CASE SERIES

A retrospective case series describing the outcomes of 7 early reversals of temporary ileostomies at a teaching hospital in Ndola, Zambia

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Abstract

Temporary ileostomy, though a simple surgical procedure, is associated with high morbidity arising from a complicated clinical course that affects the quality of life and body image of the patient. Ileostomies are offered to moribund patients with delayed presentation, fulminant enteritis, and long-standing peritonitis due to ileal perforation with severe peritoneal contamination. Ileostomies enhance intestinal decompression with improved healing, early resolution of ileus, and early initiation of enteral feeding. However, ileostomy reversal to restore intestinal continuity is a major surgical procedure associated with high morbidity and mortality. The optimal timing of temporary ileostomy reversal is controversial following emergency surgery. We report on 7 cases of delayed presentation of peritonitis due to ileal perforation. The patients were initially treated with double-barrelled end ileostomies, and they underwent ileostomy closure at Ndola Teaching Hospital, Zambia, within 14 days of the respective index admissions, with good outcomes. For 6 of the patients, the indication for ileostomy reversal was dehydration resulting in renal dysfunction, and psychosocial disturbances were evident in all 7 patients. Five of the patients developed skin excoriation. Two patients developed surgical site infections after ileostomy closure. The mean duration of hospitalization was 22 days.

Keywords: ileostomy, early ileostomy closure, early ileostomy reversal, quality of life, surgical wound infection, morbidity, intestinal perforation, typhoid, peritonitis, Zambia

Introduction

Temporary ileostomy formation is a simple surgical procedure, but it is associated with morbidity and a complicated clinical course that greatly affects the quality of life and body image of patients who undergo the procedure, which has been attributed a 2.2% mortality rate.[1]-[4] Ileostomy is a life-saving procedure and is often performed for moribund patients with delayed presentation, fulminant enteritis, and long-standing peritonitis due to ileal perforation with severe peritoneal contamination.[5] Ileostomy enhances intestinal decompression with improved healing, early resolution of ileus, and early initiation of enteral feeding. Ileostomy closure to restore intestinal continuity is, however, a major surgical procedure associated with complications and high morbidity and mortality.[6]-[9] The rationale for ileostomy is to provide defunctioning, decompression, and exteriorization of the bowel to avoid potentially dangerous anastomotic complications and minimize the risk of death.[10]-[13]

Ileal perforation requiring ileostomy construction is frequently encountered in surgical departments in low-income countries; in high-income settings, patients undergo ileostomy formation to protect distal colorectal or ileal–anal pouch anastomoses.[14]-[19] Typhoid is the most common cause of ileal perforation in low-income countries, followed by tuberculosis, trauma, and nonspecific ileal perforations.[20] Reported rates of ileal perforation due to typhoid range from 0.8% to 18%.[21] Moribund patients with typhoid peritonitis, who are not expected to survive without an operation (American Society of Anesthesiologists [ASA] class V), are better treated by means of damage control surgery after faecal-diversion ileostomy construction.[21]

The optimal timing of temporary ileostomy reversal following emergency surgery remains controversial, even though the consensus seems to suggest that ileostomy closure is best done between 8 and 12 weeks from the time of the initial surgery.[11],[12],[22]-[24] A few studies have reported on ileostomy closure as early as 10 days after initial operations, however, particularly in Western countries after elective colorectal surgery.[23],[25],[26] The early closure of a temporary ileostomy avoids the associated morbidity

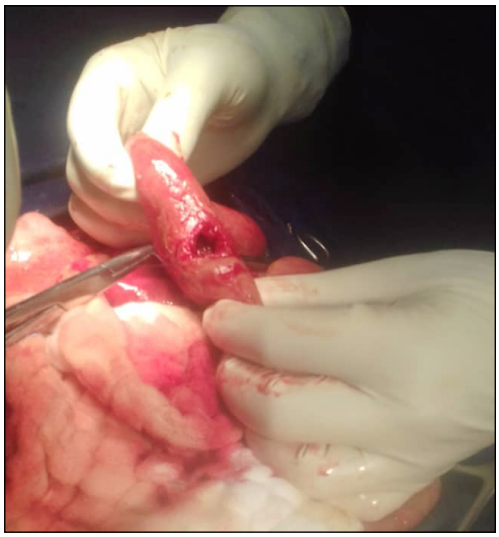

Figure. A typical typhoid ileal perforation

This is an intraoperative photograph of a 21-year-old man who presented with faecal peritonitis due to bowel perforation caused by typhoid. The perforation was typical in terms of its appearance and location on the antimesenteric border. He underwent emergency laparotomy and ileostomy construction. Ileostomy closure was performed on postoperative day 14 day. Postoperatively, the patient recovered well and was discharged with no complications..

of metabolic disturbances, skin excoriation, reduced quality of life, and psychosocial problems.[23] There is a paucity of data concerning the optimal timing of ileostomy closure following emergency surgery.[22]-[24]

To our knowledge, no published studies have investigated outcomes associated with early ileostomy closure in Zambia. We report our experience of managing 7 patients who underwent emergency operations with ileostomy construction after they presented in moribund condition with faecal peritonitis. For all of the patients reported herein, ileostomy closure was performed at Ndola Teaching Hospital within 14 days after the index surgery.

Patients, methods, and results

In this retrospective case series, we report data from the hospital files and operation notes of 7 patients who underwent ileostomy construction, followed by reversal within 14 days, between August 2017 and December 2019. All of these patients presented to the Emergency Department at Ndola Teaching Hospital in moribund condition, with fulminant peritonitis secondary to ileal perforation, and all of them required damage control surgery. For each patient, data were collected regarding demographics, date of initial presentation, details of the initial operation leading to ileostomy and ileostomy closure, stoma complications, specific perioperative investigations, duration of hospitalization, histology findings, and follow-up by outpatient clinic review up to 30 days after the ileostomy reversal.

Perioperative investigations included haemoglobin and serum albumin tests, which guided the administration of blood transfusions (targeting haemoglobin concentrations >10 mg/dL) and nutritional support (targeting serum albumin levels >30 g/L). No perioperative imaging was done to ascertain the patency of the distal ileal limb.

Table. Ileostomy-associated complications among 7 patients managed at Ndola Teaching Hospital, Zambia, between August 2017 and December 2019

Complication	n (%)
Wound infection	2 (29)
Skin excoriation	5 (71)
Renal dysfunction	6 (86)
Psychosocial	7 (100)

Among the 7 patients identified who underwent ileostomy formation and reversal within 14 days during the study period, 5 were male and 2 were female. Five patients were not formally employed and resided in rural areas, and 2 were urban residents with formal employment. Two patients were between 15 and 20 years of age, 3 were between 21 and 30 years of age, 2 were aged 31 to 40 years, and the majority were between 21 and 30 years old.

Two of the male patients were HIV-positive with CD4 counts above 200. The other 5 patients were HIV-negative. Otherwise, there were no major comorbidities among the 7 patients.

Regarding the indications for the index emergency operations during which ileostomies were constructed, 2 patients had typhoid perforations (Figure), and 5 patients had nonspecific ileal perforations.

All 7 patients had multiple ileal perforations, massive peritoneal contamination due to faecal peritonitis, bowel inflammation (enteritis), and oedema, requiring ileal resection and ileostomy. Blood cultures were not done for any of the patients, but 2 patients had samples drawn for Widal tests, which yielded positive results, and the typhoid perforation diagnoses were supported by typical histopathological findings.

All 7 patients underwent double-barrelled ileostomy procedures with mucous fistulas in the right iliac fossa, and ileostomy construction was of the sprouted type. The ileostomy reversals were done through the stoma wounds, and none of the patients required laparotomies for the stoma closure procedures.

The commonest complications were psychosocial disturbances and renal dysfunction (Table), and these were the indications for early ileostomy reversal.

Two patients had superficial wound infection after ileostomy construction, and they responded well to bedside debridement. Pus swabs yielded no growth.

All 7 patients underwent ileostomy reversal on postoperative day 14.

Following uneventful postoperative recovery periods, 6 of the patients were discharged 21 days after admission. One

was discharged on day 30 after admission after developing superficial wound infection subsequent to ileostomy closure. The pus swab for this patient grew *Pseudomonas aeruginosa*, which was sensitive to meropenem. The mean hospital stay among all patients was 22 days.

All 7 patients had unremarkable follow-up outpatient evaluations twice within 30 days after ileostomy closure.

Discussion

In low-income countries, ileostomies are mainly constructed in emergency situations wherein primary bowel anastomoses, in the context of massive peritoneal contamination and severely inflamed and oedematous bowels, carry a high risk of anastomotic failure, with associated morbidity rates up to 45% and a reported mortality rate of 2.2%.[1]-[3],[15],[16],[23] All 7 patients in our series had massive peritoneal contamination due to faecal peritonitis and were incapacitated or moribund, with a best ASA physical status score of IV. For each patient, damage control surgery was performed through a midline laparotomy, by resecting the ileal segment containing multiple perforations and then constructing a double-barrelled end ileostomy.[5],[10]-[13],[21],[27] Verma et al.[28] have reported that the majority of life-saving ileostomy-type constructions have been end ileostomies, but other studies have recommended loop ileostomies for patients with typhoid perforations.[29],[30] For each of the 7 patients in our series, the ileostomy was sprouted 1.5 cm above the skin surface for the proximal limb, and the mucous fistula of the distal limb was flush with the skin surface to minimize skin excoriation and irritative skin problems.[28]

The mean age among our patients was 32 years. Chalya et al.,[21] after a study investigating 104 patients who underwent surgery for typhoid intestinal perforations, reported that most such patients present late, are male, aged 11 to 20 years of age, from rural residences, and of low socioeconomic backgrounds. Late presentation of ileal peritonitis results in peritoneal contamination with faecal peritonitis, and surgical management involves ileostomy construction.[1]-[3],[13],[27],[29],[30]

Our 7 patients were offered early reversal because of medical and psychosocial considerations, and they all consented. The main medical indication was dehydration and electrolyte imbalance leading to renal dysfunction coupled with skin excoriation, resulting in poor quality of life, as has been reported elsewhere.[5],[6],[8],[9],[13],[21] The patients remained distressed by their ileostomies and were evidently unable to adapt to ileostomy-related challenges, with manifestations such as depression and inappropriate social interactions with episodes of aggression, withdrawal, loss of appetite, and lack of self-care. Counselling did not help, as reported in other studies.[4] This distress affected not only the patients but the surgeons as well. Sier et al.[4] noted that patients and surgeons both experience ileostomy-associated distress and look forward to early stoma reversal. Other ileostomy complications experienced by our patients were wound infection and skin excoriation, which made it difficult to firmly apply ileostomy bags to prevent further excoriation.[4] None of our patients experienced stoma prolapse, retraction, or parastomal hernia formation.

Although there is no firmly established protocol guiding the optimal timing of ileostomy closure, most surgeons prefer early closure as soon as the patient is able to provide informed consent and is medically fit to undergo the ileostomy reversal procedure. Some literature recommends ileostomy closure within 10 to 14 days, which avoids the high costs and long-term complications associated with prolonged ileostomy use.[4] Most patients report improvements in physical and social functioning as well as overall quality of life after ileostomy closure.[4]

For our patients, the ileostomy reversal procedures were performed on postoperative day 14 after the index procedures, through the ileostomy wound in the right iliac fossa. Avoidance of laparotomy led to early ambulation and early returns to physical activity. Our patients' postoperative recovery courses and follow-up reviews up to 30 days after discharge were uneventful, save for 1 minor case of perioperative surgical site infection.

Future prospective studies should be undertaken to identify and analyse the determinants of favourable and unfavourable outcomes associated with early and late ileostomy reversal in our setting.

Conclusions

Our series has suggested that early ileostomy reversal is a safe choice that avoids the catastrophic complications of delayed closure and offers improved quality of life for the patients. A large, controlled prospective study is required, however, to validate these findings.

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