



Case Report

A CASE-BASED REVIEW ON SURGICAL MANAGEMENT OF RESECTABLE OLIGOMETASTASES IN LIVER AND PANCREAS IN AN OPERATED CASE OF COLORECTAL CANCER

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Abstract:

Background: Colorectal cancer commonly metastasizes to the liver, but isolated resectable liver and pancreatic metastases are extremely rare. Their combined surgical management remains controversial due to limited global evidence. **Case Presentation:** A 52-year-old woman with moderately differentiated adenocarcinoma of the mid-transverse colon initially underwent hand-assisted laparoscopic segmental colectomy with diversion ileostomy, followed by adjuvant chemotherapy (FOLFOX regimen). Surveillance imaging after seven months of chemotherapy revealed small liver metastases (1.9×1.4 cm in segment VIII, which underwent microwave ablation during ileostomy closure. After being lost to follow-up, she returned a one and half year later with markedly elevated CEA (70 ng/mL). CECT and PET-CT detected an isolated metastasis in segment VIII/VI of the liver (4.7×4.1 cm) and a solitary resectable metastasis (1.5×1.5 cm) in the pancreatic tail. She underwent staging laparoscopy followed by right hepatectomy and distal pancreaticosplenectomy. Histopathology confirmed metastatic colorectal adenocarcinoma. Post-operatively, her CEA levels normalized, and she recovered well. Colorectal cancer involving resectable liver and resectable pancreatic metastases may benefit from aggressive surgery in a biologically non-aggressive colorectal cancer.

Keywords: Colorectal cancer, liver metastasis, pancreatic metastasis, metastasectomy, oligometastatic disease.

INTRODUCTION

Colorectal cancer (CRC) remains one of the most common malignancies worldwide and a leading contributor to cancer-related morbidity and mortality. It ranks third in global cancer incidence and is

responsible for a significant proportion of gastrointestinal cancer deaths (1). The biological behaviour of CRC is characterized by its tendency to metastasize, most frequently to the liver via the portal venous drainage system. Hepatic metastases occur in nearly 50% of all patients diagnosed with CRC during

the course of their disease, making the liver the most common metastatic site. The management of liver metastases has evolved significantly over the past few decades, with hepatic resection now accepted as the gold standard in appropriately selected patients, offering 5-year survival rates that may exceed 50% (2). In contrast, resectable pancreatic metastases from CRC are exceedingly rare, accounting for less than 2% of all metastatic colorectal lesions. Most pancreatic secondary lesions are identified incidentally during staging scans or autopsy studies, and when present, they typically indicate disseminated disease rather than isolated oligometastatic involvement (3).

The concept of oligometastasis, first proposed by Hellman and Weichselbaum, provides a crucial framework for understanding and managing patients with limited metastatic burden. Oligometastatic disease is characterized by a restricted number of metastatic lesions, biologically less aggressive than widely disseminated disease, and potentially amenable to curative-intent local therapies (4). In CRC, the oligometastatic paradigm has expanded surgical options, enabling resection of metastases in sites previously considered unsuitable for surgery, including the lung, adrenal gland, and, in rare instances, the pancreas. Pancreatic metastasectomy, although technically demanding, has been reported to offer meaningful survival benefits when complete tumor clearance (R0 resection) is achievable (5).

Combined or sequential surgical resection of both hepatic and pancreatic metastases from CRC is extremely uncommon, with only a handful of cases described in the global literature. The rarity of such presentations presents significant therapeutic dilemmas for clinicians (6). Decision-making must incorporate several critical considerations, including accurate staging to exclude widespread disease, assessment of the patient's physiological reserve to tolerate major hepatopancreatic procedures, and evaluation of whether complete oncological clearance is surgically feasible (7). Advances in imaging particularly PET-CT, multi-phase contrast-enhanced CT, and MRI have improved detection of small pancreatic and hepatic metastases, facilitating more precise staging and operative planning (8).

In the present case, the patient demonstrated a highly unusual pattern of metachronous metastasis involving an initially single liver lesion treated with microwave ablation, which was stable for almost a year followed by the later development of a large solitary hepatic recurrence and a synchronous isolated metastatic lesion in the pancreatic tail. The absence of additional extrahepatic disease on PET-CT allowed the multidisciplinary team to consider aggressive combined resection with curative intent as the disease appears to be less aggressive. Such individualized approaches highlight the importance of integrating advanced imaging, surgical expertise, and oncological judgment when managing rare metastatic patterns.

The case reports illustrate the expanding role of tailored surgical strategies in carefully selected patients with oligometastatic CRC, particularly when metastatic lesions are anatomically resectable and confined to limited sites. It further illustrates how aggressive surgical intervention, supported by modern staging and multidisciplinary evaluation, can offer meaningful disease control even in complex presentations involving both liver and pancreas.

CASE PRESENTATION

Initial Presentation: A 50-year-old woman presented with a 5-day history of non-passage of stools, abdominal pain, and recurrent vomiting. Clinical suspicion of intestinal obstruction prompted further evaluation. A contrast-enhanced CT (CECT) abdomen revealed a 3 cm stricture with wall thickening at the splenic flexure of the colon, suggestive of obstruction. Based on these findings, she underwent an emergency hand-assisted laparoscopic segmental colectomy with diversion loop ileostomy. **Primary Diagnosis and Initial Management:** Histopathological examination of the resected colon confirmed moderately differentiated adenocarcinoma of the mid-transverse colon. Following an uncomplicated postoperative recovery, the patient completed eight cycles of adjuvant chemotherapy (FOLFOX regimen) as part of standard oncologic management. She remained under routine surveillance during the immediate postoperative period.

First Metastatic Episode and Treatment: Seven months after colectomy, surveillance imaging detected single small solitary liver metastases in Segment VIII measuring 1.9×1.4 cm

These lesions were considered resectable, and the patient underwent microwave ablation of the metastases at the time of ileostomy closure. She recovered well; however, she subsequently lost to follow-up for one and half year, delaying further surveillance.

Second Presentation with Recurrent Metastatic Disease: One and half year later, the patient re-presented with an elevated carcinoembryonic antigen (CEA) level of 70 ng/mL, raising concern for recurrence. A PET-CT scan identified two FDG-avid lesions:

- A large metastatic lesion in segment VIII of the liver measuring 4.7×4.1 cm which was previously ablated.
- A solitary metastatic lesion in the pancreatic tail measuring 1.5×1.5 cm

There was no evidence of disease elsewhere. CECT abdomen demonstrated a heterogeneously enhancing liver lesion with central necrosis and a hypodense

hypoenhancing pancreatic tail lesion which is resectable.

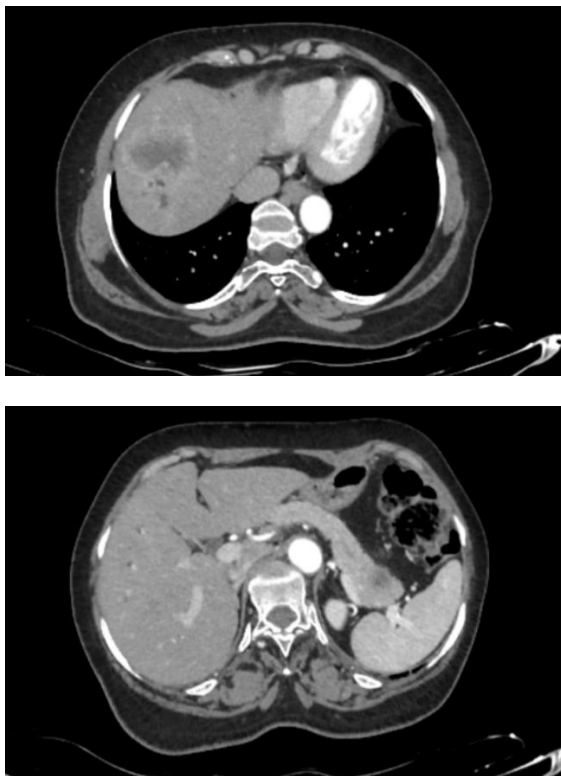


Fig 1: a) Well defined heterogeneously enhancing lesion with central necrotic area with peripheral enhancement involving segment VIII of liver, b) Hypodense hypoenhancing lesion involving the tail of pancreas

Preoperative Evaluation and Surgical Planning: The patient was evaluated in a multidisciplinary tumor board. Given the isolated nature of the liver and pancreatic resectable metastases and the absence of other metastatic sites with CEA level of 70mg/dl suggestive of biologically less aggressive disease, she was deemed a suitable candidate for curative-intent metastasectomy. A diagnostic staging laparoscopy was first performed, which showed no peritoneal or extrahepatic spread, enabling definitive surgical intervention.

Definitive Surgical Intervention: The patient underwent right hepatectomy combined with distal-pancreaticosplenectomy. Intraoperatively, a large metastatic tumor was seen in segment VIII, extending into segment V. Although the middle hepatic vein was infiltrated by tumor, the segment 4A venous branch was found to originate proximal to the lesion and could be preserved. Key left-sided structures left hepatic artery (LHA), middle hepatic artery (MHA), left hepatic vein (LHV), the segment 4A hepatic vein, and the caudate lobe were preserved. No peritoneal nodules or extrahepatic disease were identified.

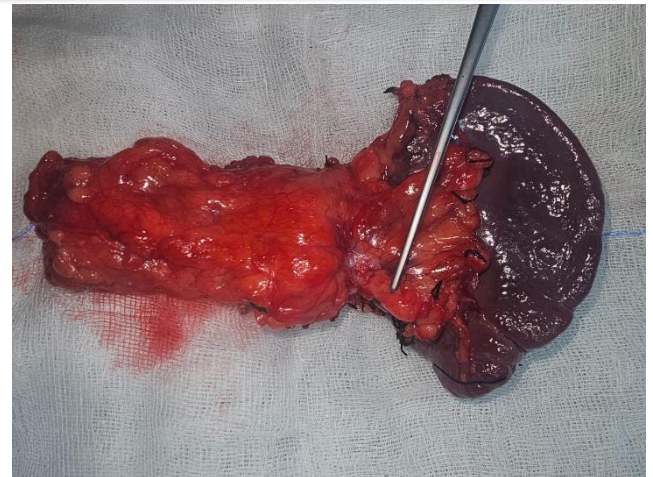


Fig 2: Gross specimen of distal pancreaticosplenectomy showing the pancreatic tail (left) containing the metastatic lesion, and the spleen (right). The instrument indicates the region of the pancreatic tail where the metastatic colorectal deposit was located.

Postoperative Course: On POD1 she was successfully weaned off from ventilatory support and subsequently recovered without further complications. She was discharged from the hospital on POD 14.

Histopathology and Follow-Up: Histopathological evaluation of both the hepatic and pancreatic specimens confirmed metastatic colorectal adenocarcinoma, consistent with the patient's primary tumor. On follow-up, her CEA levels, previously elevated, normalized, indicating effective oncological clearance after surgery.

DISCUSSION

Metachronous resectable metastases to both the liver and pancreas from colorectal cancer (CRC) represent an exceptionally rare clinical entity, with only isolated reports published worldwide. The liver is the most common metastatic site due to direct portal venous drainage from the colon, and hepatic resection remains the cornerstone of management when feasible (9). In contrast, pancreatic metastases from CRC are documented in less than 2% of metastatic cases, and most are discovered incidentally or in the setting of widespread disease. The rarity of isolated, resectable pancreatic metastasis makes combined hepato-pancreatic metastatic surgery a highly uncommon but clinically significant intervention in carefully selected patients (10).

The present case highlights several important principles in the management of oligometastatic CRC. First, rigorous disease staging plays a pivotal role. PET-CT in this patient demonstrated FDG-avid lesions confined to the liver and pancreatic tail, with no evidence of additional metastases. This

localization of disease enabled consideration of a curative-intent approach. Modern imaging has significantly improved the detection and characterization of small-volume metastases and allows surgeons to tailor operative strategies appropriately.

Second, this case underlines the importance of the oligometastatic concept, which suggests that certain patients with limited metastatic spread may benefit from aggressive local therapy. The patient initially presented with one small hepatic lesion that was treated effectively with microwave ablation. One and half year later, she developed resectable pancreatic metastasis along with a solitary large resectable hepatic recurrence. Despite the unusual metastatic pattern, the absence of disseminated disease made her a suitable candidate for combined metastasectomy. Several studies highlight that pancreatic metastasectomy, although technically demanding, can offer meaningful long-term survival when R0 resection is achieved (11).

The surgical procedure performed right hepatectomy combined with distal pancreatectosplenectomy is complex and typically undertaken only in specialized hepatopancreaticobiliary centers (12). In the present case, intraoperative findings demonstrated a large tumor in segment VIII extending into segment V, with involvement of the middle hepatic vein. However, the segment 4A branch originated just proximal to the mass and could be preserved, allowing maintenance of adequate venous outflow for the remaining liver. The left hepatic artery, middle hepatic artery, left hepatic vein, segment 4A hepatic vein, and caudate lobe were preserved, ensuring sufficient postoperative hepatic function (13).

The case reports that selected patients with metachronous metastases to both liver and pancreas may derive substantial benefit from aggressive surgical management. Thorough staging, precise surgical planning, and multidisciplinary collaboration are essential. Although such presentations are rare, they underscore the principle that oligometastatic CRC, even when involving unusual sites like the pancreas, may still be managed with curative intent when complete resection is feasible.

CONCLUSION

This case illustrates that aggressive surgical intervention can play a decisive role in the management of carefully selected patients with oligometastatic colorectal cancer, even when metastatic lesions involve rare sites such as the pancreatic tail. Despite the uncommon presentation

9. de Oliveira CVC, Santana RC, Coimbra FJF, Kow A, Pawlik TM, Adam R, et al. Metachronous colorectal liver metastasis. *Arq*

of synchronous hepatic and pancreatic metastases, thorough imaging, meticulous staging, and multidisciplinary evaluation enabled curative-intent resection. The successful completion of right hepatectomy and distal pancreatectosplenectomy, preservation of key hepatic structures, and normalization of tumor markers on follow-up demonstrate that complete oncological clearance is achievable in well-selected cases. Although postoperative complications such as transient metabolic disturbances occurred, timely management ensured a favourable recovery. The patient since last 1yr was on adjuvant treatment with capecitabine based chemotherapy and since last 1yr follow up on imaging and colonoscopy there was no evidence of recurrence and the CEA levels are within normal range 3.66. Minimum literatures are available on the case. However, our case stands out as patient has both respectable pancreatic and liver metastasis

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