CASE REPORT

Localised perforation of locally advanced transverse colon cancer with spontaneous colocutaneous fistula formation: a clinical challenge

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SUMMARY

Colon cancer can present with complications such as obstruction, perforation and bleeding. The clinical presentation has been recognised as an independent prognostic factor for morbidity and mortality.¹ We present a rare case of localised perforation of a locally advanced colon cancer arising from mid-transverse colon in an elderly woman in the absence of widely metastatic disease with eventual cutaneous involvement of the overlying skin by direct extension, resulting in formation of colocutaneous fistula. The management of such cases is complex as usually tailored to the situation encountered.² This case was a clinical challenge to choose between initial palliative resection and curative R0 resection following neoadjuvant chemotherapy.

BACKGROUND

This case was unique in term of its clinical presentation as well as its management. Complicated colon cancers present as a significant challenge. This case was a clinical challenge to choose between initial palliative resection and curative resection following neoadjuvant chemotherapy. We decided to manage with neoadjuvant chemotherapy in this patient to achieve curative resection. R0 resection was achieved; however, the effects of the chemotherapy on immune status and nutritional status of the patient placed her on high risk for nosocomial respiratory tract infection in the postoperative period, leading us to question the role of neoadjuvant chemotherapy.

CASE PRESENTATION

A 62-year-old hypertensive woman from poor socioeconomic background was diagnosed after colonoscopy with histopathology proven adenocarcinoma of transverse colon in the medical oncology department. She was being evaluated for chemotherapy and was referred to our surgical unit with chief complaints of abdominal pain, which was gradually progressive over the duration of a week and localised centrally along with anorexia and weight loss. It was not associated with fever or vomiting. There was no history of chronic non-steroidal anti-inflammatory drug use, jaundice or prior episodes of similar pain.

Her adenocarcinoma was diagnosed few weeks ago before the referral and was present as asymmetrical circumferential thickening of transverse

colon with infiltration of greater omentum and anterior abdominal wall without any distant metastasis on contrast-enhanced CT (CECT), making it cT4bN1M0. She had not received any treatment for the cancer. Her medical history was negative for diverticulosis, inflammatory bowel disease. There was no history of similar illness in the family.

On examination, her abdomen was slightly distended with tenderness in the epigastric region with erythema of 10 cm in diameter in the epigastric region. Her routine investigations—complete blood count, liver function test and kidney function test—were within normal limits with marginally raised total leucocyte count. An ultrasound was ordered and revealed a localised abscess of 2.5 cm anterior to the tumour in the mid-portion of transverse colon. She responded to broad spectrum antibiotics and anti-inflammatory drugs.

After the abscess was resolved, interdisciplinary decision with the medical oncology department was taken to place her on 5-fluorouracil, leucovorin and oxaliplatin (FOLFOX) regimen of neoadjuvant chemotherapy. After receiving three cycles of FOLFOX, she developed multiple pus discharging sinuses in the supraumbilical region on the anterior abdominal wall with one of the sinuses having faecal stained discharge. CECT showed presence of a colocutaneous fistula, communicating with the involved section of the transverse colon. She was placed on broad spectrum antibiotics and nutritional support. The patient's condition improved postantibiotics with resolution of the pus discharge and inflammation. Thereafter, decision to continue chemotherapy was taken after informed consent of the patient, with objective to achieve curative R0 resection, as infection had resolved and there were no signs of obstruction and it was a low-output colocutaneous fistula.

After completing the six cycles of FOLFOX regimen, colocutaneous fistula persisted with skin excoriation around the opening. She presented to the emergency department, few days earlier than the predecided date of admission, due to sudden epigastric pain and altered colour of the output, possibly due to necrosis and haemorrhage within the tumour. Emergency laparotomy was performed. After assessing the tumour and excluding regional metastasis in all other sites (liver, rest of the bowel and peritoneum), a decision to perform curative resection was undertaken. En bloc resection

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Figure 1 En bloc resection of transverse colon, including the tumour in the mid-portion with associated mesocolon and colocutaneous fistula (forceps inside the fistula) and anterior abdominal flap.

of transverse colon, including the tumour of 6 cm in diameter in the mid-portion, was carried out along with the mesocolon and colocutaneous fistula, and the involved anterior abdominal wall around it, according to the standard oncological principles (figure 1). Resection without anastomosis was performed with proximal colon-brought out as colostomy and distal colonic-stump closed. Peritoneal lavage was done and abdomen was closed using local advancement of abdominal wall (figure 2), with placement of left pelvic drain.

Resected specimen showed a grey-white circumferential proliferative tumour in the mid-portion with areas of necrosis. It was 5 cm away from the proximal end and 2.5 cm away from the distal end and was reaching the serosa and pericolic fat. Up to 15 lymph nodes were harvested from the mesocolon. Histopathology of the resected specimen (figure 3) revealed presence of well-differentiated tumour cells extending into the wall of the fistula and surrounding skin and metastasis in one regional lymph node, classifying it as pT4bN1M0. All resected margins (proximal/distal/radial) of the specimen were free of adenocarcinoma, making it a R0 resection.

Postoperatively, she was given intravenous antibiotics, intravenous analgesics along with nutritional therapy. Colostomy was functional on postoperative day (POD) 3. The patient seemed to be recovering well clinically. She was ambulatory and receiving adequate per-oral intake and nutritional supplementation. Unfortunately, around POD 7, she developed fever and signs of respiratory tract infection. Her abdomen was soft and non-tender. Chest X-ray showed bilateral infiltrates. She was put on intravenous broad spectrum antibiotics as well as parenteral nutritional support. She progressed to develop sepsis, as evidenced by her rising white cell counts and persistent severe hypoalbuminaemia.

Figure 2 Abdominal skin closed using local advancement after resection of the skin flap around the colocutaneous fistula.

Figure 3 Well-differentiated adenocarcinoma on histopathological assessment of the resected specimen.

Due to worsening respiratory signs, she was intubated. Later on, she developed metabolic encephalopathy due to electrolyte imbalance. On POD 12, she developed cardiorespiratory arrest and despite best efforts, she could not be resuscitated.

DISCUSSION

Colorectal cancer (CRC) is a formidable health problem worldwide. It is the third most common cancer in men (663 000 cases, 10.0% of all cancer cases) and the second most common in women (571 000 cases, 9.4% of all cancer cases).³ Incidence of adenocarcinoma in transverse colon is relatively low. Perforation is the second most common reason for urgent or emergent surgery associated with colorectal carcinoma with incidence of 2.6%–12%. Perforation most commonly occurs at the site of the primary tumour due to necrotic and friable tissue. Depending on the location, it may progress to either free or contained perforation. Contained perforation presents as localised tenderness and is more common than free perforation in descending and sigmoid colon lesions.¹ In the present case, there was a localised perforation in form of a small abscess with inflammation in the overlying skin. The role of percutaneous drainage of a contained perforation from a carcinoma differs that from benign diseases. In presence of widely metastatic disease, treatment with antibiotics and percutaneous drainage avoids the morbidity of an operation. In absence of widely metastatic disease, percutaneous drainage may result in seeding tumour cells along the drainage tract rendering the disease metastatic.¹ Since our patient did not have widely metastatic disease, percutaneous drainage was not performed and broad spectrum antibiotics were given and clinical response was seen.

There are no specific guidelines to manage complicated CRC cases. We decided to opt for multidisciplinary approach involving neoadjuvant chemotherapy (FOLFOX regimen in our case) followed by curative resection with aim to achieve histologically negative margins—R0 resection. There was eventual formation of colocutaneous fistula. This form of cutaneous involvement could be explained by direct extension of the tumour into the skin from affected transverse colon, which is in anatomical proximity. Enterocutaneous fistula is most commonly seen after anastomotic breakdown, Crohn's disease or diverticular abscess. Development of fistula in a patient with cancer indicates advanced stage of the disease and increases morbidity and mortality.⁴ The literature of such locally advanced colon carcinoma with spontaneous fistula formation with associated inflammatory skin changes is limited to a few case

reports. The case reported by Nadia Tenreiro *et al*⁵ is closest to our case with origin from transverse colon; however, there was no pre-existing defect in fascia in our case. Presence of colocutaneous fistula can complicate the clinical course. Although the output from colocutaneous fistula is relatively low, it does affect the quality of life of patients by causing dermatitis and excoriation in the skin surrounding the opening. Additionally, in our patient, postchemotherapy necrosis, which rendered the tissue friable, led to haemorrhage in the tumour causing sudden epigastric pain and alteration in the colour of the output of the fistula presenting as oncological emergency, necessitating surgery.

Under ideal circumstances, elective surgery is expected to yield better outcomes. However, in this case, we proceeded with emergency laparotomy to manage the oncological emergency. In emergency settings, one-stage surgery (primary resection with anastomosis with or without proximal diversion) is

the best choice, when possible, in selected patients; two-stage surgery (resection without anastomosis/Hartmann's procedure) is indicated in case of peritonitis, in patients haemodynamically unstable and in case of malnourished patients (hypoalbuminaemia), due to high risk of anastomotic leakage.⁶ For lesions that are in the mid-portion of transverse colon, a transverse colectomy can be performed.² We performed resection without anastomosis in a low-resource setting after evaluating patient's comorbidities and American Society of Anesthesiologists status. Complications after Hartmann's procedure are determined by the comorbidities and are associated with age, diabetes mellitus, arteriosclerosis, obesity, smoking, chemotherapy and chronic obstructive pulmonary disease.⁷ An albumin level of <3.5 is a significant predictor of postoperative complications,⁷ which was present in our patient. Old age along with postchemotherapy immunosuppression placed our patient at high risk of nosocomial respiratory infection resulting in sepsis and death of the patient.

The present case makes us question the role of neoadjuvant chemotherapy in complicated colon cancers. Alternatively, we could have resected the tumour after initial resolution of the abscess but given the locally advanced state on CECT, it would have been difficult to achieve histologically clear margins, leading to larger resection of colon as well as the anterior abdominal wall, adding to the morbidity of the patient. Neoadjuvant chemotherapy, on the other hand, provides an opportunity for curative R0 resection in such cancers with locoregional extension by reducing the size and decreasing micrometastasis. Thus, this case was a clinical challenge to choose between initial palliative resection and curative resection following neoadjuvant chemotherapy.

In conclusion, transverse colon cancers with locoregional extension can present with localised perforation and eventual cutaneous involvement in form of cellulitis/abscess/colocutaneous fistula by direct extension and carry a worse prognosis. There are no specific guidelines for managing such cases, and thus we need more cases to substantiate the management of complicated colon cancers with locoregional extension. However, preoperative aim should be to achieve R0 resection, if possible, as well as the resection of the involved section of the skin. Postoperative period requires vigilance as the complication rates are high due to comorbidities.

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Patient's perspective

The various options, including no active treatment, were explained and discussed with the patient in detail. She understood the risks and benefits of each option and wanted to include her children in the discussion as well. She made a decision to undergo treatment with her son and daughter who accompanied her. She wanted to take a chance to fight as she felt she had their support. As she developed the fistula, the option to discontinue chemotherapy along with palliative resection of the fistula was discussed too. But she wanted to continue with the chemo followed by surgery. However, it was traumatic for her when she presented to surgical emergency, few days earlier than her predecided date of admission, due to her fistula issues. After the surgery, the patient seemed satisfied and she thanked us because the fistula was troublesome and she was happy with the histopathology results. She was doing well. However, after 12 days in postoperative care, she passed away due to nosocomial respiratory infection and respiratory failure. It was indeed a great loss for her family when she passed away. On reflecting on her clinical course, we feel the postoperative care could have been better. She was immunocompromised and stress of the surgery placed her at high risk of infection. She could have recovered better in isolated room/ward setting. However, due to limited resources and beds at our government hospital, we were unable to provide this.

Learning points

- Transverse colon cancers with locoregional extension can present with localised perforation and eventual cutaneous involvement in form of cellulitis/abscess/colocutaneous fistula by direct extension and carry a worse prognosis.
- Management of such cases is difficult and requires intensive review of patient's comorbidities as well as alternative methods of treatment.
- Preoperative aim should be to achieve R0 resection, if possible, as well as the resection of the involved section of the skin.
- Postoperative period requires vigilance as the complication rates are high due to comorbidities.

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