

(CASE REPORT)



Early outcomes after open total colon resection for haemorrhagic pan-colonic diverticulosis: Report of a case and review of literature; Department of Surgery, Adult Hospital, University Teaching Hospitals, Lusaka, Zambia

Etienne BFK Odimba *, Sydney Shampile, Félix Michelo and Mabvutu Mwanza

Department of Surgery, Adult Hospital, University Teaching Hospitals, Lusaka, Zambia.

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Abstract

Total colon resection is usually performed to treat or prevent diseases that affect a large part of right and left colons and that could not be answerable to medications alone. Patients are then referrals from gastroenterologists, who had been treating them for a certain time. A part from cancer patients, who are sent quickly to surgeons upon diagnosis, other conditions include: complicated polyposis, inflammatory bowel disease (ulcerative colitis, Crohn disease) and Hirschsprung disease affecting the whole colon. Pan-colonic diverticulosis disease is rare in Sub-Saharan African settings; hence is also very rare an open total colectomy aiming to treat it.

A 80 year-old man was referred to our surgical unit from a gastro-entomologist for medically unanswerable pan colonic haemorrhagic diverticulosis. Furthermore, the patient has a well-known long standing hypertension with chronic heart ischemic lesions a type 2 diabetes Mellitus stabilized medically.

The report is aiming to share the perioperative features mainly the early outcomes postoperatively when reviewing relate literature.

The case served as a topic for a grand round interdepartmental topic at the University Teaching Hospitals, Lusaka and deserved contribution from the Internal Medicine Units where he had been hospitalised for anaemia in a cardiac unit. Then the patient was followed for bleeding colonic diverticulosis by the Gastro-enterology unit without success. He was finally referred to our Surgical Unit where one stage Open Total Colon Resection was indicated, performed and managed with the contribution of units of endoscopy, Intensive Care, Anesthesia, Cardiovascular and Biomecal laboratory as well as Medical Imaging and Nutrition support departments.

After managing type II unavoidable complications, the patient was discharged and was reviewed in out-patient in an excellent status of health with quasi normal defecation habits, not pale and well hydrated, of course continuing taking his comorbidity drugs.

Conclusion: One step pan-colectomy with site-end one layered extra-mucosal ileo-rectal anastomosis is a safe procedure in extensive colonic surgical disease of a stabilised patient.

Keywords: Total colectomy; Ileo-rectal anastomosis; Colonic Diverticulosis; Complications; Major Surgery; Perioperative Management

* Corresponding author: Etienne BFK Odimba
Department of Surgery, Adult Hospital, University Teaching Hospitals, Lusaka, Zambia.

1. Introduction

Total colon resection is usually performed to treat or prevent diseases that affect a large part of right and left colons and that could not be answerable to medications alone. Patients are then referrals from gastroenterologists who had been treating them for a certain time. A part from cancer patients, who are sent quickly to surgeons upon diagnosis made, other conditions include complicated polyposis, inflammatory bowel disease (ulcerative colitis, Crohn disease) and Hirschsprung disease affecting the whole colon. Pan-colonic diverticulosis disease is rare in Sub Saharan African settings; hence is also very rare an open total colectomy aiming to treat it. The change in dietary habits increasing the occurrence of constipation as in high income countries, may increase the appearance of diverticulosis in our settings. Thus the Colonic diverticular bleeding (CDB), a complication of diverticulosis may be the most common cause of acute lower gastrointestinal bleeding worldwide [1]. The population of people with CDB has been shown to be increasing worldwide [1].

Diverticulosis of the colon is the most frequent anatomical alteration diagnosed at colonoscopy [3]. It is by the presence of pockets which occur when the submucosa and mucosa herniate through the deficit in the muscle layer. Most the time it remains asymptomatic. It may be in 20% symptomatic with people exhibiting symptoms [4]. Diverticular disease refers to clinically significant or symptomatic diverticulosis [3]. The inflammation of colonic diverticulosis is a prevalent gastrointestinal disorder that is associated with significant morbidity and death care [5]. Risk factors include obesity, diet and physical inactivity [3, 5].

The anatomic distribution of diverticulosis in the colon varies according to geographic location worldwide [6]. In the West, acute left side diverticulosis is common whilst right sided diverticulosis is more common in non-western countries [7].

The common complication of colonic diverticulosis is to be infected or inflamed and become diverticulitis that may lead to abscess, inflammatory mass (pseudo-tumour), fistula formation, perforation of the diverticulum or to colon and the haemorrhage [8]. Risk factors for recurrence include having a C-reactive protein greater than 240mg/l, young age, a history of several episodes of acute diverticulitis, radiological signs of complicated first episode, family history of diverticulitis, higher comorbidity index, length of colon involved greater than 5cm. However, overall recurrence risk is 13% to 47% [9].

The pathogenesis of bleeding is rarely vascular erosion but most the time secondary to diffuse mucosal congested and the bleeding follows repeated infection and inflammation causing microcytic anaemia as opposed to upper GT bleeding leading to haematemesis. The occurrence of anaemia indicates advanced pseudo tumour chronic abscess which will need excision since unanswerable neither to antibiotics nor to electrocoagulation therapy. In chronic pan-colonic diverticulosis the bleeding may be massive from several sites and may need urgent blood transfusion and sometime emergency surgery.

2. Case Report

A known coronary artery disease (CAD) and colonic diverticulosis with hypertension (HTN) and diabetes (DM) patient presented to the University Teaching Hospital with intermittent dark stools, abdominal pain and constipation. He has a history of frequent admissions for haematochezia for the past 6 years with 4 episodes requiring blood transfusion due to excessive blood loss.

Systemic review revealed a New York heart association (NYHA) 1. He has 2 previous history of stent insertion 9 and 3 years ago respectively. Drug history includes clopidogrel, aspirin, atenolol, amlodipine, losartan, and isosorbide dinitrate and glyceryl trinitrate. Examinations findings were normal.

Colonoscopy revealed diverticular disease in sigmoid colon, descending and ascending colon. The anus, rectum, transverse colon and caecum were normal. Upper gastrointestinal endoscopy was normal. Electrocardiogram (ECG) showed sinus rhythm with right bundle branch block (RBBB), echo showed mild dilated left ventricle with mild systolic dysfunction, dilated ascending aorta, mild biatrial dilation and calcified aortic valve. Cardiac enzymes were within normal ranges with slight elevation of creatinine kinase. Chest x-ray showed homogenous opacities in the hilar region. Therefore, a diagnosis of sigmoid, ascending and descending colonic diverticulitis was made in a known DM, HTN and CAD patient with American Society of Anaesthesiologists (ASA) grading 3.

The indication of total colon resection was made due to diffuse colonic disease, to history of frequent periods of rectal bleeding periods and to associated cardiovascular comorbidity. However the patient needed a comprehensive preoperative care including blood transfusion, chest active and passive physiotherapy, nutritional support, colon preparation and prevision of post-operative intensive care.

One step total colon resection with side to end ileo-rectal anastomosis was decided preoperatively and confirmed intraoperatively. The total colectomy was done using a sub-umbilical transverse abdominal incision and anastomosis performed with single layer end-to-side ileo-rectal anastomosis. Intraoperative findings include diverticular on sigmoid, descending and ascending colon. However, small bowel and solid organs were normal. After abdominal incision closure, a four-finger manual dilatation for done. The blood loss during operation was less than 500mls. The operation lasted two hours.



A. Colon before resection



B. Colon after resection

Figure 1 Intra-op findings

Early outcomes were as follows. The patient was admitted to Intensive Care Unit post-operatively. He recovered from general anaesthesia the same day. Passing of flatus started from day 1 postoperative and the oral diet commenced on day2. Opening of bowel was observed day 5 as diarrhoeic faecal matters that become more solid by day 11 post-operatively He developed superficial surgical site infection with two days fever and subcutaneous fat abscess evacuated without anaesthesia, between days 5 and day 7 postoperatively. Oral diet was introduced from day2 as liquid, then semi-solid and finally solid with the support of nutritionist. Because of low oxygen saturation indicated by the oximeter and despite of normal breathing clinically, the nasal oxygen tube was kept longer after extubating. The patient got discharged on day 14 postoperatively. He was reviewed in the surgical outpatient department in excellent health status.

3. Discussion and literature review

This case required a multidisciplinary approach involving several units or services of the University Teaching Hospital: surgical of course, internal medicine, cardiovascular, anaesthesiologist and nutritionist.

Indeed as recommended by the American Ssociety of Colon and Rectal surgeons recommend a full workup of the patient upon presentation and this includes history, examination, complete blood count and urinalysis. However, clinical evaluation alone is not enough and radiographic investigations are needed to make a definitive diagnosis [9]. A thorough history and exam was done in our patient. Investigations done include endoscopy (lower and upper), complete blood count, chest X-ray, ECG, Echocardiogram, cardiac enzymes, liver and renal function tests, stool microscopy.

CT is considered the best imaging choice with a sensitivity and specificity of 94% and 99% respectively. CT not only aids in diagnosis but it also evaluates the extent and severity of the disease, guides the management plan for the treatment of abscesses and rules out other causes of abdominal pain [9]. CT was not done in our patient due to socioeconomic issues. It could have more helped in the management plan, showing how the disease has progressed

from last assessment of the patient. Barium study is still used in some centres however studies have linked it to perforations in this group [8]. Ultrasound can be used in cases where CT is contraindicated but it requires a highly skilled sonographer [7]. It has a sensitivity and specificity of 92% and 90% respectively. MRI can be used as an alternative to CT in order to limit radiation exposure [9]. However the colonoscopy is the preferred optimal initial diagnostic modality for identifying bleeding in patients with colonic diverticulitis. It is recommended at least once to rule out the possibility of other lesions [7]. It was used as the initial diagnostic modality in our case as the patient presented with melena.

The benefit of surgery had to outweigh the risk of disease as the patient had several serious co-morbidities. Treatment of patients with diverticulosis and diverticular disease generally involves the use of antibiotics and high fibre diet [4]. Dietary restriction and bowel rest are recommended but antibiotics have been reported to be unnecessary if there is no abscess or perforation however they are still used in clinical practice [7]. Antibiotics can be used in patients who are immune compromised [9].

Total colectomy was done in our patient as opposed to general medical treatment because of several periods of bleeding diffuse sites of the disease. Prophylactic colon resection is individualised to consider severity of diverticulitis, the patient's health, immune status and patient values.. Factors considered in our patient in order to ascertain the severity include the extensive diverticulitis which involved the sigmoid, ascending and descending colon, the clinical presentation of melena which suggested significant bleeding and the prior history of hematochezia which required blood transfusion. These presentations threatened the already compromised cardiovascular system of the patient. Factors such as presence of abscess, peritonitis and computed tomography (CT) findings such as pericolic fat stranding, wall thickening superior to 5mm are used to assess severity of diverticulitis [6]. The patient's Diabetes Mellitus and heart disease also compromise his immune status and health thus surgery had to be considered.

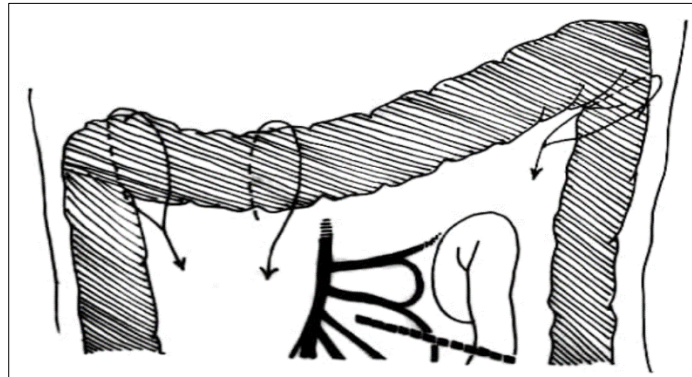


Figure 3 Manual colostomy reversal: colon mobilization from left to right

Emergency surgery is necessary for colonic diverticulitis patients who present with peritonitis as reported by one of us with his previous team [11]. Surgical intervention includes Hartmann's operation however no standard surgical procedure has been established [7]. The ways to reverse colostomy after wide recto-colic resections have been described by one of us with his previous team [12] depending on the extent of the resection.

Because of the association of chronic bleeding colonic multifocal diverticulosis and because of co-morbidity, the elective one step total colectomy was decided to clear the patient once from the septic colon and its intra-abdominal septic pockets. The advantages of one colectomy over the Hartmann operation has been explained by them being done the complications related to temporary colostomy. All these procedures always begin by a total colon mobilisation as shown on figure 3. We are used with one layered intestinal extra mucosal anastomosis. The same the ileo-rectal side-to end anastomosis is preferred to us as it gives a wide and tension free anastomosis, Localised acute diverticulitis (like sigmoiditis) with abscess may be treated with antibiotics with or without percutaneous drainage. If there is feculent or purulent contamination of peritoneal cavity surgery is recommended with primary resection and anastomosis as the procedure of choice [10]. David and al recently have done the colon resection update last year [13].

4. Conclusion

Most patients with diverticulosis remain asymptomatic. Symptomatic diverticular disease rarely requires surgery. However, surgery may be required even in non-complicated diverticulitis with co-morbidities. Colonic multifocal

bleeding diverticular disease is an advanced lesion regularly medically unanswerable condition that requires surgical treatment within a multi-disciplinary approach so that one step pan colectomy with side-to-end one layered extra-mucosal ileo-rectal anastomosis reveals to be a safe procedure that relieves the patient from colonic disease and alleviates possible co-morbidities.

Compliance with ethical standards

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Disclosure of conflict of interest

No one of the authors has conflict of interest directly or indirectly.

Statement of informed consent

The article has been written with written informed consent of the patient and Informed consent was obtained from all individual participants included in the study.”

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