

Press release

## Identifying a Marker to Determine the Risk of Cancer Recurrence in Patients Undergoing Surgery for Colon or Rectal Tumors

- Having high blood levels of a type of molecule, spermidine, before surgery increases the risk of tumor recurrence after surgery by 4.7 times.
- This risk decreases if spermidine levels in the patient's blood drop after surgery.
- The study is published in the Annals of Surgery journal and opens the door to determining which individuals are at higher risk, either before entering the operating room or just afterward, in order to offer them complementary or specific treatment.

**Barcelona, June 6, 2025.** – Having **high levels of spermidine**, a molecule involved in various cellular processes but also in tumor proliferation, **before surgery** can increase the **risk of recurrence in cases of colon and rectal cancer**. This is revealed by a study from the Hospital del Mar Research Institute and Hospital del Mar, in collaboration with the Department of Biochemistry and Molecular Biology at the Faculty of Biology, University of Barcelona. The study is published in the Annals of Surgery journal.

The research team has examined the relationship between having high levels of spermidine before colorectal cancer surgery and the risk of tumor recurrence. Specifically, this risk is **4.7 times higher** in individuals with higher levels compared to those with lower levels. The study also discovered that the greater the drop in spermidine levels after surgery, the less likely cancer is to return.

The researchers followed 146 patients who underwent surgery for these tumors for five years after surgery. In one out of every six, 16.4%, the tumor reappeared, and the relationship between high spermidine levels before surgery and the importance of its decrease after surgery with the recurrence risk was established.

"The results of our study could allow us to anticipate recurrence in these cases, even with samples taken before surgery, in patients with higher spermidine levels" says Dr. Francisco Madrid-Gambin, researcher at the Applied Metabolomics Research Group of the Hospital del Mar Research Institute. And to do so "through a blood test", he adds.

### **Offering Complementary or Specific Treatment**

Currently, to predict the risk of recurrence, the medical team mainly relies on tumor classification, particularly in terms of whether lymph nodes are affected. The results of this study may allow going beyond this and having a new tool. "We still need to validate our findings, but they could help us determine which patients could benefit from chemotherapy or other more specific therapies to prevent disease recurrence", explains Dr. Blanca Montcusí, assistant doctor in the Colorectal Surgery section of the Surgery Service at Hospital del Mar and researcher at its research institute.

"Our goal is to find other risk factors that anticipate recurrence risk, so we can offer treatments, such as chemotherapy or specific therapies to reduce this risk" explains Dr. Miguel Pera, current head of the Surgery Service at Hospital Clínic. Additionally, in cases where very high levels of this molecule are detected before surgery, a neoadjuvant treatment could even be

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administered before surgery, which would help reduce the tumor, facilitate resection, and reduce the risk of recurrence. It is important to note that 80% of cases with these tumors undergo surgery.

The study is part of the research team's work, which had already established the relationship between blood levels of certain metabolites and short-term postoperative complications in patients undergoing surgery for cancer and colon tumors. "We continue to work to verify whether what we've observed is repeated in other populations with these tumors and to determine the role of spermidine in colorectal cancer recurrence, exploring the reason for the relationship between its presence and tumor recurrence", says Dr. Oscar Pozo, coordinator of the Applied Metabolomics Research Group of the Hospital del Mar Research Institute.

The study received the third prize at the 2025 National Awards of the Spanish Association of Coloproctology-Medtronic Foundation, presented at the XXVIII national congress of the organization. It also received the XXVII Dr. Lino Torre Award for Surgical Research, given by the General Surgery Service at Hospital del Mar.

#### Reference

Montcusí B, Madrid-Gambin F, Marin S, Mayol X, Pascual M, Cascante M, Pozo ÓJ, Pera M. Circulating Metabolic Markers Identify Patients at Risk for Tumor Recurrence: A Prospective Cohort Study in Ann Surg. 2024 Colorectal Cancer Surgery. Nov 1;280(5):842-849. doi: 10.1097/SLA.00000000006463. Epub 2024 Aug 1. PMID: 39087328.

#### Related

Montcusí B, Madrid-Gambin F, Pozo ÓJ, Marco S, Marin S, Mayol X, Pascual M, Alonso S, Salvans S, Jiménez-Toscano M, Cascante M, Pera M. Circulating metabolic markers after surgery identify patients at risk for severe postoperative complications: a prospective cohort study in colorectal cancer. Int J Surg. 2024 Mar 1;110(3):1493-1501. doi: 10.1097/JS9.0000000000000965. PMID: 38116682; PMCID: PMC10942180.

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