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Case Report

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 reported risk of metachronous CRC within 5 years after surgical resection of the colon and rectum ranges from 2 to 12%, and the risk factors include age, synchronous lesions, location and stage of the first CRC, and family history. Case presentation: We report a rare case of metachronous two colonic cancers arising in ascending and sigmoid colon, A 73-year-old female patient with a history of right hemicolectomy in 2010, developed a metachronous sigmoid cancer in 2023, treated with sigmoidectomy without performing total colectomy (only right hemicolectomy and sigmoidectomy in 13 years apart), followed by adjuvant chemotherapy and close follow-up. ***Conclusion:*** This case illustrates the occurrence of metachronous two colonic cancer arising in ascending and sigmoid adenocarcinoma, which is a rare and challenging scenario by avoiding colostomy and total colectomy.

Keywords: Metachronous colorectal cancer, family history, treatment.

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INTRODUCTION

Colorectal cancer (CRC) is the third most diagnosed cancer worldwide [1]. Most CRCs develop through the adenoma pathway [2]. Metachronous CRC is defined as a newly diagnosed primary CRC that occurs at least 6 months after the initial CRC [3]. Studies have reported a risk of metachronous CRC within 5 years after surgical resection of the colon and rectum ranging from 2 to 12% [4, 5]. In articles that examined metachronous CRC combined with advanced adenoma, Zhang *et al.*, defined metachronous advanced neoplasia as the diagnosis of specific conditions that occurred at least 6 months after the first CRC. These conditions include tubular adenoma with a diameter of ≥10 mm, adenoma with villous or tubulovillous histology, adenoma with high-grade dysplasia, or primary CRC [6, 7]. Individuals with a first CRC in the distal colon, as opposed to the proximal colon, were found to be at a higher risk of metachronous advanced neoplasia but a lower risk of metachronous CRC [6].

Approximately 50% of metachronous CRC cases occur within 2 years after the primary CRC, thus emphasizing the critical importance of the first colonoscopy after CRC treatment for patients. Currently, surveillance colonoscopy is recommended following treatment of the first CRC to detect metachronous CRC and metachronous advanced adenoma. However, the existing surveillance guidelines are the same for all CRC pateints due to a lack of comprehensive understanding of the risk factors for metachronous CRC and advanced adenoma [8, 9].

CASE REPORT

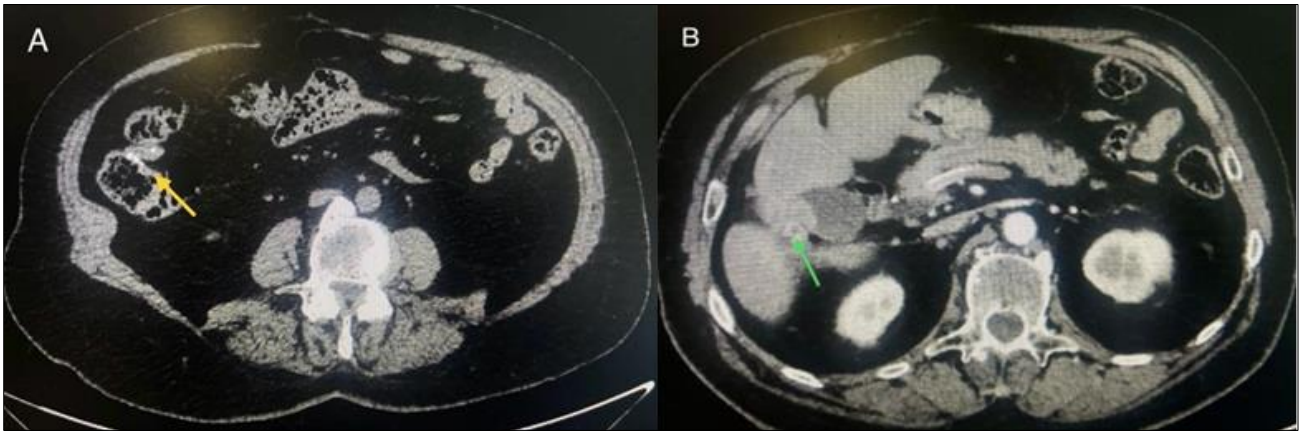
This case report highlights the rare and challenging occurrence of two metachronous colonic cancers in a 73-year-old woman patient who underwent two surgeries and adjuvant chemotherapy, resulting in a positive outcome. Previously, in 2010, the patient had undergone a right hemicolectomy due to moderately invasive adenocarcinoma in the ascending colon, which infiltrated the full thickness of the colonic wall into the pericolonic fat, with two out of eleven lymph nodes excised showing tumor metastasis with no lymphovascular invasion, (picture A shows Computed Tomography (CT) with ileo-transverse colon anastomosis). Thirteen years later, in March 2023, the patient was presented with a sigmoid tumor and a mass

in the gallbladder fundus. Colonoscopy revealed a large, ulcerated mass lesion in the recto-sigmoid colon, 25 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 (PET) 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 and D).

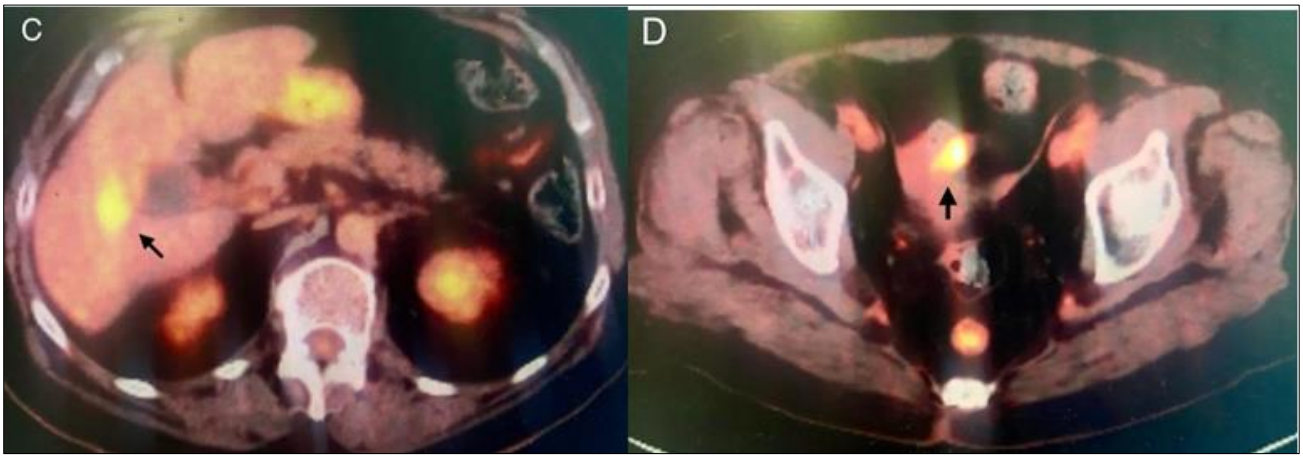
The multidisciplinary team (MDT) discussed the case and debated whether to proceed with a total colectomy or sigmoidectomy. The patient underwent preoperative preparation and optimization with high protein ENSURE nutrition intake for two weeks. During the surgery, no ascitic fluid or peritoneal deposits were found.

The splenic flexure was mobilized, and an oncological resection of the sigmoid colon and descending colo-rectal anastomosis were performed (picture E) without creating a colostomy, protective ileostomy, or performing total colectomy. Additionally, a wedge resection of the gallbladder was carried out.

The patient received postoperative care for one week and was then discharged. The postoperative histopathology report showed invasive moderately differentiated colonic adenocarcinoma in the sigmoid colon (pT3pN0) with lymphovascular invasion. The margins for invasive carcinoma were negative, and all 17 recovered lymph nodes were negative for malignancy, 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 got adjuvant chemotherapy with 5-fluorouracil and leucovorin and is currently undergoing regular follow-up in the outpatient clinic for over seven months.



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 colo-rectal anastomosis without performing permanent colostomy besides wedge resection of the gallbladder, (picture E)

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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

Dealing with metachronous colorectal cancer is challenging. The optimal surgical approach depends on various factors, including tumor location, size, and stage, the patient's overall health, and previous surgeries. In this case, the multidisciplinary team decision was made to perform a sigmoidectomy instead of a total colectomy due to the higher risks of morbidity and mortality associated with the latter option, while still preserving the function of the remaining colon (distal transverse and descending colon) to avoid potential complications such as dehydration, diarrhea, and electrolyte imbalance commonly seen with colon resection or stoma. It emphasizes the significance of surveillance, multidisciplinary management, surgical decision-making, nutritional support, and adjuvant therapy in such cases.

We reviewed the literature of various studies and case reports published in the context of metachronous colorectal adenocarcinoma. The aim was to discuss the clinical features, diagnostic techniques, treatment choices, and patient surveillance related to this condition. The research conducted by Zhang *et al*., [6], involved an extensive analysis of 22 studies. Of these, 13 studies investigated risk factors for metachronous CRC and 9 for advanced neoplasia. The results indicated that if the initial CRC diagnosis was accompanied by a synchronous advanced lesion, the risk of metachronous CRC or advanced neoplasia increased. Furthermore, the location of the initial CRC played a role, with distal CRCs associated with a lower risk of metachronous CRC but a higher risk of advanced neoplasia. Age was also a significant factor, with the risk of metachronous advanced neoplasia increasing as patients aged. The findings of Benfatto *et al*., [10], case report of meta-metachronous CRCs emphasized the limitations of colonoscopy in detecting minute lesions during the adenoma phase. This confirms the importance of regular check-ups or even preventative subtotal colectomy.

Dimitrios *et al*., [11], study also highlighted non-radical initial resection and inadequate follow-up may contribute to metachronous carcinomas. Extended radical colectomies in young patients and those with adenomatous polyps reduce the incidence of metachronous carcinoma, they also highlight the role of genetic alterations and microsatellite instability in tumorigenesis, the importance of postoperative surveillance and prevention guidelines.

In J. Park *et al*., [12], study identified younger age and the presence of synchronous polyps or cancer as risk factors for metachronous CRC. The study also revealed that metachronous cancer is more likely to be situated in the right colon and diagnosed at an early stage. O Fajobi *et al*., [13], supported total colectomy and ileorectal anastomosis in patients with hereditary non-polyposis colorectal cancer (HNPCC). The Dukes stage and histological differentiation of metachronous colorectal cancers are similar to single tumors, however, some metachronous cancers may exhibit more aggressive behavior than primary lesion.

Harindra *et al*., [14], study followed a large cohort of participants and found that the presence of synchronous cancer and the location of the initial CRC in the proximal colon cancer were significant risk factors. Alfred *et al*., [15], study supported this finding, noting that metachronous carcinomas can manifest between 7 and 246 months (about 20 and a half years) after surgery. According to J. Cerdan *et al*., [16], research, metachronous lesions can be detected up to seven years after the primary cancer, with the majority of these cancers emerging in the rectosigmoid region.

Pramateftakis *et al*., [17], observed that the time interval between the onset of primary and metachronous cancer varied widely and that male patients had the highest incidence of metachronous cancer.

Similarly, Lin *et al*., [18], study found that male patients had a higher likelihood of developing metachronous CRCs especially within 3 years. More severe staging is significant in the diagnostic interval between 2 and 3 years. Metachronous colorectal cancer located at the right colon is more common after a diagnostic interval of 5 years.

Finaly, The Australian guidelines, which were published by Cancer Council Australia and recognized by the National Health and Medical Research Council, propose that individuals undergo a colonoscopy one year following curative primary resection. Subsequently, the recommendation is to undergo additional colonoscopies every five years, provided that the previous colonoscopy yielded no abnormalities [19].

Taken together, these studies emphasize the significance of regular monitoring, early detection, and a thorough understanding of risk factors in managing metachronous carcinoma. Further research is needed to develop effective prevention and treatment strategies. The findings of these studies can be invaluable in informing clinical practice and guiding the management of metachronous carcinoma. It is a challenging field, but each study brings us closer to a deeper understanding and more effective management of this disease.

CONCLUSION

Surgeons must carefully weigh the benefits and risks of different surgical approaches, incorporating a multidisciplinary approach that is individualized for each case to optimize patient outcomes and minimize morbidity and mortality, considering several factors, especially the location of the two tumors, whether they are distant (ascending and rectosigmoid colon as in our case) or closer together.

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