The impact of multimodal prehabilitation in colorectal cancer patients on postoperative lean body mass: a study protocol

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Background

Colorectal cancer (CRC) is the second most prevalent type of cancer in Canada, accounting for 13% of all cancers. The only cure for CRC is removal of the tumor via surgery. **Incidence of post-operative complications is associated with the pre-operative nutritional status and lean mass.**

Traditional surgical recovery efforts focused on the **post**operative period – an inopportune time to attempt major changes in nutrition and physical activity. The **pre**operative window may be a better period to alter modifiable risk factors using prehabilitation.

Our multimodal prehabilitation program includes include exercise, nutritional care, anxiety-coping interventions, and smoking cessation. Particular focus is given to optimizing lean mass and modifying protein intake to help offset the catabolic response experienced postoperatively.

Objectives

1) Qualify the effect of a multimodal prehab program on lean mass during the perioperative period to determine if prehab yields significant differences compared to standard care.

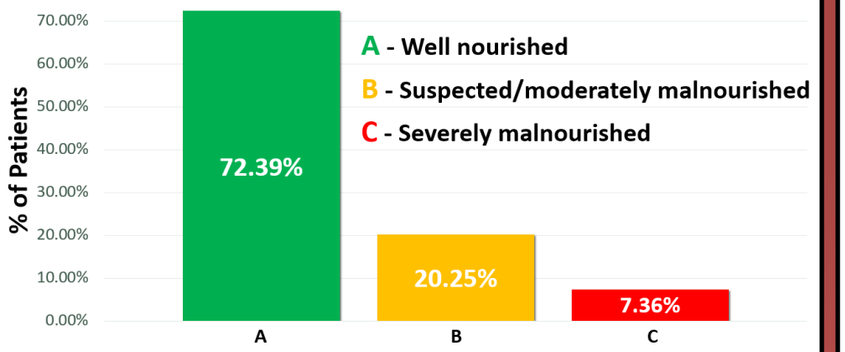
2) Quantify patient protein intake in the postoperative window to determine if further counseling may be needed.

Patient Demographics

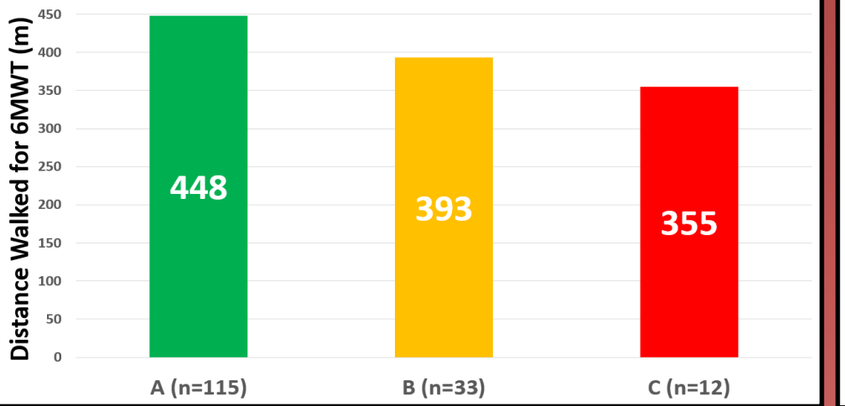
*Carli, F. (2017). Database of perioperative CRC patients (unpublished), MGH

AGE: 57-79
GENDER: 60% M | 40% F
BMI: ~27 | ~35% obese (BMI ≥ 30)
COLONIC SURGERY: ~65% | **RECTAL SURGERY:** ~35%

Patient-Generated Subjective Global Assessment
(n=163)



Functional Capacity By PG-SGA Category at Baseline



Methodology

SUBJECTS: This study is a prospective randomized controlled trial enrolling 100 CRC patients undergoing surgery at the Montréal General Hospital. Patients will be allocated either to the prehabilitation (PREHAB) intervention group, receiving 4 weeks PREHAB, or to the control group, receiving standard care which is defined as the Enhanced Recovery After Surgery (ERAS) guidelines. All groups will receive smoking cessation therapy and anxiety management counseling, as needed. Both groups will receive 8-weeks rehabilitation following ERAS.

INTERVENTION GROUP: The PREHAB group will perform supervised in-hospital training 3x/week consisting of 28 minutes of high-intensity individualized interval training followed by resistance training which includes 2 sets of 10 repetitions of 8 exercises. In-home unsupervised low intensity aerobic training performed 4x/week will also be prescribed. Protein intake will be increased to 1.5-1.8g/kg/day and participants will receive post-workout and pre-sleep protein.

CONTROL GROUP: The control group will be instructed to perform some light stretching and breathing exercises and receive no protein supplementation.

DATA COLLECTION: Both groups protein intake will be tracked using weekly 24-hour recalls, 4 weeks before and after surgery. Changes in lean mass are tracked via four DXA scans; 2 pre- and 2 postoperative at weeks -4, -1, +4, and +8.