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Case Report

Multivisceral resection for colon cancer with adjacent organ invasion: Whipple procedure, right hemicolectomy, and hepatic segmentectomy

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ABSTRACT

Female patient, 55 years old, with a medical history of arterial hypertension and type 2 diabetes mellitus, diagnosed with a tumor in the hepatic flexure of the colon infiltrating the duodenum, the pancreatic head, the biliary tract, and segment V of the liver. A right hemicolectomy, Whipple procedure, and hepatic segmentectomy of segment V were performed. The patient exhibited a favorable postoperative course on the first day without signs of immediate complications. This case highlights the importance of multivisceral resection in the management of advanced colon tumors with invasion into multiple organs.

Keywords: Whipple procedure, Right hemicolectomy, Hepatic segmentectomy, Colon tumor

INTRODUCTION

Colorectal cancer represents the third leading cause of cancer in both men and women in the United States and the second leading cause of cancer-related mortality worldwide.[1] According to the World Health Organization (WHO), in 2020, more than 1.9 million new cases of colorectal cancer were diagnosed globally, accounting for approximately 10% of all cancer diagnoses.[1] In Mexico, colorectal cancer ranks fourth in incidence among malignant neoplasms, with a rising trend due to population aging and risk factors such as a Western diet, physical inactivity, and obesity.[2]

Mortality in patients with advanced colorectal cancer remains high. However, there has been a 35% reduction in mortality rates compared to statistics from 1990 to 2007, with a five-year survival rate ranging from 11% to 14%, depending on the degree of invasion and metastatic spread.[3] Approximately 19% to 31% of all patients with colorectal cancer (CRC) present or develop hepatic metastases at some point during the course of their disease.[4]

In cases where colorectal cancer advances and compromises adjacent organs, it is crucial to consider surgical strategies that allow for complete tumor resection, such as multivisceral resection. Colectomy is a well-established option, particularly in patients with hepatic metastases, who have shown improved outcomes in populations with limited access to chemotherapy or specialized oncology care.[5]

The Whipple procedure (pancreaticoduodenectomy) is a complex surgical technique primarily used for managing tumors of the pancreatic head. However, it can also be a viable therapeutic option when colon tumors invade the duodenum and bile duct, even in elderly patients.[6] The surgery involves the removal of the pancreas, duodenum, gallbladder, and a portion of the stomach, followed by gastrointestinal tract reconstruction.

The combination of procedures such as right hemicolectomy and hepatic segmentectomy is indicated when the cancer has infiltrated both the liver and colon. Although these multivisceral resections are highly invasive and associated with increased perioperative complications, they can significantly improve survival

rates and provide a curative option for selected patients with locally advanced disease.[7,8]

CASE REPORT

A 55-year-old female patient with a history of systemic arterial hypertension and type 2 diabetes mellitus for ten years, well controlled, with no prior surgical history. The patient presented with symptoms of predominant right flank pain, unquantified weight loss, asthenia, and adynamia for three months before admission.

Preoperative diagnosis

The preoperative diagnosis was based on clinical findings and contrast-enhanced abdominopelvic computed tomography, which revealed a tumor in the hepatic flexure of the colon with infiltration into the duodenum, pancreatic head, and segment V of the liver. A colonoscopy showed an exophytic lesion in the colon measuring 40×50 mm, with central ulceration and bleeding upon manipulation. A biopsy confirmed malignant cellularity.

Surgical procedure

On 03 September 2024, a multivisceral resection was performed, including: right hemicolectomy, Whipple procedure (pancreaticoduodenectomy), and hepatic segmentectomy of segment V.

The tumor was found to infiltrate the duodenum, bile duct, pancreatic head, and hepatic segment V.

Postoperative course

On the first postoperative day, the patient was awake and oriented, breathing spontaneously with an oxygen mask. Abdominal drains showed minimal hematic content, and the patient reported mild pain (VAS 3/10). She remained hemodynamically stable, without vasopressor requirements, and without immediate surgical complications.

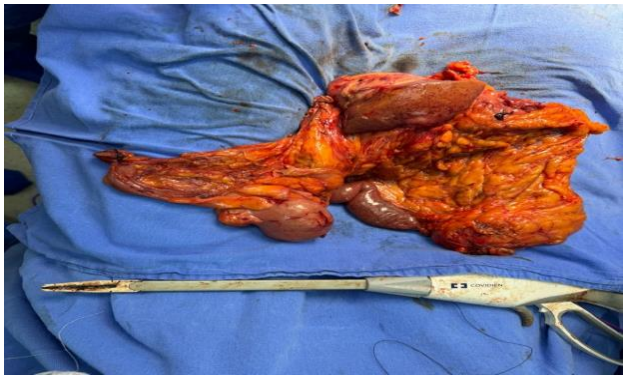

Figure 1: En-bloc surgical specimen including the right hemicolon, duodenum, pancreatic head, and hepatic segment V.

Figure 2: Contrast-enhanced CT of the abdomen and pelvis demonstrates invasion into the liver, duodenum, and pancreas.

DISCUSSION

Multivisceral resection, including the Whipple procedure combined with a hemicolectomy, is a surgical option for patients with advanced colon tumors that invade adjacent organs such as the pancreas, duodenum, and bile duct. Although it is a high-risk and complex procedure, in selected patients, it can provide significant survival benefits and improved quality of life.[8] Various studies have shown that multivisceral resection can achieve R0 margins in patients with colon cancer. Despite the radical nature of these interventions, medium-term follow-up has demonstrated favorable outcomes.[9]

Survival following Whipple procedure combined with hemicolectomy

Mortality following pancreaticoduodenectomy has significantly decreased, from 25−30% in the 1970s−1980s to less than 2−4% in recent years, depending on tumor invasion and the extent of resection.[10] It is important to emphasize that survival is strongly linked to the quality of the resection, particularly achieving complete tumor removal with negative margins (R0), a key factor in improving postoperative prognosis.[9]

Alternative management

For patients who are not candidates for extensive surgery or have a poor prognosis, alternative treatments include palliative chemotherapy and radiotherapy. Chemotherapy regimens using 5-fluorouracil (5-FU) and leucovorin (LV) have shown a 25−30% reduction in recurrence rates and an improvement in eight-year survival.[11] However, these do not achieve the same outcomes as radical surgical resection.[12]

A 2021 study on palliative management of advanced colon cancer reported that patients treated with systemic chemotherapy instead of surgery had a median survival of 12−18 months, significantly lower than those undergoing multivisceral resections.[13] Additionally, targeted therapies, such as monoclonal antibodies (bevacizumab),

combined with chemotherapy in advanced cases where radical surgery is not feasible, have been documented to extend survival by up to six additional months compared to standard chemotherapy alone.[13]

In summary, while surgical resection provides the best chance of survival in advanced cases, non-surgical approaches offer limited long-term benefits. Patients who are not candidates for surgery may still benefit from chemotherapy and targeted treatments; however, their overall survival remains significantly lower.

CONCLUSION

This case highlights the feasibility and potential benefits of multivisceral resection in patients with advanced colon tumors infiltrating adjacent organs. Reports indicate that multivisceral resection reduces microsatellite lesions. Although the risk of complications is high, surgery can provide a curative outcome in well-selected patients under careful postoperative supervision.

Furthermore, in populations with limited access to chemotherapy or specialized surgical oncologists, multivisceral resection has been shown to significantly improve survival rates in selected patients.

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REFERENCES

1. World Health Organization. Colorectal cancer. Available at: https://www.who.int/news-room/fact-sheets/detail/colorectal-cancer. Accessed on 28 January 2025.
2. García-Osogobio S, Téllez-Ávila FI, Méndez N, Uribe-Esquivel M. Results of the first program of colorectal cancer screening in Mexico. Endoscopia. 2015;27(2):59-63.
3. Kurbatov V, Resio BJ, Cama CA, Heller DR, Cha C, Zhang Y, et al. Liver-first approach to stage IV colon cancer with synchronous isolated liver metastases. J Gastrointest Oncol. 2020;11(1):76-83.
4. Karim SAM, Abdulla KS, Abdulkarim QH, Rahim FH. The outcomes and complications of pancreaticoduodenectomy (Whipple procedure): Cross sectional study. Int J Surg. 2018;52:383-7.
5. Birkett RT, O'Donnell MMT, Epstein AJ, Saur NM, Bleier JIS, Paulson EC. Elective colon resection without curative intent in stage IV colon cancer. Surg Oncol. 2019;28:110-5.
6. Watanabe J, Hanaki T, Arai Y, Tokuyasu N, Sakamoto T, Honjo S, et al. Perioperative Outcomes after Pancreaticoduodenectomy in Elderly Patients. Hepatogastroenterology. 2015;62(139):590-4.
7. Croner RS, Merkel S, Papadopoulos T, Schellerer V, Hohenberger W, Goehl J. Multivisceral Resection for Colon Carcinoma. Dis Colon Rectum. 2009;52(8):1381.
8. Das B, Fehervari M, Hamrang-Yousefi S, Jiao LR, Pai M, Jenkins JT, et al. Pancreaticoduodenectomy with right hemicolectomy for advanced malignancy: a single UK hepatopancreaticobiliary centre experience. Colorectal Dis. 2023;25(1):16-23.
9. Eveno C, Lefevre JH, Svrcek M, Bennis M, Chafai N, Tiret E, et al. Oncologic results after multivisceral resection of clinical T4 tumors. Surgery. 2014;156(3):669-75.
10. Narayanan S, Martin AN, Turrentine FE, Bauer TW, Adams RB, Zaydfudim VM. Mortality after pancreaticoduodenectomy: assessing early and late causes of patient death. J Surg Res. 2018;231:304-8.
11. André T, Boni C, Mounedji-Boudiaf L, Navarro M, Tabernero J, Hickish T, et al. Oxaliplatin, fluorouracil, and leucovorin as adjuvant treatment for colon cancer. N Engl J Med. 2004;350(23):2343-51.
12. Cukier M, Smith AJ, Milot L, Chu W, Chung H, Fenech D, et al. Neoadjuvant chemoradiotherapy and multivisceral resection for primary locally advanced adherent colon cancer: a single institution experience. Eur J Surg Oncol. 2012;38(8):677-82.
13. Simmonds PC. Palliative chemotherapy for advanced colorectal cancer: systematic review and meta-analysis. Colorectal Cancer Collaborative Group. BMJ. 2000;321(7260):531-5.

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