

Metachronous Two Colonic Cancer Arising in Ascending and Sigmoid Colon without Performing Colostomy: A Case Report

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Abstract

Background: Metachronous colorectal cancer (CRC) is defined as the development of a second primary CRC at least 6 months after the treatment of the first CRC. The incidence of metachronous CRC ranges from 0.6% to 3.9%, and the risk factors include age, synchronous lesions, location and stage of the first CRC, and family history. We report a rare case of metachronous two colonic cancer arising in ascending and sigmoid colon, 13 years apart, without performing colostomy (stoma).

Keywords: Metachronous colorectal cancer, family history, treatment.

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INTRODUCTION

Colorectal cancer (CRC) is the third most common cancer and the second leading cause of cancer-related death worldwide [1]. Most CRCs develop from adenomatous polyps through the adenoma-carcinoma sequence [2]. The risk of developing CRC is influenced by both genetic and environmental factors, such as family history, lifestyle, diet, and inflammatory bowel disease [3].

Metachronous CRC is defined as the occurrence of a second primary CRC at least 6 months after the treatment of the first CRC [4]. The incidence of metachronous CRC ranges from 0.6% to 3.9%, depending on the duration of follow-up and the quality of surveillance [5]. Metachronous CRC poses a significant clinical challenge, as it may require additional surgery, chemotherapy, and surveillance, and may affect the prognosis and quality of life of the patients. Several risk factors have been identified for metachronous CRC, such as age, synchronous lesions, location and stage of the first CRC, and family history.

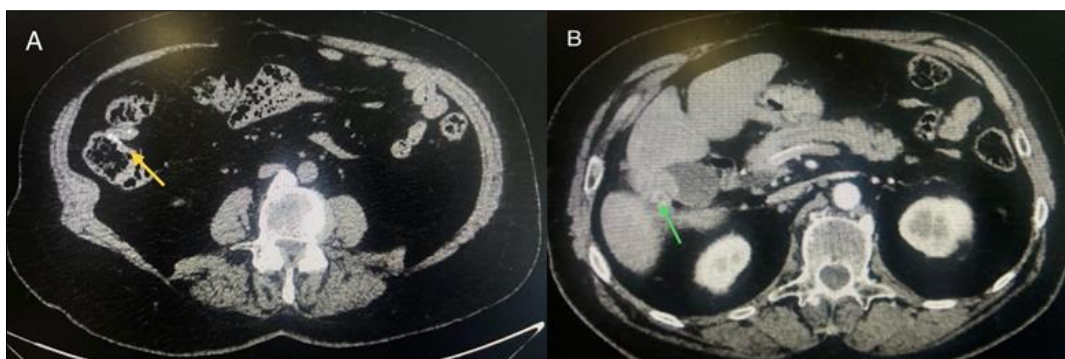
However, the evidence is inconsistent and limited by the heterogeneity of the studies, the potential confounding, and the risk of bias. Moreover, most studies have focused on metachronous CRC as the

outcome, while few have investigated the risk factors for metachronous advanced neoplasia, which is defined as adenoma with high-grade dysplasia, villous component, or size ≥ 10 mm. Metachronous advanced neoplasia is also an important outcome, as it represents a precursor lesion for CRC and a marker of increased CRC risk.

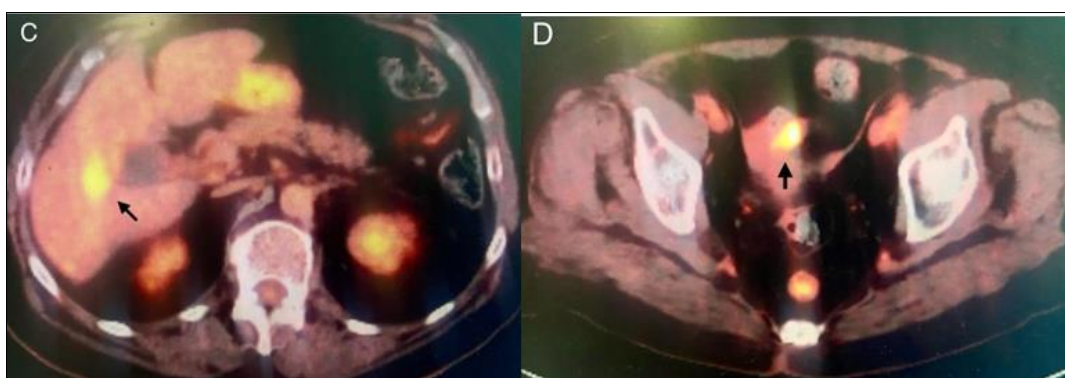
In this case of metachronous two colonic cancer arising in ascending and sigmoid colon with colostomy avoidance, we describe the clinical features, the diagnostic procedures, the treatment modalities, and the follow-up of the patient.

CASE PRESENTATION

A 73-year-old female patient with a history of right hemicolectomy in 2010 followed by adjuvant chemotherapy for ascending colon cancer (picture A; site of previous anastomosis) presented with sigmoid tumor and gallbladder fundus mass in 2023. Colonoscopy revealed a large, ulcerated mass lesion in the recto-sigmoid colon, 20 cm from the anal verge, and biopsy confirmed invasive moderately differentiated colonic adenocarcinoma. Triphasic liver CT showed an enhanced suspicious spiculated soft tissue mass lesion involving the gallbladder fundus associated with mild subhepatic fat stranding, (Picture B).



The positron emission tomography scan showed hypermetabolic malignant colonic wall thickening in the sigmoid colon with small regional mesenteric lymph nodes, and a hypermetabolic subhepatic lesion mostly related to the gallbladder, (picture C, D)



The case was discussed with medical oncology, and the plan was for sigmoid colectomy, with descending colorectal anastomosis without performing permanent colostomy besides wedge resection of the gallbladder, (picture E)



The postoperative histopathology report showed invasive moderately differentiated colonic adenocarcinoma in the sigmoid colon (pT3pN0) and extensive active chronic inflammation in the liver tissue with acute and chronic cholecystitis with focal area of xanthogranulomas inflammation in the gallbladder, with no evidence of malignancy. The patient received adjuvant chemotherapy with 5-fluorouracil and leucovorin and is currently under regular follow-up

DISCUSSION

We report a rare case of metachronous two colonic cancer in ascending and sigmoid colon, 13 years apart, without colostomy. The patient had ascending colon cancer in 2010, and sigmoid colon cancer (pT3pN0) and gallbladder inflammation in 2023.

The patient was treated with surgery and adjuvant chemotherapy for both cancers. We compared

our case with other published case reports or articles on the treatment modalities of metachronous colon cancers, especially those by Zhang *et al.*, [5].

Zhang *et al.*, [5], conducted a systematic review and meta-analysis of 19 studies to identify the risk factors for metachronous colorectal cancer (CRC) following a primary CRC. They found that the risks of metachronous CRC or advanced neoplasia were higher if

the first CRC was diagnosed in the presence of a synchronous advanced lesion, if the first CRC was distal (compared with proximal), and if the patient was older. They also found that there was no evidence that any lifestyle risk factors studied were associated with the risk of metachronous CRC or advanced neoplasia. They recommended that patients with these risk factors should undergo intensive surveillance and preventive strategies to reduce the incidence and mortality of metachronous CRC. They also discussed the surgical approach for metachronous CRC and suggested that extensive colectomy should be preferred for synchronous CRC, while iterative colectomy can be performed safely for metachronous CRC. They also suggested that adjuvant chemotherapy may improve the survival of patients with metachronous CRC, especially those with high-risk features such as lymph node involvement, vascular invasion, or perineural invasion.

In this case, the patient had several possible risk factors for metachronous CRC, such as older age (73 years), synchronous lesion (gallbladder mass), and distal location of the first CRC (ascending colon). These factors were associated with higher risk of metachronous CRC or advanced neoplasia in the meta-analysis by Zhang *et al.*, [5]. Therefore, the patient should have received intensive surveillance and preventive strategies after the first CRC. However, the patient developed metachronous CRC in the sigmoid colon, 13 years after the first CRC. The patient underwent sigmoid colectomy and wedge resection of the gallbladder without performing colostomy for metachronous CRC and received adjuvant chemotherapy with 5-fluorouracil and leucovorin. This is consistent with the recommendations of Zhang *et al.*, [5], for the surgical approach and the adjuvant chemotherapy for metachronous CRC.

We also searched for other articles similar to Zhang *et al.*, [5], on the treatment modalities of metachronous colon cancers and found two articles by Lee *et al.*, [6], and Kim *et al.*, [7]. Lee *et al.*, [6], reported a case of metachronous colon cancer in the transverse colon and the sigmoid colon, 10 years apart, treated with laparoscopic surgery. They performed laparoscopic transverse colectomy for the first colon cancer, and laparoscopic sigmoidectomy for the second colon cancer. They claimed that laparoscopic surgery is feasible and safe for metachronous colon cancer, and has advantages such as less pain, faster recovery, and better cosmesis. Kim *et al.*, [7], described a case of metachronous colon cancer in the ascending colon and the sigmoid colon, 8 years apart, treated with robotic surgery.

They performed robotic right hemicolectomy for the first colon cancer, and robotic sigmoidectomy for the second colon cancer. They argued that robotic

surgery is a promising technique for metachronous colon cancer, as it offers better visualization, precision, and ergonomics than laparoscopic surgery. These articles suggest that minimally invasive surgery, such as laparoscopic or robotic surgery, may be a viable option for metachronous colon cancer, and may have better outcomes than open surgery. However, the choice of surgical plan may also depend on the surgeon's experience, the patient's preference, and the tumor characteristics.

In conclusion, this discussion compares the different treatment modalities for metachronous colon cancer. It shows that our case was in line with the current evidence and recommendations by Zhang *et al.*, [5], and that there are other options for surgery, such as laparoscopic or robotic surgery, as reported by Lee *et al.*, [6], and Kim *et al.*, [7].

CONCLUSION

This case illustrates the occurrence of metachronous two colonic cancer arising in ascending and sigmoid adenocarcinoma, which is a rare and challenging scenario. The avoidance of colostomy in this case was possible due to the adequate bowel function and the absence of anastomotic complications. The management of such cases requires a multidisciplinary approach, including surgery, chemotherapy, and surveillance. The risk factors and molecular mechanisms of metachronous CRC need further investigation.

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