

Physical prehabilitation in colorectal cancer surgery patients

A systematic review of randomized controlled trials to assess whether the evidence (a) indicates that physical prehabilitation is effective in colorectal cancer surgery clinical outcomes, and (b) is sufficiently strong to support a recommendation for physical prehabilitation interventions to be included in ERAS® guidelines.

ABSTRACT

Introduction

Colorectal cancer accounts for 16,500 UK deaths per annum making it the second highest cause of cancer related mortality. With 44,706 new diagnoses in 2019, it is the second most common cancer in males and third most common in females. When detected and treated early, 90% of colorectal cancer patients survive. Surgery remains the cornerstone of colorectal cancer treatment along with neo-adjuvant therapies, chemo- and radiotherapy, where indicated. ERAS® Society best practice guidelines for colorectal cancer surgery recommends nutritional and psychological “prehabilitation” however current literature remains equivocal for the inclusion of physical prehabilitation.

Review Objectives

To review research published since the 2018 ERAS® Society guidelines to evaluate the effectiveness of prehabilitation, and to determine whether recent evidence can support inclusion of physical prehabilitation interventions in colorectal cancer treatment guidelines.

Selection Criteria:

Randomised controlled trials published between 2018 and 2023, comparing physical prehabilitation interventions to usual care or other physical interventions, in adults aged 18+ with non-metastatic colorectal cancer.

Search Methods

A systematic search of PubMed, Ovid MedLine and Google Scholar databases, Clinicaltrials and CENTRAL trials registers was completed between 29th January and 4th February 2023. Hand searches of reference lists for relevant systematic

reviews and a BrowZine search for subject related journals was completed on 25th February 2023.

Results

Ten studies (1452 participants) were included. Risk of Bias (ROB2), quality of exercise reporting (CERT) and overall certainty of evidence (GRADE) quality assessments were completed. GRADE evaluations were downgraded to reflect ROB2 and CERT concerns and scoring over blinding and reporting imprecision in study data. Meta-analysis undertaken for physical capacity, complications and hospital length of stay outcomes. A significant improvement in prehabilitation group 6MWT mean difference in distance walked between baseline and pre-operative assessments (33.85 metres 95%CI: 6.84, 60.87; $p = 0.01$) more than the control group) was found for studies included in functional capacity meta-analysis. Overall risk of post-operative complications reduced slightly in the prehabilitation group but not statistically significant (OR 0.8 95%CI [0.60, 1.06], $p=0.14$). Length of hospital stay was marginally increased in the prehabilitation group (MD 0.16 days 95%CI - 0.18, 0.50; $p = 0.35$) but also not statistically significant.

Conclusion

Physical prehabilitation significantly improved functional capacity in preparation for surgery. Post-surgical complications reduced whilst length of hospital stay was slightly higher, though neither finding was statistically significant. Quality assessment of included studies suggests the evidence remains insufficient for physical prehabilitation inclusion in ERAS® guidelines. This review brings the existing literature up-to-date however small sample sizes, heterogeneity in exercise modes and lack of precise reporting of intervention types or protocols means large scale trials are still necessary, focussing on specific physical prehabilitation exercise modes for optimal post-surgical outcomes.

Keywords: colorectal cancer, physical prehabilitation, functional capacity, complications

Word Count: 500