



Case report

The utility of the Altemeier procedure in strangulated rectal procidentia secondary to rectal cancer. A case report

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ABSTRACT

Introduction and importance: Altemeier rectosigmoidectomy has been cited in the literature as a suitable approach for incarcerated rectal prolapse when a large segment of bowel is involved. However, the literature is devoid of cases that employed the technique as an oncological procedure for rectal carcinoma. For this reason, this case report heralds a new perspective on an old technique.

Case presentation: We describe the case of a male in his 6th decade who presented with stage four rectal cancer. Computed tomography imaging showed a rectal mass at the rectosigmoid junction with pelvic lymphadenopathy and a solitary hepatic lesion in segment two of the liver. While admitted to the hospital a 16 cm segment of bowel containing the mass prolapsed and became incarcerated, eventually becoming necrotic. A modification of the Altemeier procedure was performed along with a diverting ileostomy and hepatic wedge resection of the solitary metastases. Histological assessment of the surgical specimens confirmed that adequate resection margins were obtained with one of twenty-one lymph nodes positive for malignancy. He is currently being followed up in the outpatient oncology clinic and has commenced adjuvant chemotherapy.

Clinical discussion: Synchronous excision of rectal carcinoma with hepatic metastasectomy is a feasible surgery even in the emergency setting and can offer improved patient survival.

Conclusion: The combination of both an abdominal and perineal approach was suitable for this patient given his improved quality of life and negative pathological margins.

1. Introduction

Rectal prolapse is a progressive condition from rectal intussusception evolving into rectal procidentia [1]. On rare occasions, the prolapsed bowel can become strangulated presenting as a surgical emergency. We outline our approach to this unique clinical scenario for oncologic resection of a prolapsed incarcerated rectal tumour, excised by a modification of the Altemeier's technique and synchronous hepatic metastasectomy in a public tertiary care center. This work has been reported in line with the SCARE criteria [2].

2. Presentation of case

A 55-year-old male with no known chronic illnesses presented to the emergency department with a two-week history of weight loss, constipation, lethargy, and a two-day history of a bleeding mass protruding from the anus. His social history was significant for a 40-pack year

tobacco smoking history and daily alcohol consumption of approximately 30 units. There was no family history of cancer. Examination confirmed a 10 cm segment of prolapsed rectum with an associated mass which was successfully manually reduced. Blood investigations demonstrated severe hypochromic microcytic anaemia (6.5 g/dL) and leucocytosis (15.6 K/ μ L). A diagnostic colonoscopy was performed which showed a 5 cm ulcerated rectal mass at the rectosigmoid junction (Fig. 1). Three more adenomatous polyps were removed via snare. Given his symptomatic anaemia the patient was transfused two units of packed red blood cells and allowed home with haematinics, while awaiting histology results. On review three weeks later he reported poor appetite, fatigue, and fecal incontinence which began 2 days ago. The patient reported a decrease in his quality of life, and he was forced to wear pampers. His examination was unremarkable. Blood investigations showed an improvement of his anaemia (11.1 g/dL) and a preoperative CEA of 34.2 ng/mL. Histology results confirmed rectal adenocarcinoma. A staging CT scan showed clear lung fields, a 2.1 cm likely metastatic

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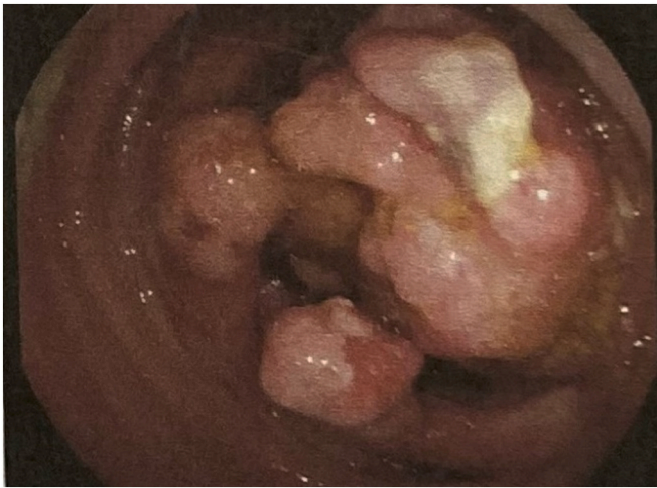


Fig. 1. Endoscopic view of rectal tumour.

lesion involving segment two of the liver, and multiple perilesional pelvic lymph nodes (Figs. 2 and 3). No mesenteric lymph nodes were seen.

The initial plan was to refer the patient to oncology for neoadjuvant therapy however the clinical presentation required urgent surgical intervention and he was admitted for an anterior resection. During admission, a 16 cm segment of the rectum was noted to be protruding from the anus which was oedematous and tender. This mass was irreducible despite our efforts at reduction. Unfortunately, there was a delay in access to the operating theatre because of limited operating theatre staff, and at the time of the operation the mass was necrotic. The lead surgeon initially was the general surgery registrar in year five of his training. Laparotomy was performed to facilitate the anterior resection however attempts at reduction were unsuccessful even under general anesthesia. Aid was sought by the fellowship-trained consultant general surgeon who completed the case. The approach was changed, and the devitalized bowel was approached from the perineal route. The rectal wall was grasped at the perineum using Allis clamps and incised circumferentially through the full thickness of the wall. This incision was made 2-3 mm from the mucocutaneous junction. Attention was then turned to the sigmoid colon which was transected via the abdomen for an adequate oncologic clearance in the form of high ligation of the

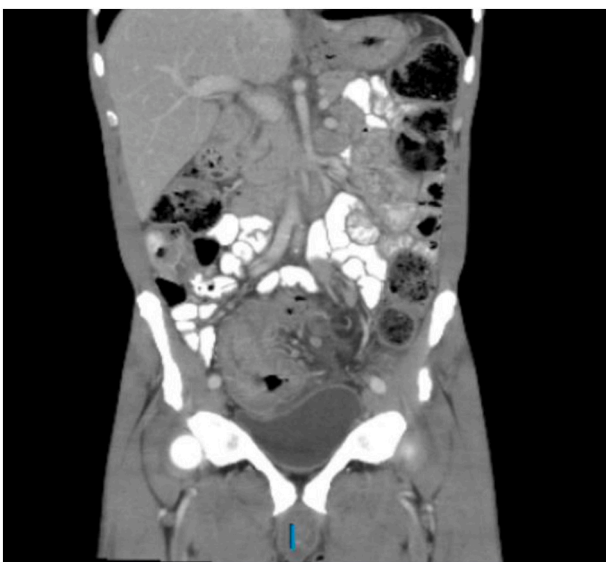


Fig. 2. CT scan of abdomen showing tumour at rectosigmoid junction.



Fig. 3. CT scan of abdomen demonstrating solitary hepatic metastases in segment two of the liver.

inferior mesenteric vessels with appropriate lymphadenectomy. A primary colorectal anastomosis was fashioned with interrupted sutures via the abdomen. A diverting loop ileostomy was created, and the surgery was completed by wedge resection of the solitary nodule to the left lobe of the liver with electrocautery. We were hesitant to perform levatorplasty given the patient's brief history of rectal prolapse. The post-operative period was complicated by atelectasis, but this quickly resolved and there was a return of bowel function by day three post-procedure. Before discharge, the patient was seen by the dietician and placed on an optimized diet regime and allowed home day four post-procedure.

The surgical specimen confirmed a 6 cm moderately differentiated rectal adenocarcinoma at the apex of the 16 cm segment of prolapsed bowel. The abdominally resected segment of colon was 19 cm and had a 1.2 cm lobulated mucosal polyp in its proximal aspect. Twenty-one (21) lymph nodes were harvested, one of which was positive for metastases. The longitudinal resection margins were free of tumour. The polyp noted in the surgical specimen was a tubular adenoma with mild epithelial dysplastic change. The liver segment resected contained a 2 cm subcapsular nodule which was histologically identical to the rectal mass. This patient was assigned a TNM score of T2 N1a M1a AJCC Stage 4A.

Since discharge, he has begun adjuvant chemotherapy with Xelox (capecitabine and oxaliplatin) and is doing well. The plan is to reverse the patient's ileostomy when he has completed chemotherapy.

3. Discussion

Rectal prolapse is defined as the telescoping of the rectal wall through the anus. It is an uncommon clinical presentation reported to have an annual incidence of 2.5 per 100,000 [3]. This process occurs along a spectrum initially occurring as intussusception which can progress until the entire wall of the rectum is encompassed [4]. This poses a threat to bowel viability if incarceration and strangulation ensue. This 56-year-old male with no known chronic illnesses did not fit the usual demographic for patients presenting with rectal prolapse. This condition tends to have a female predominance with median age usually in the 8th decade [3]. We suspect the rectal carcinoma was able to act as a lead point for intussusception and eventual incarceration.

Surgical management of rectal prolapse can be performed via an

abdominal or a perineal approach. The perineal method tends to be done in elderly, infirm individuals who cannot tolerate general anesthesia [5]. Delorme and Altemeier resection are two recognized perineal approaches for rectal prolapse. The technique selected usually depends on the length of the bowel involved. For rectal prolapse greater than 4 cm Altemeier approach is preferred whereas for prolapse with a short segment of bowel Delorme procedure can be performed [6]. A few case studies have described a similar clinical presentation, however, it has never been described in the case of rectal adenocarcinoma prolapsing from the anus, making this case unique [7–11]. Each of these studies performed an Altemeier rectosigmoidectomy for resection of the necrotic segment of bowel. Our combined abdominal and perineal approach created a unique opportunity to perform an oncologically sound colorectal resection and wedge resection of the solitary hepatic metastases to segment two of the liver.

The literature describes both the simultaneous and delayed approach to the management of synchronous colorectal liver metastases. One study derived that the two-year overall survival and disease-free survival were improved in the simultaneous cohort and both groups had comparable complication rates [12,13]. Admittedly the patients selected for simultaneous resection had less extensive liver disease similar to our case. Another area of controversy surrounding simultaneous resection is whether to perform the hepatic resection first. With this approach, the anaesthetic team can maintain central venous pressure less than 5 mmHg, which has been associated with less blood loss [14]. Given the strangulated segment of bowel at the perineum the colon was dealt with first. After completing the anastomosis our concern with lowering the central venous pressure was the theoretical risk of anastomotic failure by depriving the anastomosis of necessary blood supply for healing. Despite the absence of controlled central venous pressure, blood loss was 400mls which was well tolerated.

The decision to proceed with a wedge resection was ideal for this patient given the current evidence which shows that there is no difference in overall survival when wedge resection is compared to anatomical hepatic resections [15]. Given the emergent nature of the case an anatomical resection would have subjected our patient to a longer period of general anesthesia and its associated complications. In addition, if hepatic recurrence were to occur this patient would have greater hepatic reserves if reoperation was deemed necessary [15]. This scenario is plausible given more than half (56%) of the colorectal cancer patients with metastatic hepatic disease who undergo curative-intent surgery develop recurrence within two years [16].

Unfortunately, our patient did not have the opportunity to be assessed by our oncology colleagues before surgery which likely would have changed his perioperative care. For rectal cancer with a solitary hepatic metastasis and an uninvolved circumferential resection margin National Comprehensive Cancer Network recommends neoadjuvant chemotherapy and radiotherapy followed by restaging then surgery [17].

4. Conclusion

Given this difficult clinical scenario, the combined abdominal and perineal approach was suitable for this patient and provided improvement in his quality of life and potential for long-term survival. Despite the emergent nature of this case, he undoubtedly received optimal surgical care.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Dr. Courtenay Chase- original manuscript draft, review and editing.
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Declaration of competing interest

None.

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