Réseau de cancérologie Rossy

Rossy Cancer Network

# Using Multimodal Prehabilitation to Improve Outcomes for Frail Patients undergoing Resection of Colorectal Cancer

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## INTRODUCTION

Colorectal cancer is the third most common cancer in North America, and it is the second leading cause of cancer death in both men and women.

Even in patients without medical or surgical complications, colorectal cancer surgery is associated with a 40% reduction in functional capacity, physical fatigue, disturbed sleep and a decreased ability to concentrate for up to 4 weeks after discharge

Elderly, persons with cancer and frail subjects with limited physiological reserve are the most susceptible to the negative effects of surgery with high rate of post-operative complications,

While efforts are made to mitigate the impact of stress after surgery (rehabilitation) little emphasis has been placed on optimizing patient physical function in the pre-operative period,. *Prehabilitation* is defined as a process designed to improve functional capacity in anticipation of an upcoming surgical stressor. (Figure 1)

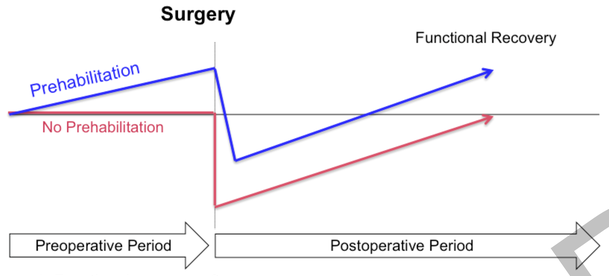


Figure 1. Functional recovery after surgery

## OBJECTIVES

- Prehabilitation using a 4-week multimodal protocol in frail (Fried score >2) patients will reduce postoperative complications after surgery for colorectal cancer compared to use of post-operative rehabilitation.

- To see if the addition of a prehabilitation program is more effective than post-operative rehabilitation alone in improving markers of early post-operative recovery and health-related quality of life in patients with this population.

## METHODS / INTERVENTIONS

**Participants:**

- Patients will be approached and screened for frailty (Fried score >2).
- 120 patients will be enrolled in the study (60 at MGH and 60 at JGH).

- Patients are randomly assigned on a 1:1 ratio by computer generated random numbers either to the prehabilitation (Prehab) group or to the rehabilitation (Rehab) group.

**Study design:** Single-blind parallel-arm superiority Randomized Controlled Trial to be conducted at the MGH and JGH .

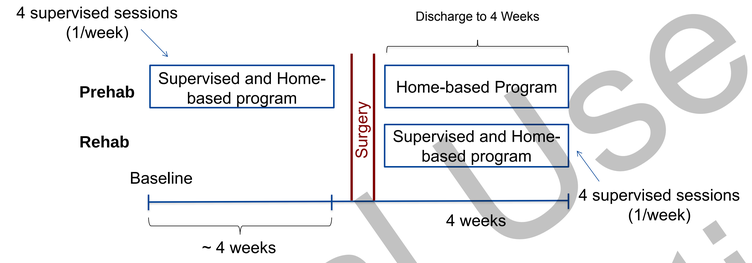


Figure 2. Study design

- **Prehab group:** Will receive instructions on the home-based multimodal program by a kinesiologist and a nutritionist respectively. (Figure 3)

- **The Rehab group:** Will start the same multimodal program at home after hospital discharge and continue for 4 weeks, with one supervised exercise session per week at the hospital lab

- All patients will receive a instructional booklet and log book.

**Measurements** (Table 1):

- Before randomization (Baseline), two days before surgery (Preop), at hospital discharge (Discharge) and 4 weeks after hospital discharge (4 weeks postop).

| Construct | Measure | Baseline | Preop | 4 weeks post op |
|---|---|---|---|---|
| Demographics | Age, sex, language, education, work | X | | |
| Body weight | Body weight | X | X | X |
| Nutritional status | PG-SGA | X | | |
| Health Status | ASA, morbidity, medications | X | | |
| Dementia | Mini-cog test | X | | |
| Frailty | Fried Score | X | | |
| Surgical incision | Open,laparoscopic | X | | |
| Tumor stage | Tumor stage | | | X |
| Inflammation | Albumin, CRP, IL-1B, IL-6, creatine kinase | X | | |
| Diabetic stage | Hb A1C | X | | |
| Neoadjuvant therapy Adjuvant therapy | | X | | X |

Table 1. Measurements

| Exercise Program | Complimentary Program |
|---|---|
| **Aerobic Exercise**<br>• 30 minutes/day at moderate intensity (modified BORG Scale) | **Nutrition**<br>Whey protein supplement (1.2g/kg/day of body weight) |
| **Resistance (1-2 sets of 8 – 12 repetitions)**<br>3 – 4 x / week<br>• Pushups<br>• Chest<br>• Seated row<br>• Shoulder abduction<br>• Biceps flexion<br>• Triceps extension<br>• Quadriceps extension<br>• Leg flexion<br>• Calf raises<br>• Abdominal curls | **Psychology**<br>• Relaxation techniques/ Motivation<br>• Breathing exercises<br>• Relaxation CD |
| **Flexibility**<br>• 2 x 20 second hold for all muscles utilized | |

Figure 3. Program Prescription

## OUTCOME MEASURES

| Construct | Measure | Baseline | Preop | Discharge | 4 weeks post op |
|---|---|---|---|---|---|
| **Primary (Confirmatory)** | | | | | |
| Postoperative complications | Comprehensive Complication Index (CCI) | | | | X |
| **Secondary (Exploratory)** | | | | | |
| Time to readiness for discharge | Time to achieve discharge criteria | | | X | |
| Length of hospital stay | Time from surgery until actual hospital discharge | | | X | |
| Readmission rate | Readmission rate | | | | X |
| Functional walking capacity | 6MWT | X | X | | X |
| Mobility | Time up and go | X | X | | X |
| HRQL | SF-36 | X | X | | X |
| Physical activity | CHAMPS, steps | X | X | | X |
| Anxiety & Depression | HADS | X | X | | X |
| Adherence to the program | % Compliance to prescriptions | | X | | X |

Table 2. Outcome measures

## CURRENT UPDATE

REB approval for MGH = July 2015
REB approval for JGH = November 2015

•179 Patients approached from September 2015 – Present
- 41 Patients eligible
  - 37 Recruited
  - 4 Refused

**Contact**

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