMI), co morbidities, time between stoma construction and reversal, morbidity, mortality rate and reoperations after reversal, when and why a new stoma had to be constructed, as well as follow-up data of the patients. The factors for not closing the stoma were evaluated and analyzed. The statistical methods used for presentation and analysis of data were by mean and percentage values. No software package used for such analysis.

**RESULTS**

Consequent upon analysis of factors around colostomy closure, the data were compiled and tabulated as below.

From Table 1, it was observed that the total number of cancer rectum patients operated at the referral hospital of regional cancer centre in the south-eastern part of India, was 158, out of which 43 (27.21%) patients were in the lower rectum or the lower mid junction and undergone low anterior resection (LAR) or anterior resection (AR).

**Table 1: Regional cancer center data of cancer rectum operated from April 2011 to December 2016 (n=158).**

Variables	Number	Percentage
Number of carcinoma rectum operated	158	-
Number of LAR*/AR†	43	27.21%
Handsewn /Stapler 29A anastomosis	17/26	39.53% / 60.47% of all LAR/AR
Number of protective colostomy/ileostomy in LAR*/AR†	38	88.37% of LAR/AR
Transverse colostomy/Ileostomy	35/3	92.11% / 7.89% of all stomas
Number of stomy constructed in elective/emergency setting	27/11	71.05%/28.95%
Number of colostomy/ileostomy reversed	14	36.84% of stomas
Number of colostomy/Ileostomy with delayed closure	11	28.95% of all stomas
Number of stomy revised after closure due to technical problem which was again closed in a later date	1	7.14% of all closures
Number of patients died	4	10.53% of all stomas
Number of stoma not yet reversed (deemed permanent colostomy)	20	52.63% of LAR/AR

\*Low anterior resection, †Anterior resection.

None of the patients underwent surgeries like inter sphincteric resection. Out of those 39.53% were anatomized by hand sewn method and rest 60.47% by end to end circular stapler 29A. Thirty-eight patients

(88.37% of all AR, LAR) required a protective stoma. Only 3 patients required protective ileostomy but rest 35 patients (92.11%) underwent a loop transverse colostomy. In about 11 (28.95%) cases a pre-surgery

stoma was created in emergency setting due to initial presentation as obstruction. Rests 27 of patients (71.05%) were combined with a protective stoma along with resection. It was observed that over a period till June 15<sup>th</sup>, 2017, only 14 cases of stomata (36.84% of all stomata) were reversed. Again, out of those 11 patients (28.95% of

all stomas) were reversed in a delayed period. One such stomy was revised after closure due to technical problem which was again closed in a later date. Meanwhile 4 patients already died due to terminal disease (3) or otherwise (1). So, till date a sizeable number of stoma of 20 cases (52.63%) are not yet reversed.

**Table 2: Delayed reversal of stoma (n=11/14).**

Variables	Number	Mean/percentage
Number of days between colostomy and reversal	49-368	202
Number of cases with timely or early reversal	3/14 (within 84 days)	21.43% of all reversals
Number of delayed reversal	11/14	78.57% of all reversals
Causes of delayed reversal	Retraction, prolapsed, adjuvant therapy, old age, surgeons' choice	

Table 2 showed that the number of days between stoma creation and closure varied from 49 to 368 days mean being 202 days. Out of total 14 cases of stoma reversal only 3 cases (21.43% of all reversals) could be reversed in time within 84 days (12 weeks). Rest 11 cases

(78.57%) were found to be delayed closure. The causes of those delayed reversal were retraction and or prolapsed of stoma needing correction, completion of adjuvant therapy, old age stigma made by relatives, more importantly surgeon's choice.

**Table 3: Details of colostomies/ileostomies not yet reversed (n=24).**

Factors	Number	Percentage
Anastomotic site leak but healed	1	4.17
Anastomotic leakage leading to presacral sinus	0	0
Pelvic abscess	1	4.17
Anastomotic stricture	9 (all used stapler for anastomosis, 6 received post-operative radiation)	37.5
Recurrence	2	8.33
Distant metastases	4	16.67
Stoma related complications (retraction, prolapsed leading to repair)	4	16.67
Stoma closure related complications-leak, obstruction needing again recreation of stoma	1	4.17
Responsible surgeon's choice	1	4.17
Preoperative RT/CT	4	16.67
Post-operative radiation	6	25
Type of ileostomy-end	0	0
Old age	2	8.33
Relaparotomy after creation	1	4.17
Death	4	16.67

Table 3 described different causes which prohibited the procedure of closure of stomas till the last follow up. Anastomotic stricture was the most common variable 9 cases (37.5%) prohibiting the reversal of colostomy. In all those 9 cases, the anatomizes was made by using end to end stapler 29A. Six patients received post-operative radiation. Four patients died before reversal of stoma due to terminal disease in 3 and other reason in 1 case. Next

cause in order 4 cases each (16.67%) were having stoma related complications like-retraction and or prolapsed stoma requiring repair, status of preoperative chemo radiation and distant metastasis. Next cause in order in 2 cases each (8.33%) was anastomotic recurrence and old age. Distant metastasis and old age factors were not the absolute causes. Once distant metastasis occurred both the surgeon and relatives were skeptical about the

longevity of the patient and indirectly had a two mind to go for the reversal. Similarly, the relatives were also reluctant to go for another surgery in the prevailing old age and associated co morbidity. Please note that the total number of factors analyzed does not correspond to the total number of cases not reversed. This is due to overlapping of factors in a patient. For example, the patient received preoperative CT RT had post-operative stricture and so on.

## DISCUSSION

It is a routine practice by many surgeons, while taking informed consent that the stoma created as a protection during LAR/AR, is said to be a temporary one and can safely be reversed in due time. Many a times this has become not true. Literature shows that non-reversal rate ranges from 9 to 25 %.<sup>1,8</sup> In current study it is found even much more than that (52.63%). The reasons may be that ours being a government hospital and the patients were from low socio economic and low literacy group where there is a strategy from government side that they should not wait extended period before surgery. They come mostly in a low general and physiological condition. So, we must give them supportive care and quickly make them fit for anaesthesia and surgery in the next week. This may be the major fact why in high percentage of LAR/AR (88.37%) we go for stomas.

The low physiological condition also prevails in the immediate and delayed postoperative period. This is also attributable to delayed closure in current study. Pre-and post-operative radiotherapy contributed further for non-reversal in a good percentage of situations in current study. In a study by Lindgren et al, preoperative radiotherapy was not an independent risk factor for non-reversal.<sup>6</sup> In our experience, a small group of patients eventually accepted having a stoma for a longer period, as they preferred to be disease-free after their eventful period during the past year and especially in old age situation. The surgeon also plays a role in this regard. Protocol for optimal timing of closure for stomies is not available in any literature.<sup>4</sup>

However, most surgeons prefer to close the ileostomy or colostomy as soon as the patient is medically fit and willing.<sup>5</sup> A period of at least 6-10 weeks is required for the inflammations and adhesions to subside. It has been shown that in selective patients, e.g. those who recover quickly after the initial surgery, the stoma can be closed within these 10-14 days avoiding a longer period of having a stoma with the associated problems and costs.<sup>9</sup> The majority of patients experience an overall improvement of quality of life, physical functioning and social functioning following stoma closure.<sup>10</sup> The time to closure of colostomy in current study was found to be much longer than anticipated, which was dissimilar to other studies in which median time to reversal ranged from 4.1 to 5.9 months.<sup>1</sup> One of the reasons for the delay in stoma closure is that stoma closure is considered an

elective, low-priority operation that has to compete with more complex and urgent operations. To get around this problem, some advocate that scheduling a date for stoma closure at discharge helps early closure of ileostomies.<sup>5</sup> It is necessary that surgeons are aware of these problems and customize their surgical strategy to the patients and its disease keeping this in mind.<sup>11</sup>

## CONCLUSION

To conclude good number of stomas that are initially intended as temporary may never be closed. The interval between construction and closure are many a time longer than the usually assumed. Patients with advanced cancer or anastomotic leakage are at high risk of permanent stoma after temporary colostomy or ileostomy. Surgeons should be aware and patients should be informed of the possibility of permanent stoma formation. Patients should be told before initial rectal surgery that there is a risk of non-closure and possible complications associated with permanent colostomy or ileostomy.

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