

Video Article

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Simultaneous robotic liver resection and left colectomy for sigmoid colon cancer with synchronous liver metastases using the same robotic trocar positioning

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Abstract

[Watch](#) a video of this article.

BRIEF EXPLANATION

Colorectal cancer (CRC) remains one of the most common cancers^[1]. Despite advances in understanding its pathogenetic mechanisms, metastatic CRC continues to pose a major clinical challenge, with colorectal liver metastasis (CRLM) being the critical cause of CRC-related death due to limited therapeutic options and poor prognosis^[2]. Liver resection remains the only potentially curative treatment for patients with CRLM^[3]. Three approaches to treating CRC with liver metastases have been proposed, all preceded by neoadjuvant chemotherapy (nCT)^[4]: colonic resection followed by adjuvant chemotherapy (aCT) and then liver resection; hepatic resection followed by aCT and then colonic resection; or simultaneous colonic and hepatic resection followed by aCT. For patients with unresectable CRLM, palliative chemotherapy is the only option, with a 5-year overall survival rate of only 10%^[3].



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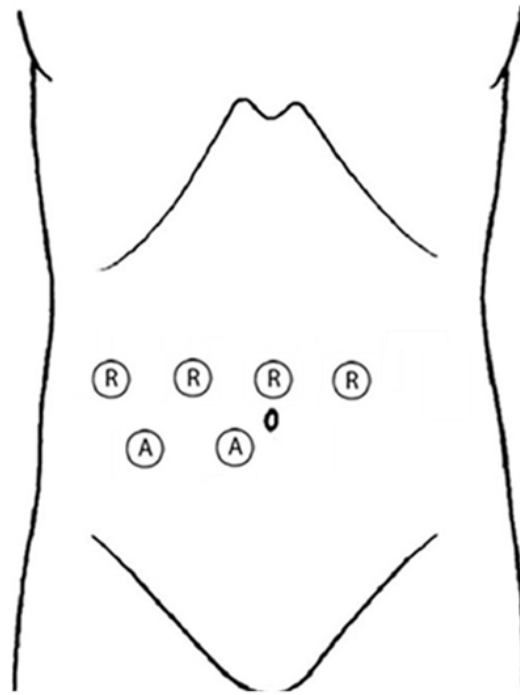


Figure 1. Port placement for liver wedge resection and splenic flexure mobilization. R: Robotic trocar; A: Assistant laparoscopic trocar.

In recent years, simultaneous robotic resections have been increasingly adopted for properly selected patients^[5], due to the enhanced maneuverability provided by robotic platforms. The presented video [Video 1] demonstrates a single-docking robotic left colectomy combined with ultrasound-guided, parenchymal-sparing wedge resection of liver segments 7 and 8, and left hemicolectomy with mechanical anastomosis according to the Knight-Griffen technique. This procedure was performed on a patient with sigmoid cancer and a solitary liver metastasis following four cycles of neoadjuvant FOLFOX chemotherapy.

The port placement strategy and key surgical steps are shown in Figures 1-4. The total operative time was 320 min, with an estimated blood loss of 100 cc. Postoperatively, the patient reported a pain score of 3 on the Numerical Rating Scale (NRS) on day 1, which decreased to 1 on day 2 and 0 on day 3. Bowel movements were observed on postoperative day (POD) 0, with flatus on POD 1, allowing for initiation of solid oral intake that evening. The first evacuation of solid stools occurred on POD 3. Following a follow-up abdominal ultrasound, the patient was discharged on POD 5.

Histologic examination revealed pT3N0M1a according to the AJCC 8th edition. The patient has completed six of the planned eight cycles of adjuvant FOLFOX chemotherapy, and at the 6-month follow-up visit, she was in excellent general condition, with a negative CT scan for disease recurrence.

By carefully positioning the da Vinci Xi robot ports, this synchronous surgery can be performed without altering the original robotic trocar configuration, with the addition of only an assistant trocar. Thanks to the articulated design of the robotic system, such complex operations can be safely performed across two distinct abdominal regions while maintaining the advantages of minimally invasive surgery, including shorter hospital stays, reduced morbidity, and lower blood loss.

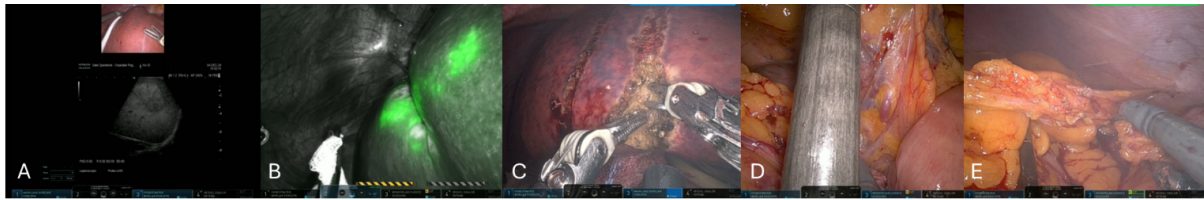


Figure 2. Key surgical steps performed using the trocar configuration shown in [Figure 1](#). (A) Intraoperative ultrasonography; (B) Identification with indocyanine green; (C) Liver transection using the MAMBA technique; (D) Inferior mesenteric artery and vein identification; (E) Splenic flexure mobilization.

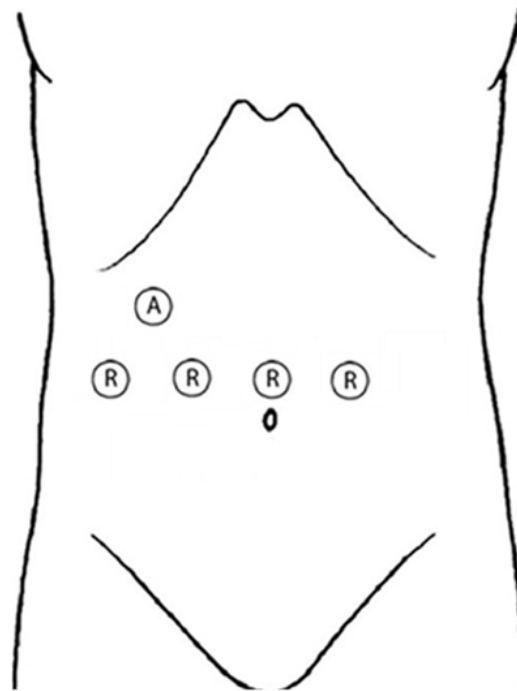


Figure 3. Port placement for the remaining left colectomy. R: Robotic trocar; A: Assistant laparoscopic trocar.

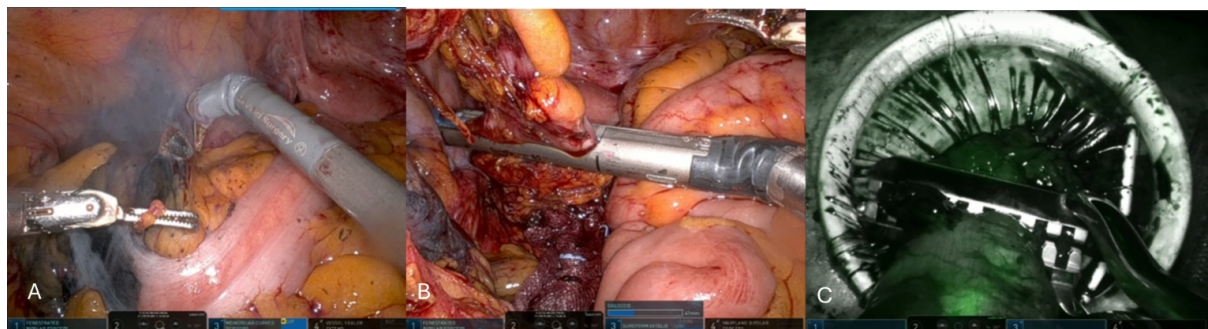


Figure 4. Key surgical steps performed using the trocar configuration shown in [Figure 3](#). (A) Left paracolic gutter dissection; (B) Distal bowel transection with robotic stapler; (C) Extracorporeal proximal bowel transection with perfusion assessment using Indocyanine green.

DECLARATIONS

Authors' contributions

Creation of manuscript: Caringi S, Madaro A, Memeo R Video creation: Caringi S

Availability of data and materials

Not applicable.

Financial support and sponsorship

None.

Conflicts of interest

All authors declared that there are no conflicts of interest.

Ethical approval and consent to participate

This video article did not require ethics committee approval. The patient signed an informed consent form.

Consent for publication

Not applicable.

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REFERENCES

1. World Health Organization News Page. Available from: <https://www.who.int/news/item/01-02-2024-global-cancer-burden-growing--amidst-mounting-need-for-services> (Accessed on 2025-8-14).
2. Cañellas-Socias A, Sancho E, Batlle E. Mechanisms of metastatic colorectal cancer. *Nat Rev Gastroenterol Hepatol.* 2024;21:609-25. DOI PubMed
3. Adam R, de Gramont A, Figueras J, et al; of the EGOSLIM (Expert Group on OncoSurgery management of LIver Metastases) group. Managing synchronous liver metastases from colorectal cancer: a multidisciplinary international consensus. *Cancer Treat Rev.* 2015;41:729-41. DOI PubMed
4. Van Cutsem E, Cervantes A, Adam R, et al. ESMO consensus guidelines for the management of patients with metastatic colorectal cancer. *Ann Oncol.* 2016;27:1386-422. DOI PubMed
5. Moris D, Tsilimigras DI, Machairas N, et al. Laparoscopic synchronous resection of colorectal cancer and liver metastases: a systematic review. *J Surg Oncol.* 2019;119:30-9. DOI