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Morbidity of colostomy reversal

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ORIGINAL ARTICLE

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Abstract

Objective: To determine morbidity after colostomy reversal at a tertiary care hospital.

Method: The retrospective case series was conducted at the Aga Khan University Hospital, Karachi, and comprised records of patients aged 15 years or more who underwent colostomy reversal from January 2003 to December 2011. Data was collected regarding demographics, procedure dates, indication, as well as type and location of colostomy. Details of colostomy reversal, including pre-operative, intra-operative and post-operative variables were recorded.

Results: The mean age of the 96 patients was 40±16 years; 72(75%) of them being males. The most frequent indications for fashioning of colostomy were bowel perforation in 53 (55.2%) and malignancy in 9(9.3%) patients. Intra-operative complications occurred in 5(5.2%) with bowel perforation in 3(3.1%) and bleeding in 2(2%) patients. Overall, 40(41.6%) patients had post-operative local complications; the most common being wound infection in 19(19.8%) followed by incisional hernia 15(15.6%). Patients who experienced post-operative complications had significantly longer hospital stay compared to those without complications (9±2.8 vs. 7±2.4days; p=0.038).

Conclusion: Colostomy reversal was associated with non-negligible morbidity. The most common complications were wound infection and incisional hernia.

Keywords: Stoma reversal, Stapled anastomosis, Wound infection. (JPMA 66: 1081; 2016)

Introduction

Colostomy reversal is done once the disease process has settled for which it had been formed and it has no distal obstruction with healthy bowel ends.[1,2] Colostomy reversal is a commonly performed surgical procedure which is known to be associated with low mortality and significant morbidity.[3] A landmark series of 6,107 patients revealed a 29.4% morbidity rate for colostomy closure (range 5.6% to 49%).[4] Common complications after reversal include wound infection, anastomotic leak, ileus and incisional hernia.[5,6] Surgical outcome in terms of mortality and morbidity for colostomy reversal varies from place to place, depending on many factors, including characteristics of the population, individual-to-individual variation and the level of healthcare provision.[4,7,8] Hence, despite the available data on western populations and a couple of Asian samples, the outcome of colostomy reversal in our population, cannot be precisely predicted based on these studies.

The current study was planned to assess the complication pattern of patients undergoing colostomy closure at a tertiary care hospital.

Patients and Methods

The retrospective case series was conducted at the Aga Khan University Hospital (AKUH), Karachi, and comprised records of patients who underwent colostomy reversal from January 2003 to December 2011, Data of all patients aged >15 years with complete medical record and follow-up of at least six months was retrieved through international classification of disease version 9 (ICD-9) coding system. Data was collected about demographics, indication for colostomy and urgency, details of colostomy reversal, including pre-operative variables, like American Society of Anaesthesiology (ASA) scoring, antibiotic use, and bowel preparation, presence of confounders such as smoking and diabetes mellitus, intra-operative variables like operative technique, staple vs. suture anastomosis, duration of surgery wound type, open vs. close, with and without drain placement. Post-operative variables included duration of hospital stay and re-admissions. Intra-operative complications included bleeding, spillage of bowel contents and iatrogenic bowel injury. Post-operative local complications included wound infection, anastomotic leakage, post-operative ileus, post-operative bleeding, and foecal fistula/ entero-cutaneous fistula, incisional hernia.

Data was analyzed using SPSS 15. Categorical variables were expressed as frequencies and percentages, and continuous variables as means and standard deviations (SD).

Results

Of the 120 subjects who underwent colostomy closure

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Table-1: Patient demographics.

Variables	Colostomy reversal n=96 (%)
Age (years)	40±16
Gender	
Male	72(75%)
BMI[1]	24±4.8
HB[2]	11.4±1.5
Time between formation to reversal	45.7±5.8
Indication for colostomy	
Bowel perforation	53 (55.2%)
Malignancy	9 (9.3%)
Necrotizing fasciitis	9 (9.3%)
Sigmoid volvulus	3 (3.1%)
RV fistula[3]	3 (3.1%)
Diverticulitis	2 (2.08%)
Fistula in ano	2 (2.08%)
Others	12 (12.5%)
Type of colostomy	
Loop	84 (87.5%)
With mucous fistula	8 (8.3%)
Double barrel	3 (3.1%)
Cecostomy	1 (1%)
ASA Score†	
ASA I	41 (42.7%)
ASA II	47 (48.0%)
ASA III	8 (8.3%)
Hospital stay	8.3±2.6

[1]BMI: Body mass index.
[2]HB: Haemoglobulin level.
[3]RV: Rectovaginal.
†ASA: American Society of Anaesthesiology.

during the period, 96(80%) met the inclusion criteria. The overall mean age was 40±16 years; and 72(75%) of them were males. The most frequent indications for colostomy were bowel perforation in 53(55.2%) patients, followed by malignancy in 9(9.3%). The mean duration from the colostomy formation to its closure was 45.7±5.8 days. Mean hospital stay after the procedure was 8.3±2.6 days (Table-1).

Pre-operative antibiotic and bowel preparation regime were instituted in all (100%) patients. Intra-operative complications occurred in 5(5.2%) patients which included bowel perforation in 3(3.12%)) and bleeding in 2(2.08%), while 40(41.6%) patients had local complications. The most frequent local complication was wound infection followed by incisional hernia, while incidence of anastomotic leak was low. On the other hand atelectasis remained the most common systemic complication (Table-2). Mean hospital stay in patients who had complications was significantly higher compared to those without complications (9±2.8 vs. 7±2.4days; p=0.037).

Table-2: Intra-and post-operative complications during colostomy reversal.

Complication	Colostomy reversal n=96 (%)
Intraoperative	5 (5.2%)
Bowel perforation	3 (3.1%)
Bleeding	2 (2%)
Local	40 (41.6%)
Wound infection	19 (19.8%)
Postoperative ileus	3 (3.1%)
Anastomotic leak	2 (2.0%)
Faecal fistula	1 (1.0%)
Incisional hernia	15 (15.6%)
Systemic	22 (22.9%)
Atelectasis	12 (12.5%)
UTI	8 (8.3%)
Urinary retention	1 (1%)
Cardiac arrhythmia	1 (1%)

UTI: Urinary Tract Infection.

Discussion

Colostomy is considered a double-edged sword.[8] Creation of colostomy on the one hand avoids serious other consequences, while on the other it also maintains its fair share of significant morbidity and, therefore, requires operation for closure.[9] Reversal of colostomy is a frequently performed procedure in our surgical practice. Host of minor and major complications, including anastomotic leak, wound infection, obstruction, wound dehiscence and incisional hernia, are associated with it.[5] Colostomy will provide true benefit if morbidity and mortality is kept to a minimum so that it does not interfere with the patient's ability to recover.[10] The aim of our study was, therefore, to determine complications after colostomy closure.

Main indication in western literature for colostomy formation was bowel malignancy, while it was traumatic bowel perforation (gunshot, road traffic accident) in our study.[9] Mean age of colostomy formation in our study was 40 years (range: 17-76 years), while it is higher in western studies largely due to the above-mentioned reason for colostomy formation.[11]

Colostomy reversal is a high-morbidity procedure with low risk of serious complications.[8] The overall morbidity in our study was 41.1% which is comparable to international literature (5%-40%).[12] The most common complication in our study was wound infection (19.8%), while it was 22% in another series.[8] Effect of wound closure on wound infection has been the focus of recent studies.[13] We left

majority of wounds open primarily because of their traumatic nature at the time of presentation, but, on the contrary, in one study all of them were closed.[8] Another retrospective study found that primary closure after stoma reversal did not increase the wound infection rate.[13]

Type of colostomy, location of stoma, operative technique and presence of drain did not affect the outcome of colostomy closure. Complications had increased the hospital stay by 2 days. Contemporary literature shows that in-hospital stay ranges from 4.2 to 15.5 days. One reported a span of hospitalisation for those without complications to be 11.1 days, with wound infection (15.5 days), ileus (18.5 days) and anastomotic leak (20.4 days).[1]

There were limitations of our study. The design is a retrospective database review and was subject to the biases inherent in such studies. It is a single-institution study therefore results cannot be generalised based on small sample size. Regardless of the limitations, however, the study has highlighted some important observations and findings that affect patient outcomes.

Conclusion

Colostomy reversal is a high-morbidity procedure. Wound infection and incisional hernia are common complication.

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Conflict of Interest: None.

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