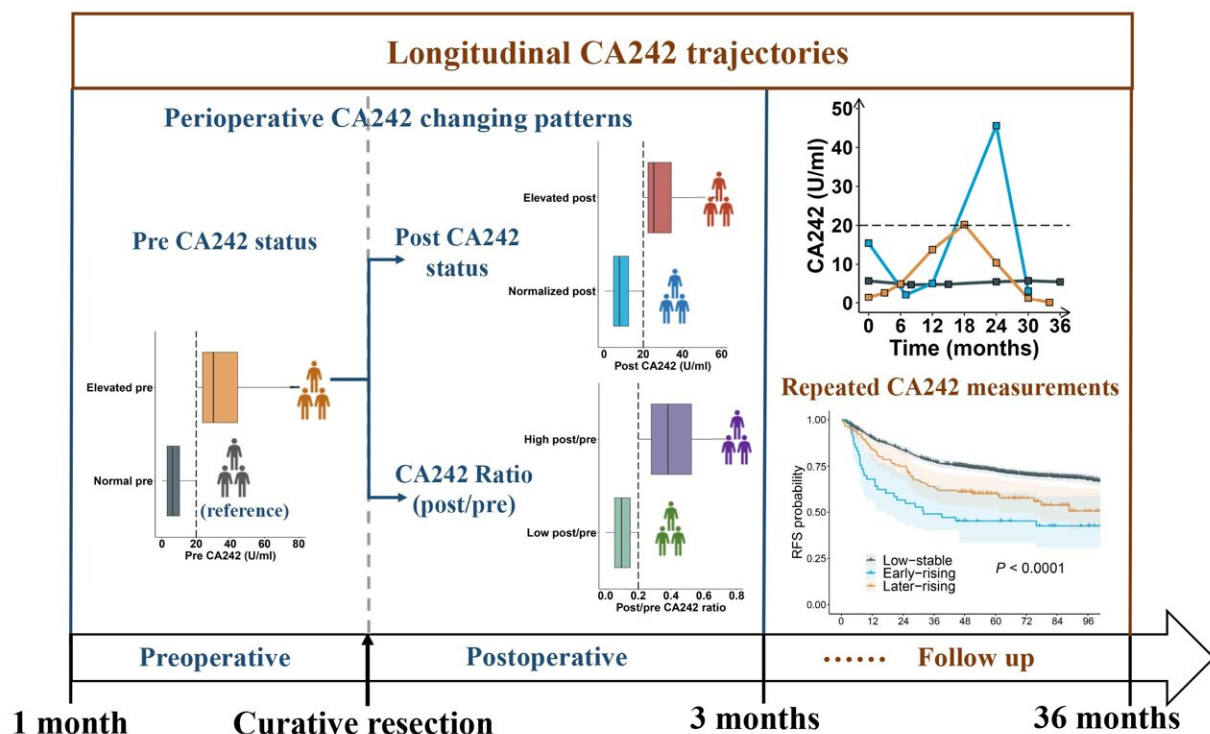


# Perioperative changing patterns and longitudinal trajectories of CA242 with colorectal cancer prognosis

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Perioperative CA242 changing patterns were defined based on preoperative and postoperative CA242 levels, and longitudinal CA242 trajectories were fitted using repeated CA242 measurements during follow-up. Credit: Science China Press

Carbohydrate antigen 242 (CA242), a clinically commonly used tumor marker, has been proven to be an independent prognostic factor of colorectal cancer (CRC), and it may complement carcinoembryonic antigen (CEA) in the follow-up after curative resection for CRC.

However, most previous studies on CA242 were limited to its preoperative level, with the perioperative changing patterns and longitudinal trajectories ignored, which may provide additional information on CRC prognostic surveillance. Based on a retrospective cohort including patients undergoing curative resection for stage I-III CRC, this study aimed to evaluate the associations between CA242 dynamic changes and CRC prognosis.

Preoperative CA242 was normal in 2271 patients and elevated in 531 patients. Patients with elevated preoperative CA242 were divided into the normalized and persistently elevated postoperative CA242 groups, as well as the low and high postoperative/preoperative CA242 ratio groups.

Patients with persistently elevated postoperative CA242 had lower RFS than those whose postoperative CA242 normalized after surgery, indicating postoperative CA242 an independent prognostic factor complementary to preoperative CA242. The postoperative/preoperative CA242 ratio was also significantly associated RFS, and joint analysis showed that the CA242 ratio could further stratify the recurrence risk of patients with normalized and persistently elevated postoperative CA242.

Longitudinal CA242 trajectories during preoperative to 36 months after surgery were fitted using the latent class growth mixed model, with 1620 patients and 12906 CA242 measurements included. Three trajectory groups were identified for longitudinal CA242, labeled as low-stable, early-rising, and later-rising. Compared with the low-stable group, the adjusted HRs on RFS for the early-rising and later-rising groups were 2.30 (95%CI: 1.58–3.35, P

Longitudinal trajectories of CA242 had independent prognostic value even in patients with normal preoperative and postoperative CA242, demonstrating the importance of following-up CA242 in prognosis monitoring of CRC.

In this study, perioperative changing patterns and longitudinal trajectories of CA242 were independent prognostic factors of CRC. Persistently elevated postoperative CA242, high postoperative/preoperative CA242 ratio, and rising CA242 trajectory were all independently associated with poor prognosis.

And the associations between CA242 dynamic changes and RFS were robust in patients with normal CEA, suggesting that CA242 may complements CEA in the identification of high-risk CRC patients. Therefore, researchers recommend a routine follow-up of CA242 in addition to CEA in the postoperative surveillance of CRC [patients](#).

The findings are published in the journal *Science Bulletin*. This study was led by Prof. Tao Zhang (Shandong University School of Public Health), Prof. Qiuxia Xiong (Department of Clinical Laboratory, the First Affiliated Hospital of Kunming Medical University), and Prof. Dingyun You (Kunming Medical University School of Biomedical Engineering Research).

**More information:** Chunxia Li et al, Perioperative changing patterns and longitudinal trajectories of CA242 with colorectal cancer prognosis: a retrospective longitudinal cohort study, *Science Bulletin* (2023). [DOI: 10.1016/j.scib.2023.07.039](https://doi.org/10.1016/j.scib.2023.07.039)

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