Low quantity and quality of muscle predicts poor outcomes in colon cancer surgery

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Low muscle quality and quantity are both predictive of poor outcomes in colon resection surgery, according to a new study published in *JAMA Surgery*.

Carla Prado, a researcher in the University of Alberta's Faculty of Agricultural, Life & Environmental Sciences, and her team followed 1,630 patients who received a diagnosis of Stage I to Stage III [colon cancer](link). The researchers examined various outcomes including length of hospital stay, need for readmission and mortality in patients with colon cancer following colon resection surgery.

They found that low [muscle](link) mass was linked to greater post-operative complications, hospitalization and mortality.

According to the Canadian Cancer Society, in 2020, [colorectal cancer](link) is expected to be the second-leading cause of death from cancer in Canadian men and the third-leading cause of death from cancer in women. Surgery is often used to remove the cancer, and post-operative complications can affect a patient's quality of life.

Prado noted that the ability to predict who may suffer poor outcomes after surgery would allow for more personalized treatment and improved patient care.

Patients in the study were assessed using preoperative computerized tomography (CT) scans, a technique that involves taking a series of X-ray images from different angles and using computer technology to create cross-sectional images of the body. Scans are taken during [cancer diagnosis](link), and researchers can also use the images to analyze body composition.

The CT technology is what allows for the added analysis of muscle radiodensity, which is the quality of the muscle itself.

"It's like you're looking at a steak and you have fat inside the steak. Our muscles can be like that too, and that's not good for us—so our study looked at both the mass (the quantity) and also the quality of the

muscles, which is the amount of fat infiltration," said Prado.

Prado said colon cancer patients were of particular interest for a variety of reasons. The CT images obtained span the body to the third lumbar vertebrae, a frame that is ideal for assessing body composition. Many patients with colon cancer also commonly fall into the obese weight range, and studying low muscle mass in patients at higher weights can offer added insight.

According to Prado, the knowledge that low muscle quantity and quality are indicative of poor post-operative outcomes can have a major impact on patient care through targeted patient interventions.

"It is possible to preoperatively improve muscle, and through that intervention we can better people's quality of life. So I think exploring ways that we can successfully use this approach is the way of the future," she said.

More information: Jingjie Xiao et al. Association of Low Muscle Mass and Low Muscle Radiodensity With Morbidity and Mortality for Colon Cancer Surgery, *JAMA Surgery* (2020). DOI: 10.1001/jamasurg.2020.2497

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