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Quality of life in older and frail patients after surgery for colorectal cancer—A follow-up study

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ABSTRACT

Objective: The incidence of colorectal cancer is increasing, mainly due to the aging of the population. Frailty, describing a state of increased vulnerability, is common in older patients, but frailty and high age are not necessarily contraindications to surgical treatment. However, limited data describing long-term outcomes after surgery in this patient group exist. In this clinical follow-up study, we aimed to examine long-term health-related quality of life in older surgical patients with colorectal cancer.

Materials and Methods: Patients were recruited from a prospective multicenter study investigating frailty as a predictor of postoperative complications after surgery for colorectal cancer. A preoperative geriatric assessment was performed, and patients were classified as frail or non-frail. Patients responded to version 3.0 of The European Organisation of Research and Treatment of Cancer Quality of Life Questionnaire-C30 before surgery, 3 months postoperatively and at a long-term follow-up 16–28 months (median 22 months) after surgery. One-way repeated-measures analyses of variance were performed to examine changes in scores over time.

Results: 180 patients with a mean age of 80 years were included at baseline, 138 at 3 months postoperatively, and 84 patients (69% of survivors) at long-term follow-up. A significant improvement in quality of life-scores was present 3 months after surgery, also in the subgroup of frail patients. At long-term follow-up, scores decreased, but to values above baseline.

Conclusion: Health-related quality of life may be improved in older patients after surgery for colorectal cancer, even in patients who are classified as frail preoperatively.

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1. Introduction

Colorectal cancer is the third most common cancer in the world, and Norway has one of the highest incidence rates of the disease.[1] The median age for patients treated in Norway is 73 years (colon) and 69 years (rectum).[2] With aging of the general population, an increase in new cases is expected.

Surgery, with either curative or palliative intent, is the main treatment modality for colorectal cancer. Chemotherapy, radiation therapy, or both is also offered in selected cases. Colorectal cancer is a lethal disease and, if left untreated, may lead to severe complications, suffering, and death. Thus, surgical treatment is usually offered regardless of the patient's chronological age. However, postoperative mortality and morbidity are more frequent in older compared to younger patients—partially due to comorbidities and more emergency procedures because of late disease presentation.[3] Fortunately, with advances in diagnostic and therapeutic measures during recent years, survival from colorectal cancer has improved, also in patients of higher age.[4]

Because it is well known that chronological age alone is a poor discriminator for evaluating patient fitness, an approach based on a *geriatric assessment* (GA) has been suggested.[5] GA is a multidimensional evaluation of an older individual and includes assessment of physical function/dependency in activities of daily living (ADL), comorbidities, medications, cognitive function, nutritional status, emotional status, and social support. GA is helpful in the clinical decision-making process and discharge planning, and in the recognition of potential reversible health problems, such as malnutrition or depression.[6] A recent review concluded that performing a GA is also feasible in preoperative care of older surgical patients with cancer, as it may be predictive of postoperative complications.[7]

GA may also be used as a clinical tool to identify the clinical syndrome of *frailty* in older individuals.[6] Frailty is related to, but not dependent on, higher age and comorbidities. The term describes an individual characterized by diminished *strength*, *endurance*, *and reduced physiologic function that increases an individual's vulnerability for developing increased dependency and/or death*.[8] In the setting of geriatric oncology, research suggests that frail patients have increased risk of experiencing postoperative complications, chemotherapy toxicity, and death.[9] Because a patient's frailty status provides more information about the risk of complications from cancer treatment than chronological age alone, it is a highly relevant factor to consider when caring for older patients with cancer.

Studies show that older patients frequently prioritize functional outcomes, such as functional independence, more than survival.[10–11] However, few studies have reported long-term outcomes related to functional status and self-reported quality of life for this patient group. Such data are important for several reasons. Firstly, data are needed to provide patients with reliable information on what to expect after cancer treatment. Secondly, such knowledge may lead to modifications of standard treatment due to a high risk of complications that are unacceptable for the individual patient. Thirdly, increased knowledge of older patients' trajectories after surgery for colorectal cancer in fit versus frail patients will increase our understanding of how to optimize treatment for this patient group.

We have previously shown that in a population of patients >70 years undergoing surgery for colorectal cancer, a significant but modest reduction in physical function developed 1.5–2.5 years after surgery.[12] The present study evaluates health-related quality of life (QOL) before and after surgery in the same patient cohort.

2. Materials and Methods

This is a planned follow-up of a previously published prospective multicenter study investigating the impact of frailty and other clinical variables upon the risk of postoperative complications after elective surgery for colorectal cancer in older patients.[13] The original study and this follow-up study were approved by the Regional Committee for Medical and Health Research Ethics in Eastern Norway. All participants provided written informed consent at baseline and again at follow-up.

Patients eligible for inclusion were aged ≥70 years and scheduled for elective resection of colon or rectal cancer in one of three Norwegian hospitals; Akershus University Hospital and Oslo University Hospital; Aker or Ullevål divisions. Before surgery, patients underwent a GA performed by a medical doctor with training in geriatrics. To assess functional dependence in activities of daily living, the Barthel Index and Nottingham Extended Activities of Daily Living Scale (NEADL) were used.[14–15] Comorbidity and nutritional status were evaluated by the Cumulative Illness Rating Scale (CIRS) and the Mini Nutritional Assessment (MNA), respectively.[16–17] Emotional symptoms were measured by the Geriatric Depression Scale (GDS), and cognitive function by the Mini Mental State Examination (MMSE).[18–19] Polypharmacy was defined as using 8 or more daily medications. Based on the GA, patients were classified as frail when fulfilling one or more of the following criteria: physical dependence in basic ADL measured by the Barthel index, >1 grade 4 comorbidity/>2 grade 3 comorbidities in CIRS, a score of <17 in MNA representing malnutrition, MMSE-score <24 indicating cognitive impairment, a score of >13 in GDS indicating depression, or polypharmacy. Details of the frailty-classification are thoroughly described in a previous paper.[20]

Participants responded to version 3.0 of The European Organisation of Research and Treatment of Cancer Quality of Life Questionnaire-C30 (EORTC QLQ-C30) before surgery (baseline), 3 months postoperatively and at follow-up, which was performed 16–28 months after surgery. The reason for the wide range in time to follow-up was that the inclusion for practical reasons had to take place within 1 year. Patients were consecutively contacted during this year, based on their order of inclusion in the original study. Thus, those who were included late in the original study had shorter time to long-term follow-up. To make the questionnaire available for all patients, including those with vision impairments and mild cognitive impairments, it was presented as an interview.

The EORTC QLQ-C30 is a 30-item questionnaire including scales that evaluate physical, role, emotional, cognitive, and social functioning as well as global health/QOL.[21] Higher mean