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**Original Research Article**

# Patients need to know that ileostomy following anterior resection may not be reversed

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## ABSTRACT

**Background:** A diverting ileostomy is often created following a low colorectal anastomosis to reduce the clinical consequences of an anastomotic leak. Whilst many patients are advised that these ileostomies are temporary, not all stomas will eventually be closed. This study aimed to look at the reversal rates of diverting ileostomy following anterior resections, and the reasons for delayed or non-reversal.
**Methods:** A retrospective review of all patients who underwent an anterior resection with a diverting ileostomy from March 2011 to March 2013 was performed.
**Results:** A total of 115 patients had a diverting ileostomy following anterior resection within the study period. Seventy-six (66.1%) patients had a reversal before March 2016. The median time to reversal was 8 months (range, 1-26 months) with only 13% reversed within 12 weeks. Two patients (2.6%) had anastomotic leaks post ileostomy reversal requiring surgery and 1 patient (1.3%) had significant hematochezia requiring hospitalization. In the 39 (33.9%) patients who did not have their ileostomies reversed, deterioration in the fitness of the patient for surgery was the most commonly cited reason (n=12, 30.8%). This was followed by disease progression (n=9, 23.1%) and patient's choice (n=8, 20.5%).
**Conclusions:** One in 3 diverting ileostomies performed following anterior resection is not reversed. The interval time to its closure is longer than typically expected. Patients should be made aware of the significant possibility of non-reversal.

**Keywords:** Anterior Resection, Diverting Ileostomy, Morbidity, Reversal

## INTRODUCTION

A diverting ileostomy is often created following low colorectal anastomosis after an anterior resection to reduce the morbidities of an anastomotic dehiscence.[1] The decision to create a diverting stoma following an anterior resection is often dependent on the clinical judgment of the surgeon. Some of the known risk factors associated with an increased risk of developing an anastomotic dehiscence following low anterior resections include prior radiation therapy, low rectal cancer, male gender, significant premorbid conditions of renal failure and diabetes mellitus and technical intraoperative challenges.[2-4] Even in such instances, the anastomotic leak rates remain around 10%.[5-7] Thus, in the majority of the patients, the stoma may not be necessary. The

morbidities associated with a stoma such as electrolyte imbalances, dehydration from high stoma output, bowel obstruction, hernia and skin excoriations are well documented.[8-10] Furthermore, stomas are also associated with significant impedance on the patient's quality of life.[11] Complications following closure of ileostomies are not infrequent as well.[12]

Currently, patients are often advised prior to their index operation that their diverting ileostomies are temporary and will be reversed soon after they recover from their anterior resection.[13] Whilst several reports have successfully reported early closures of stoma within 2 weeks of the index operation, many others have reported otherwise.[14]

With the aforementioned conflicting evidence in mind, this study was performed to evaluate the actual reversal rates of the diverting ileostomy following anterior resection in an Asian population and the reasons for non-reversal.

## METHODS

A retrospective review of a prospectively collected database of all patients who underwent anterior resection with a diverting ileostomy in 2 colorectal surgery units from the National University Hospital and Khoo Teck Puat Hospital in Singapore between March 2011 and March 2013 was performed. The respective Institutional Review Boards approved the conduct of the study.

The study group comprised of any patient who had a diverting loop ileostomy created following an anterior resection during the study period. Demographic characteristics such as age, gender, and indication for the index operation were documented. The study group was then reviewed at March 2016 to enable a minimum follow-up period of 3 years to identify the patients who had subsequent reversal of ileostomies. The time interval between the index anterior resection and the closure of ileostomy was calculated. Patients who did not have their stomas reversed during the time of review were evaluated to determine the reasons accounting for the non-reversal.

## RESULTS

A total of 115 patients formed the study group. The baseline characteristics of the patients are shown in Table 1. Patients who died within the same hospital admission following the initial procedure were not included in further analysis. Eighty-seven (75.7%) patients underwent the surgery in an elective setting, and malignancy was the main indication for the operation in the study group (n=94, 81.7%).

Seventy-six (66.1%) patients had undergone reversal of their ileostomies at the time of review. The median time to the reversal was 8 months (range, 1-26 months) with only 19 patients (13%) having their stomas reversed within 12 weeks. Two patients (2.6%) developed an anastomotic leak, following reversal of their ileostomy reversal necessitating emergency surgery. There was another patient (1.3%) who developed significant hematochezia, requiring hospitalization and stabilization.

**Table 1: Baseline patient characteristics (n=115).**

| **Age (years)** | |
|---|---|
| Median age (range) | 68 (35-88) |
| **Gender (%)** | |
| Male | 65 (56.5) |
| Female | 50 (43.5) |
| **Surgery (%)** | |
| Elective | 87 (75.7) |
| Emergency | 28 (24.3) |
| **Status of ileostomy (%)** | |
| Reversed | 76 (66.1) |
| Not reversed | 39 (33.9) |

Of the 39 patients who did not have their stomas reversed, patient-related factors were the most commonly cited reason (n=22, 56.4%). These included the development of new comorbidities and the decision to live with the ileostomy. Disease progression of the malignancy was the next most cited reason for non-reversal (n=7, 17.9%). One patient (2.6%) was lost to follow-up. Table 2 illustrates the reasons for non-reversal in the study group.

**Table 2: Reasons for non-reversal (n=39).**

| **Reasons (%)** | |
|---|---|
| General fitness for surgery | 12 (30.8) |
| Disease progression | 9 (23.1) |
| Patient choice | 8 (20.5) |
| Demise | 5 (12.8) |
| Surgical complications (e.g. anastomotic stricture) | 4 (10.3) |
| Lost to follow-up | 1 (2.6) |

## DISCUSSION

Proximal diversion of the gastrointestinal tract following a low anterior resection is commonly practiced worldwide. Surgeons are often fixated with the successes of the oncological resection and anastomotic integrity. However, the psychological and quality of life aspects faced by patients are being emphasized increasingly. A defunctioning gastrointestinal stoma may appear to be a simple procedure for the surgeons. The physical, physiological and psychological impacts onto the patients are, however, immense. More often than not, the patients are also worried about the oncological outcomes of their cancer surgery and may be unaware of the potential implications of harbouring a stoma.

Surgeons and stoma therapists play an important role in explaining the indications and also the care and potential

morbidities of a stoma. However, it is not uncommon that patients are being informed that their temporary ileostomies would be closed soon after the surgery. What our data demonstrated is that only two-third of the patients would have their stoma closed and the majority of them would only have it closed 6 months after the index operation. There is likely a discrepancy between the patients' expectations and the reality. Careful and detailed counseling is necessary to prepare the patient physically and psychologically for the presence of a stoma.

In the 33.9% of our patients that do not have their stomas reversed after a median follow-up of 3 years. Deterioration in their general medical fitness and patients' choice accounted for over 50% of the reasons. Going ahead, if we could identify these individuals through further studies, it is possible that these individuals could be counselled upfront for a permanent end-colostomy instead, which have its benefits over a temporary ileostomy.[15-19] The absence of a clinical anastomotic leak does not mean that there is no anastomotic leak following the low anterior resection. It was perhaps not surprising that surgical complications such as anastomotic stricture or dehiscence accounted for the other 10% for non-closure. Procedures such as dilatation of anastomotic strictures can also be performed to improve the chance of closure while re-anastomosis of completed dehisced anastomosis is likely to be fraught with considerable technical challenges.

On the other hand, patients may also decide to delay their stoma closure or even decline further surgeries in the absence of any adverse post-operative events. While this may seem surprising, a properly managed stoma can actually provide a patient with reasonable independence and reassurance cumulating in a change of mind. The ability to have control of the bowel function to a certain extent (by emptying the bag when convenient) is more optimal than individuals who become anal incontinent following reversal of their ileostomies. Low anterior resection syndrome is often understated and the impediments to the anal continence and faecal control can be even more detrimental than managing a stoma. Patients often believe that their defecating habits will revert to their pre-operative states upon closure of the stoma, which is almost next to impossible following the extensive surgery to the pelvis during a low anterior resection. Again, proper counseling and management of the patients' expectations is very important.

Equally important, stoma reversal surgery is not without its own set of risks. A recent systematic review covering 6107 cases noted an overall post-operative morbidity of 17.3% with around 2.3% requiring re-laparotomy.[20] Our series also revealed a similar re-operation rate of 2.6% for anastomotic leak post stoma reversal. Other complications may also include wound infection/breakdown, ileus and also entero-cutaneous fistulations.

The limitations of present study include its retrospective aspects with its inherent biases. The small number of patients also made any statistical analysis inaccurate. Authors attempted to overcome this limitation by combining the data between two colorectal surgical units to understand the true extent of this understated issue. Important findings were also uncovered that would be useful to guide colorectal surgeons and patients going ahead.

## CONCLUSION

Over 33% of diverting ileostomies created following anterior resection are not reversed. Colorectal surgeons and stoma therapists play an important role in counselling the patients pre-operatively and explaining the considerable possibility of non-reversal and the implications of having a lifelong stoma. Pre-operative identification on the patients who are likely to have non-reversal could prompt the creation of a permanent end colostomy instead.

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