OPEN ACCESS

Saudi Journal of Medical and Pharmaceutical Sciences

Abbreviated Key Title: Saudi J Med Pharm Sci
ISSN 2413-4929 (Print) | ISSN 2413-4910 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com

Case Report **Oncology**

Metastatic Right-Sided Colon Adenocarcinoma Complicated by Malignant Biliary and Duodenal Obstruction after Prior Cholecystectomy: A Case Report

Mohammed Essam Mahroos[1*], Mohammed Ayman Kharabah[2], Shatha Hamzah Alreheili[3], Imran Ahmad Ghufran Ahmad[4], Abdulrahman Qassim[5], Mohammed Ali Alhamadi[6], Wissam Bleibel[7]

[1]Specialist Physician of Adult Medical Oncology, King Faisal Specialist Hospital & Research Center, Madinah Branch, Saudi Arabia
[2]Internal Medicine Resident, King Faisal Specialist Hospital & Research Center, Madinah Branch, Saudi Arabia
[3]Internal Medicine Resident, King Faisal Specialist Hospital & Research Center, Madinah Branch, Saudi Arabia
[4]Consultant Adult Medical Oncology, King Faisal Specialist Hospital & Research Center, Madinah Branch, Saudi Arabia
[5]Gastroenterology Fellow, King Faisal Specialist Hospital & Research Center, Madinah Branch, Saudi Arabia
[6]Assistant Consultant radiologist, King Faisal Specialist Hospital & Research Center, Madinah Branch, Saudi Arabia
[7]Consultant Gastroenterology, King Faisal Specialist Hospital & Research Center, Madinah Branch, Saudi Arabia

DOI: https://doi.org/10.36348/sjmps.2026.v12i04.008 | **Received:** 23.02.2026 | **Accepted:** 17.04.2026 | **Published:** 20.04.2026

***Corresponding author:** Mohammed Essam Mahroos
Specialist Physician of Adult Medical Oncology, King Faisal Specialist Hospital & Research Center, Madinah Branch, Saudi Arabia

Abstract

Colorectal cancer (CRC) most often metastasizes to the liver, lung, lymph nodes, and peritoneum; involvement of the gallbladder or extrahepatic biliary region is distinctly uncommon and can create diagnostic and therapeutic uncertainty. We report a 67-year-old woman with a history of treated left breast cancer who presented in April 2025 with hematochezia and anemia. Colonoscopy demonstrated a large obstructing ascending colon mass; biopsy confirmed adenocarcinoma. Staging PET-CT (June 2025) showed an FDG-avid right colonic mass with FDG-avid peri colonic and porta hepatis/portacaval nodal disease and no definite visceral organ uptake. Serum carcinoembryonic antigen (CEA) was markedly elevated (2690). She underwent laparoscopic right hemicolectomy with partial omentectomy (July 2025). Histopathology revealed an 8.5-cm moderately-to-poorly differentiated adenocarcinoma invading the visceral peritoneum (pT4a) with extensive nodal involvement (12/13 nodes; pN2b) and omental metastasis, consistent with stage IV disease. Multidisciplinary tumor board recommended systemic therapy; however, the patient initially declined chemotherapy. By late December 2025, rising symptoms and imaging demonstrated progressive retroperitoneal/mesenteric nodal and peritoneal disease and a new lytic C7 lesion. Before planned palliative chemotherapy, she developed obstructive jaundice with right upper quadrant pain (January 2026). CT and MRCP showed progressive intra-and-extrahepatic biliary dilatation and new marked diffuse duodenal wall thickening with mass effect at the ampulla, causing secondary biliary and pancreatic duct obstruction. She was managed with percutaneous transhepatic biliary drainage and subsequent endoscopic duodenal stenting to re-establish enteral intake. This case highlights the need to consider metastatic CRC in atypical biliary/duodenal obstruction patterns, to distinguish secondary involvement from a new primary periampullary process, and to use multidisciplinary palliation to enable systemic therapy when appropriate.

Keywords: Ascending Colon Adenocarcinoma, Stage IV Colorectal Cancer (CRC), pT4a pN2b, Carcinoembryonic Antigen (CEA), Peritoneal Carcinomatosis.

BACKGROUND

Colorectal cancer remains a major global health burden and is among the leading causes of cancer morbidity and mortality worldwide (Bray *et al.,* 2024). Metastatic spread most frequently involves the liver via portal venous drainage, followed by the lungs and distant lymph nodes; peritoneal metastasis is also common in advanced right-sided tumors and confers a poorer prognosis compared with non-peritoneal metastatic patterns (Cervantes *et al.,* 2023; Franko *et al.,* 2016; Tonello *et al.,* 2024). The clinical presentation of right-sided colon cancers often differs from left-sided lesions, with anemia and occult bleeding being prominent

features, whereas left-sided cancers more commonly produce obstructive symptoms and overt hematochezia; however, advanced disease may blur these distinctions (Cervantes *et al.,* 2023; Hall *et al.,* 2019).

Serum carcinoembryonic antigen (CEA) is widely used in CRC for prognosis, treatment planning, and surveillance, although it is not sufficiently sensitive or specific for screening (Hall *et al.,* 2019; Kankanala & Duke, 2024). Very high pretreatment CEA levels typically reflect substantial tumor burden and correlate with advanced stage and inferior outcomes across cohorts (Hall *et al.,* 2019; Xie *et al.,* 2024). In metastatic settings, CEA trends may parallel radiologic response and can support clinical decision-making when interpreted alongside imaging and symptoms (Hall *et al.,* 2019).

CRC is increasingly managed through biomarker-informed systemic therapy. Contemporary guidelines recommend fluoropyrimidine-based doublets such as FOLFOX or CAPOX (XELOX), often combined with biologic agents (e.g., bevacizumab), with regimen selection shaped by fitness, tumor biology, and goals of care (Cervantes *et al.,* 2023; NCCN, 2025). RAS pathway alterations are particularly important: KRAS mutations occur in roughly one-third to two-fifths of CRCs and predict lack of benefit from anti-EGFR monoclonal antibodies such as cetuximab or panitumumab (Lièvre *et al.,* 2006; Takeda *et al.,* 2025). PIK3CA mutations are also relatively frequent and may influence prognosis and therapeutic research directions, although routine frontline decisions remain primarily driven by RAS/BRAF status and MSI/MMR in most practice settings (Wang *et al.,* 2024; Cervantes *et al.,* 2023).

Metastasis to the gallbladder is rare and is typically described in late-stage disease, sometimes masquerading as primary gallbladder carcinoma or complicated cholecystitis (de Bitter *et al.,* 2022; Yoon *et al.,* 2009). When CRC involves the gallbladder, diagnostic confusion may occur because metastatic CRC can colonize mucosal surfaces and mimic a second primary tumor; immunohistochemistry panels (e.g., CK7/CK20/CDX2 and SATB2) and, in challenging cases, molecular clonality assessment can clarify the origin (de Bitter *et al.,* 2019; Dragomir *et al.,* 2014). The literature largely comprises isolated case reports—some presenting as gallbladder perforation or acute cholecystitis—underscoring both rarity and the potential for delayed recognition (Bukhari & Abdulkader, 2018; Nagpal *et al.,* 2023).

CASE PRESENTATION

A 67-year-old woman with a past history of left-sided breast cancer treated by mastectomy followed by chemotherapy, radiotherapy, and hormonal therapy (completed May 2022) developed new gastrointestinal bleeding and anemia in early 2025. Colonoscopy performed at an outside facility in April 2025 identified a large mass in the ascending colon; the scope could not be advanced beyond the lesion. Biopsy demonstrated well-differentiated adenocarcinoma.

Staging PET-CT (18 June 2025; Figure 1) revealed a large FDG-avid right colonic mass with associated FDG-avid peri colonic fat stranding and nodularities, as well as FDG-avid nodal disease including portacaval/porta hepatis lymph nodes. There was no definite focal FDG-avid lesion in the liver, pancreas, spleen, or adrenals, and no suspicious FDG-avid osseous disease was reported. Serum CEA on 30 June 2025 was markedly elevated at 2690.

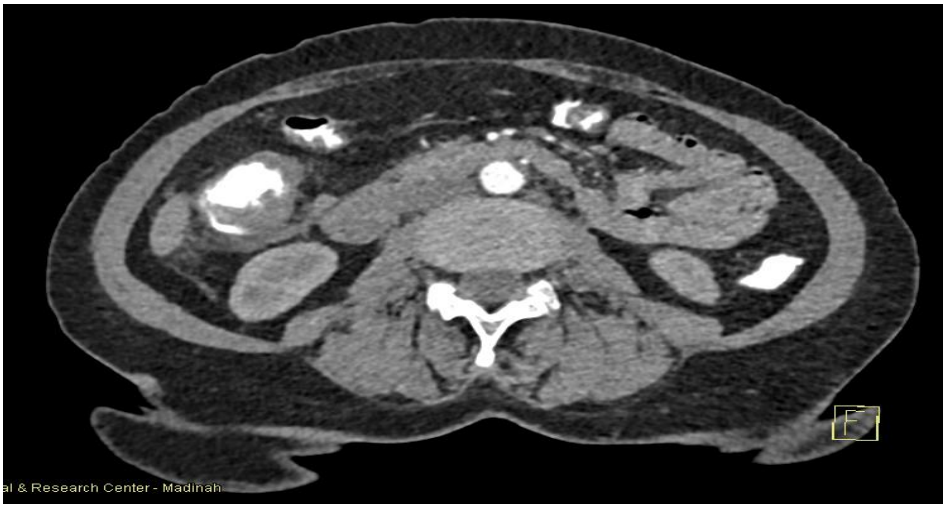

Figure 1: CT abdomen-pelvis with contrast before resection.

The patient underwent laparoscopic right hemicolectomy with partial omentectomy on 23 July 2025. Final histopathology demonstrated an adenocarcinoma measuring up to 8.5 cm, moderately to poorly differentiated, invading the visceral peritoneum with tumor continuity to the serosal surface through an inflamed area. Twelve of thirteen lymph nodes were positive for carcinoma. The omentum was positive for

adenocarcinoma. Pathologic staging was reported as pT4a pN2b (AJCC 8th edition), and molecular profiling identified KRAS and PIK3CA mutations. Given omental metastasis, the overall picture was consistent with stage IV disease (peritoneal metastatic involvement).

At multidisciplinary tumor board review (28 August 2025), the consensus recommendation was systemic therapy. During an initial oncology visit (29 September 2025), adjuvant/palliative chemotherapy with CAPOX (XELOX) every three weeks for eight cycles was discussed. Despite counseling regarding recurrence risk and systemic control, the patient declined chemotherapy on 1 October 2025. She subsequently missed follow-up (10 November 2025) but re-engaged in care in December 2025, when she reported two weeks of abdominal pain with alternating constipation and diarrhea. CEA on 28 December 2025 was 948.

Restaging CT of chest, abdomen, and pelvis (31 December 2025) showed focal eccentric thickening at the right-sided anastomotic site, multiple enlarged retroperitoneal and mesenteric lymph nodes consistent with progression, a mildly enlarged AP-window mediastinal lymph node, and a new lytic lesion at C7 compatible with metastasis (Figures 2, 3). The clinical assessment was recurrent metastatic disease not amenable to further curative surgery, with systemic therapy recommended and palliative radiotherapy considered if spine symptoms developed.

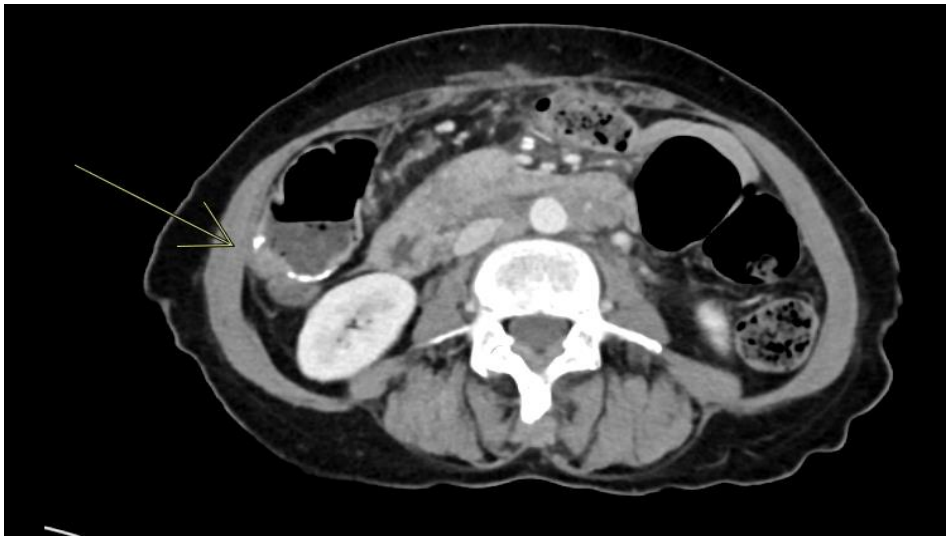

Figure 2: CT abdomen and pelvis with contrast after resection the colonic anastomosis at right upper abdomen showing focal eccentric thickening on the anterolateral side of about 2.1cm x 1.2cm in length and thickness.

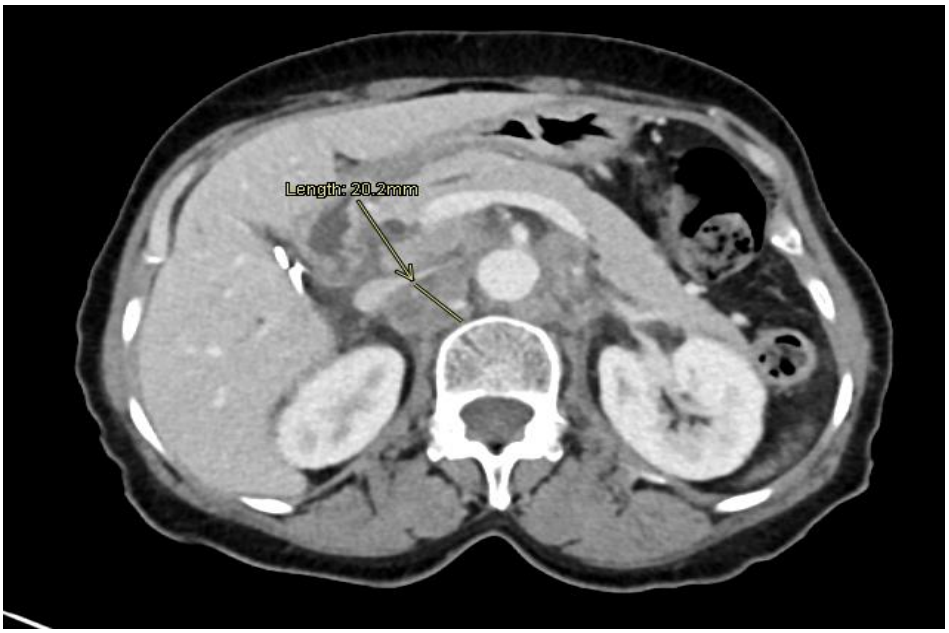

Figure 3: CT abdomen after resection showing multiple enlarged lymph nodes noted at retroperitoneum (at retrocaval region with its short axis about 1.7 cm) and at mesentery anterolateral to the pancreatic head and duodenum (largest one about 1.4 cm in short axis).

The patient was scheduled to start palliative FOLFOX plus bevacizumab on 29 January 2026 but was found to be jaundiced with markedly abnormal liver function tests and right upper quadrant pain, prompting hospital admission for intravenous fluids, antibiotics, and analgesia. CT abdomen/pelvis (1 February 2026) demonstrated interval progression of intra- and extrahepatic biliary dilatation (CBD up to 2.4 cm), mild pancreatic duct dilatation, a new left adrenal nodule, progression of retroperitoneal lymphadenopathy and peritoneal disease, and persistent small pelvic ascites.

MR abdomen with MRCP sequences (2 February 2026) showed new marked diffuse duodenal wall thickening (up to 1.4 cm) with restricted diffusion, relatively sparing the fourth part, exerting mass effect on the ampulla and producing upstream biliary and pancreatic duct dilatation (Figure 4). No biliary calculi were identified, and no focal hepatic lesion was seen. The radiology impression favored a rapidly developing primary duodenal neoplasm while noting that neoplastic infiltration remained a differential consideration in the context of known metastatic disease.

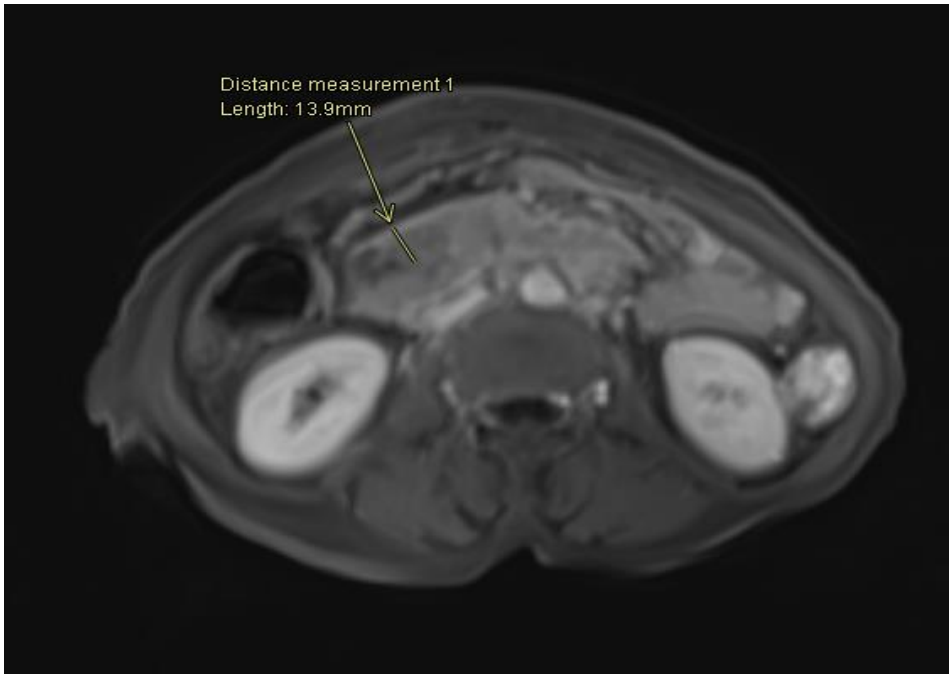

Figure 4: MRI abdomen after resection showing marked, diffuse wall thickening involving the duodenum, measuring up to 1.4 cm in thickness.

Given ongoing obstructive jaundice, the patient underwent percutaneous transhepatic cholangiography with placement of an internal/external biliary drainage catheter (9 February 2026). Cholangiography demonstrated diffuse moderate intrahepatic duct dilatation with distal common bile duct obstruction; the second portion of the duodenum appeared diffusely thickened with luminal narrowing. The biliary catheter was left to external drainage because duodenal narrowing raised concern that internal drainage might not function reliably. She later underwent endoscopic evaluation with duodenal stenting (12 February 2026) for symptomatic obstruction and inability to tolerate oral intake, requiring supportive care with a plan to transition off parenteral nutrition as intake improved. At the latest documented follow-up (mid-February 2026), liver biochemistry was improving, but she continued to have intermittent nausea/vomiting with gradual attempts to advance oral intake, with outpatient palliative chemotherapy reconsidered once nutritional status stabilized.

DISCUSSION

This case illustrates an aggressive right-sided colon adenocarcinoma with extensive nodal involvement and peritoneal metastasis at diagnosis, complicated later by malignant biliary and duodenal obstruction that delayed initiation of palliative systemic therapy. The patient's initial presentation with anemia and gastrointestinal bleeding is consistent with common right-sided CRC phenotypes, and her extraordinarily elevated baseline CEA (2690) strongly suggested high tumor burden (Hall *et al.,* 2019). Although CEA decreased after surgery, it remained markedly elevated months later (948), aligning with radiologic progression and underscoring that postoperative CEA normalization is not guaranteed in metastatic disease and that persistently high levels warrant reassessment for residual or progressive cancer (Hall *et al.,* 2019).

At diagnosis, the patient already had peritoneal involvement (omentectomy positive for adenocarcinoma), a pattern associated with worse outcomes compared with non-peritoneal metastatic

CRC. Individual patient data analyses and contemporary reviews consistently show that peritoneal metastases represent a biologically and clinically distinct subgroup with limited survival when treated with systemic therapy alone, although selected patients may benefit from cytoreductive strategies plus HIPEC in specialized settings (Franko *et al.,* 2016; Tonello *et al.,* 2024). In this patient, extensive nodal disease (12/13 nodes), visceral peritoneal invasion (pT4a), and early progression on imaging supported a high-risk biology with limited window for durable control.

A central point of interest in the submitted case concept is the uncommon involvement of the gallbladder/biliary region in CRC. Gallbladder metastases overall are rare, often underrecognized, and frequently reported in end-stage malignancy (de Bitter *et al.,* 2022; Yoon *et al.,* 2009). In the largest open single-center clinicopathologic series, metastatic lesions represented a small fraction of gallbladder malignancies and arose from multiple primaries, including colorectal cancer (Yoon *et al.,* 2009). Diagnostic pitfalls are well described: metastatic CRC can "colonize" mucosa and mimic a primary gallbladder carcinoma, leading to inappropriate treatment selection if not carefully evaluated (de Bitter *et al.,* 2019). Case reports highlight presentations ranging from cholecystitis to gallbladder perforation, where gallbladder pathology unexpectedly reveals metastatic adenocarcinoma of colorectal origin (Bukhari & Abdulkader, 2018; Nagpal *et al.,* 2023). These publications emphasize the practical importance of immunohistochemistry panels. A CK7–/CK20+ profile with strong CDX2 and/or SATB2 expression supports colorectal origin, while primary gallbladder carcinoma more commonly shows CK7 positivity and variable intestinal markers (de Bitter *et al.,* 2019; Dragomir *et al.,* 2014).

In the present patient, a prior cholecystectomy is documented on cross-sectional imaging, but the gallbladder specimen histopathology was not included in the provided clinical record excerpt. Therefore, definitive confirmation of gallbladder metastasis cannot be asserted from the available data. Nonetheless, the disease repeatedly involved the periportal/porta hepatis region on PET-CT and progressed to a pattern of distal common bile duct obstruction with profound duodenal thickening at the second portion and mass effect on the ampulla, which is a clinically important anatomic crossroads for biliary obstruction. Whether this represents metastatic infiltration of the duodenum/periampullary region, nodal compression, an intraductal metastatic pattern, or a new synchronous primary duodenal/ampullary neoplasm, the diagnostic approach and palliative priorities are similar: relieve obstruction, restore enteral intake, and enable systemic therapy when consistent with patient goals.

The imaging evolution also raised a second major issue: new rapid diffuse duodenal thickening with restricted diffusion, sparing part of the duodenum, producing ampullary compression and combined biliary/pancreatic duct dilatation. This pattern commonly prompts consideration of a primary periampullary or duodenal malignancy; however, in patients with known metastatic cancer, infiltrative metastasis remains plausible. Direct CT signs at the pancreatobiliary–duodenal junction may include duodenal wall thickening and ampullary-region soft tissue, while indirect signs include upstream biliary and pancreatic duct dilatation.

Management of malignant duodenal/gastric outlet obstruction has shifted toward less invasive palliation in advanced disease. Endoscopic duodenal stenting offers rapid symptom relief, earlier resumption of oral intake, and shorter hospitalization compared with surgical bypass, In this case, duodenal stenting was performed with the immediate goal of enabling enteral nutrition and tapering parenteral support, thereby potentially reopening the option of systemic chemotherapy.

From an oncologic perspective, the patient's KRAS mutation is clinically consequential. KRAS-mutant metastatic CRC does not benefit from anti-EGFR monoclonal antibodies, making chemotherapy doublets with bevacizumab a common biologic pairing, particularly when MSI/MMR status and other targets do not suggest immunotherapy or alternative targeted approaches (Cervantes *et al.,* 2023; Lièvre *et al.,* 2006; Takeda *et al.,* 2025). Her PIK3CA mutation is biologically relevant and increasingly studied, but it does not, by itself, override first-line guideline-based regimens in most current algorithms (Wang *et al.,* 2024; Cervantes *et al.,* 2023). Importantly, her delayed acceptance of chemotherapy likely narrowed therapeutic benefit, as early systemic therapy in stage IV disease is central to controlling progression, limiting complications, and preserving performance status.

CONCLUSION

Advanced right-sided colon adenocarcinoma can progress to complex malignant obstruction syndromes that delay systemic therapy and worsen prognosis. While true gallbladder metastasis from CRC is rare and requires histopathologic confirmation, CRC should remain in the differential diagnosis for atypical biliary/duodenal obstruction patterns in metastatic disease, particularly when porta hepatis nodes or periampullary involvement are present. Multidisciplinary palliation—PTBD for biliary decompression and endoscopic duodenal stenting for enteral obstruction—may restore liver function and oral intake, enabling appropriately selected patients to proceed to systemic therapy aligned with their goals.

REFERENCES

- Abrams, H. L., Spiro, R., & Goldstein, N. (1950). Metastases in carcinoma. Analysis of 1000 autopsied cases. *Cancer*, *3*(1), 74-85.

- Barretta, M. L., Catalano, O., Setola, S. V., Granata, V., Marone, U., & D'Errico Gallipoli, A. (2011). Gallbladder metastasis: spectrum of imaging findings. *Abdominal imaging*, *36*(6), 729-734.
- Bukhari, N., & Abdulkader, M. (2018). Metastatic cecal adenocarcinoma to the gallbladder presenting with acute cholecystitis. *Case reports in oncological medicine*, *2018*(1), 5308585.
- Franko, J., Shi, Q., Meyers, J. P., Maughan, T. S., Adams, R. A., Seymour, M. T., ... & Grothey, A. (2016). Prognosis of patients with peritoneal metastatic colorectal cancer given systemic therapy.
- NCCN. (2025). *NCCN Clinical Practice Guidelines in Oncology: Colon Cancer (Version 2.2025)*. National Comprehensive Cancer Network.
- Tonello, M., Cenzi, C., Pizzolato, E., Fiscon, R., Del Bianco, P., Pilati, P., & Sommariva, A. (2024). Systemic chemotherapy in colorectal peritoneal metastases treated with cytoreductive surgery: systematic review and meta-analysis. *Cancers*, *16*(6), 1182.
- Van Der Merwe, S. W., Van Wanrooij, R. L., Bronswijk, M., Everett, S., Lakhtakia, S., Rimbas, M., ... & Van Hooft, J. E. (2022). Therapeutic endoscopic ultrasound: European society of gastrointestinal endoscopy (ESGE) guideline. *Endoscopy*, *54*(02), 185-205.