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32 Years after a Low Rectal Cancer: A Rare Case of Metachronous Tumor in the Lowered Anastomosed Colon

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Abstract **Case Report**

***Introduction*:** Several factors determine the risk of developing metachronous colorectal cancer after primary cancer. Implying rigorous postoperative surveillance to detect a possible tumor early and propose curative treatment. Advances in the management of colorectal cancer have significantly reduced the risk of late recurrence and metachronous colorectal cancer. Prolonged surveillance beyond recommendations, with its constraints and healthcare costs, should be reserved for patients with risk factors. ***Case Report*:** In this article, we report the case of a patient who presented with late metachronous lowered colon cancer 32 years after the first rectal cancer. ***Discussion*:** The management of metachronous colorectal cancers is sometimes difficult in connection with re-operation in a scarred abdomen especially if there is a notion of previous irradiation; techniques currently under evaluation for intraoperative verification of colonic vascularization or lymph node extension could find their interest in the management of metachronous colorectal cancers in order to preserve the vascularization of the remaining colon and limit lymph node curage. ***Conclusion*:** The occurrence of recurrence and late metachronous colorectal cancer does not justify prolonged surveillance beyond recommendations in the absence of risk factors; and the management of metachronous colorectal cancer must take into account the operative difficulties and the need to preserve the vascularization of the remaining colon

Keywords: Metachronous Colorectal Cancer, Lowered Colon, Surgery Challenges, Vascularization.

1. INTRODUCTION

Colorectal cancer (CRC) is the third most commonly diagnosed cancer and the second leading cause of cancer-related mortality globally [1]. Mortality associated with CRC is primarily due to disease recurrence [1]. Advances in treatment strategies have significantly reduced the risk of late recurrence and metachronous CRC between 5 to 10 years following curative surgery for non-metastatic CRC [1]. This timeframe extends beyond the currently recommended surveillance period. Prolonged surveillance, while potentially beneficial, would substantially increase healthcare costs and should be considered only in the presence of risk factors for late recurrence. It is essential to also account for the potential emergence of late metachronous cancers and secondary primary malignancies [2].

Metachronous colorectal cancer (MCRC) is defined as the occurrence of a new colorectal cancer at least six months after the curative surgery of the primary tumor [3]. The prevalence of MCRC varies across studies, ranging from 0.6% to 9%, largely depending on the duration of follow-up, with a cumulative incidence estimated at approximately 0.3% to 0.35% annually [4]. The risk of developing MCRC is influenced by a range of individual and environmental factors, which in turn has significant implications for the frequency and duration of endoscopic surveillance of the residual colon [1].

Although late recurrences are uncommon in patients who remain cancer-free after five years, MCRC may develop several years after the initial cancer resection, with intervals reported in the literature up to 29 years [4, 5]. The mean interval between primary cancer and the onset of MCRC is approximately 4.1 years [6].

Here, we present a rare case of a patient who developed metachronous cancer 32 years after undergoing rectal resection for rectal cancer. Uniquely, the metachronous tumor arose in the region of the colon

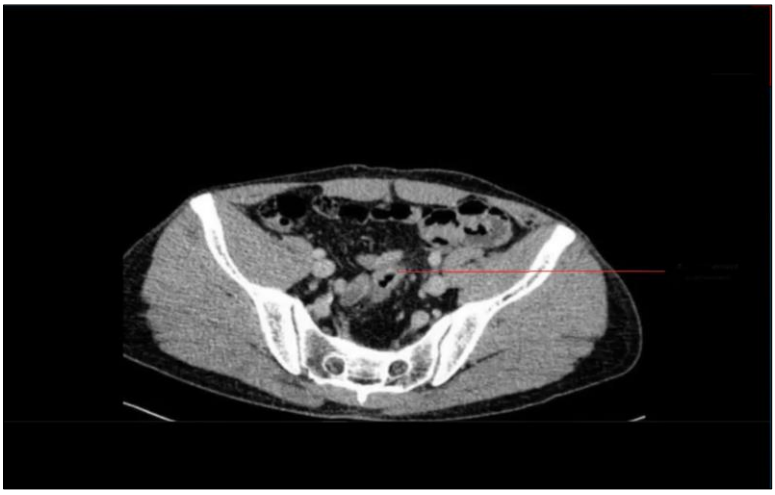
used for coloanal anastomosis, presenting a significant surgical management challenge.

2. PRESENTATION OF CASE

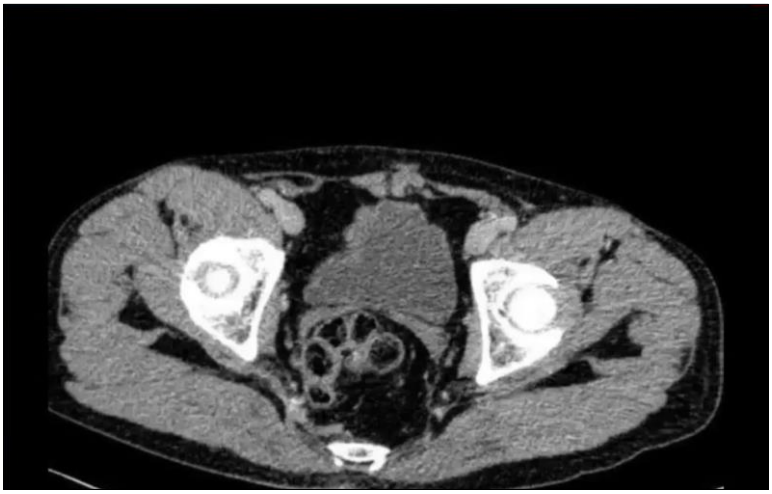
The patient was a 57-year-old chronic smoker who underwent surgery in 1991, at the age of 24, for a carcinoma of the lower rectum. The procedure involved an anterior resection of the rectum with coloanal anastomosis and protective ileostomy performed via laparotomy, followed by stoma closure six months later. Pathological examination of the resected specimen revealed a well-differentiated adenocarcinoma, classified as pT3N0, with clear surgical margins and no adverse prognostic factors. The patient did not receive neoadjuvant or adjuvant therapy. Postoperative follow-up included regular monitoring over a five-year period. Annual clinical examination and abdominal ultrasound remained within normal, and a single colonoscopy performed 18 months post-surgery showed no evidence of local recurrence or polyps.

The patient presented for consultation 32 years post-initial surgery with a three-month history of left flank pain, constipation, and intermittent low-volume rectorrhagia. Clinical examination was unremarkable. Colonoscopy identified a circumferential, ulcerative, exophytic lesion in the left colon, located 20 cm from the anal verge, with multiple millimetric polyps, and two additional small sessile polyps in the right colon, which were excised.

Pathological examination confirmed well-differentiated adenocarcinoma in the left colonic lesion and non-specific colitis in the resected right-sided polyps. A thoraco-abdominal-pelvic CT scan performed for staging classified the tumor as T3N1b (Fig.1: diagnostic CT scan), with no evidence of distant metastasis.



A : CT scan image of the tumoral thickening of the left colon.



B : CT scan image showing the position of the lowered colon in the pelvis.

Fig. 1 : Axial CT scan images showing the tumor of lowered left colon.

A : CT scan image of the tumoral thickening of the left colon.

B : CT scan image showing the position of the lowered colon in the pelvis.

The patient's case was discussed in a multidisciplinary consultation, focusing on the extent and feasibility of resection based on two primary considerations:

First, due to the presence of multiple polyps in the left colon, the resection plan was expanded beyond the tumor area to ensure complete removal of the associated polyps in the affected segment.

Second, vascularization concerns were highlighted, as limiting the distal resection to the usual 5 cm margins could jeopardize blood supply to the remaining colon. This risk arises from the prior lymphadenectomy at the origin of the inferior mesenteric artery (IMA), which has left Riolan's arch as the sole remaining vascular source. Linking the arch to the newly resected segment may cause necrosis in the remaining distal colon, particularly at the site of the prior colo-anal anastomosis.

Through a re-do of the previous median laparotomy, extended below the umbilicus, surgical exploration, no hepatic metastases or signs of peritoneal carcinosis were observed. The tumor was located in the lowered colon, approximately 3 cm below the promontory, without evidence of local invasion. Dissection of the lowered colon proved challenging due to a fibrotic and adherent plane, consistent with the patient's prior surgical history. Ultimately, the patient underwent an extended left hemicolectomy down to the anal canal, which included removal of the previous anastomosis (Fig.2: surgical specimen). A new mechanical coloanal anastomosis was created, accompanied by a protective ileostomy.

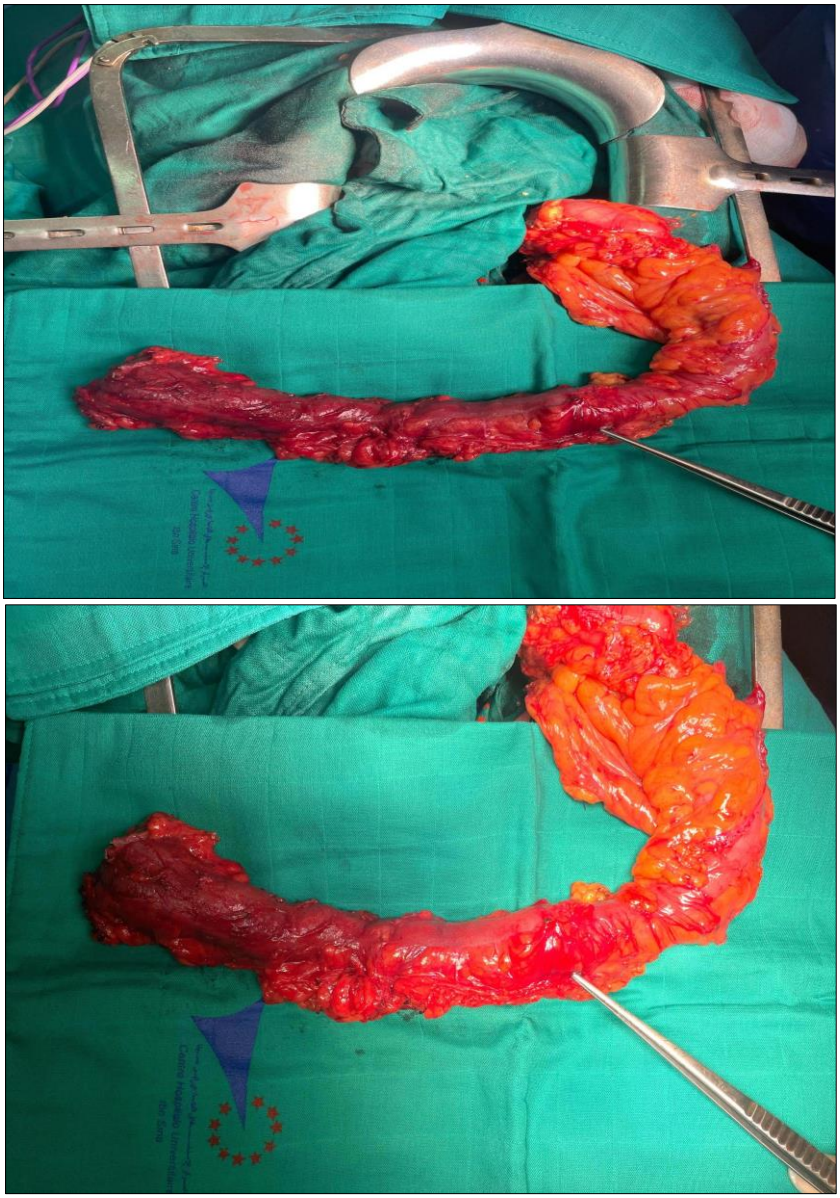


Fig. 2: (A, B): Surgical specimen of left hemicolectomy removing the tumor (forceps)

The postoperative course was uneventful, marked by functional ileostomy and resumption of oral intake on postoperative day two. Clinically and biologically, the patient progressed well, with inflammatory markers decreasing, and was discharged on day five.

Histological examination of the specimen revealed a moderately differentiated adenocarcinoma infiltrating the colonic wall down to the subserosa, classified as pT3N1b. Surgical margins were clear, although vascular emboli were present, and 2 out of 16 lymph nodes were positive. Additionally, a polyp distant from the primary tumor showed features of tubular adenoma with high-grade dysplasia.

The patient subsequently received adjuvant chemotherapy with the XELOX regimen, and intestinal continuity was restored three months later. At the 10-month follow-up, the patient remains in good health with no evidence of recurrence.

3. DISCUSSION

Metachronous metastases refer to the development of new colorectal cancers (i.e., a primary tumor distinct from the initial malignancy, and not a recurrence or metastatic lesion of the first tumor) at a different site following a disease-free period of at least six months after curative surgery for the initial cancer[3,6]. The interval between metachronous colorectal cancer and the initial malignancy varies across studies and is influenced by the intensity of surveillance. Reported intervals range from several years to extremes of 22 and 29 years [4, 5], with an average interval of 4.1 years [6]. The specificity of the present case lies in the exceptionally long interval of 32 years between the initial cancer and the MCRC, one of the longest documented in the literature.

MCRCs incidence rate in the literature is estimated at approximately 3.0% [4]. This incidence has been observed to decrease, from 4.1% among patients operated on between 2004 and 2008, to 2.1% for those treated between 2009 and 2013. This decline is likely attributable to advancements in postoperative care and follow-up, including improved detection of precancerous lesions and the implementation of updated surveillance colonoscopy recommendations[1].

Several studies have sought to identify patients at higher risk of developing metachronous colorectal cancer, with the aim of determining which individuals may benefit from more intensive surveillance [6]. For instance, Jayasekara *et al*., in a prospective cohort study, found that an initial colorectal cancer located in the proximal colon, as well as the presence of synchronous CRC, were significantly associated with an increased risk of MCRC [6]. Additionally, other research has indicated that males may have a slightly higher risk of developing metachronous cancer (3.1%) compared to females (2.9%) [1]. Other relevant risk factors include age at the time of surgery (<65 years), findings of high-risk adenomas during preoperative colonoscopy (such as adenomas with villous histology, high-grade dysplasia, size ≥10 mm, presence of three or more adenomas, sessile morphology, or synchronous CRC), a high Charlson comorbidity index, and cancer stage (UICC I-III) [5]. Furthermore, active smoking, particularly in individuals with a high genetic predisposition, has been suggested to influence the incidence of metachronous cancers [7, 8].

In our case, the early onset of the initial cancer at the age of 24 years, along with a prolonged survival period, appears to be an important factor. Additionally, active smoking and the advanced stage of the initial rectal cancer likely contributed to the development of a metachronous cancer, despite the absence of other known risk factors.

The survival of patients with metachronous metastases following colorectal cancer is a critical area of study, as it significantly impacts the long-term management and monitoring of these individuals. Nors *et al*., reported that among patients who developed metachronous colorectal cancer after a five-year interval, the overall five-year survival rate was 72% [1]. This notably high survival rate contrasts with the 46% survival rate observed in patients experiencing late recurrence of colorectal cancer. The observed difference suggests that metachronous metastases may be less aggressive or detected at an earlier stage, allowing for more effective intervention. Conversely, late recurrence, which frequently involves distant metastases, may indicate a more severe and advanced form of the disease [1].

This risk of colorectal cancer recurrence and metachronous colorectal cancer necessitates the implementation of stringent postoperative surveillance protocols, which include clinical examinations, carcinoembryonic antigen (CEA) assays, thoraco-abdomino-pelvic computed tomography (CT) scans, and colonoscopy. The primary objective of this surveillance is to detect asymptomatic recurrences and metachronous cancers at an early stage, facilitating the potential for curative treatment, while also preventing MCRC through the identification and resection of adenomatous polyps [2]. Various endoscopic surveillance strategies have been recommended by professional societies, informed by studies evaluating the impact of intensive surveillance on overall survival, while also considering associated costs and the patients' quality of life [4]. Notably, the U.S. Multi-Society Task Force on Colorectal Cancer (USMSTF) has suggested a colonoscopy one year following surgery (or within six months if the preoperative colonoscopy was incomplete), followed by intervals of three years and five years thereafter (equating to surveillance at 1, 4, and 9 years post-surgery). If polyps are detected during any of these

examinations, the interval before the next colonoscopy may be shortened, in accordance with post-polypectomy surveillance guidelines [4].

The surgical management of MCRC follows the same principles as for primary colorectal cancer, emphasizing oncological resection and adequate lymph node dissection [9]. However, it has not been conclusively demonstrated that more extensive resections reduce the risk of a second metachronous tumor [9]. The decision to perform a total colectomy must carefully weigh the morbidity and mortality associated with the procedure against the risk of developing a subsequent tumor, which, if detected early, offers a favorable prognosis for cure [10].

Furthermore, prior surgical interventions on the colon or rectum necessitate an assessment of the vascular supply to the remaining colon before proceeding with any resection. This is crucial to avoid compromising vascularization, which could increase the risk of an anastomotic fistula if bowel continuity is restored simultaneously [9]. Another factor contributing to the rarity and uniqueness of our patient's case is that the metachronous tumor is developed in the segment of the colon utilized for the coloanal anastomosis, thereby presenting significant challenges for surgical management. We were apprehensive about the potential risk of vascular insufficiency in the remaining colon if a standard oncologic resection (with a 5 cm margin on either side of the tumor) were to be performed, owing to the disruption of the arterial anastomotic network resulting from the initial surgery. This concern prompted us to expand the resection to encompass the entire lower colon, including the previous anastomosis, and to create a new colo-anal anastomosis. Additionally, the complexity of reoperation was heightened by the presence of a fibrotic, multi-adherent pelvic region that had already undergone prior surgical dissection. Techniques for assessing colonic vascularization, such as the use of indocyanine green, as well as methods for evaluating lymph node involvement, including indocyanine green and sentinel lymph node mapping, may be of particular relevance in this context. These approaches have the potential to optimize surgical outcomes by ensuring adequate vascularization and minimizing the extent of lymph node dissection [9].

4. CONCLUSION

Although there is always a risk of developing late metachronous colorectal cancer in patients with a history of colorectal cancer, this risk appears to be low and does not warrant rigorous surveillance beyond the recommended guidelines. Our case of colorectal cancer recurrence after 32 years illustrates that surveillance beyond five years can be particularly challenging, costly, and burdensome for the patient. The management of metachronous colorectal cancer (CCRM) adheres to the same oncological principles as those applied to the primary tumor. However, it is crucial to conduct a thorough assessment of the colon's vascularity prior to any resection to minimize the risk of compromising the blood supply to the remaining colon.

Consent of Publication

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.

Ethical Approval: Ethical approval is exempt/waived at our institution.

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Author Contribution

MR designed the paper. AA and YL collected the data. AA and YL wrote the first draft of the manuscript. HS participated in the article design and critically reviewed the manuscript. AH, FS, MMA, and YB critically reviewed the manuscript. All authors approved the final version of the manuscript.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Competing Interests

The authors have no conflicts of interest and source of funding. The subject of study had no commercial interest, no financial or material support.

Ethics Statement

Drs Abdelaziz Alillouch, Younes Laroussi, Hamza Sekkat, Youness Bakali, Mouna EL Alaoui Mhamdi, Farid Sabbah, Abdelmalek Hrora, and Mohammed Raiss declare no conflict of interest.

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