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Enhanced Recovery After Colorectal Surgery (ERAS) in Elderly Patients Is Feasible and Achieves Similar Results as in Younger Patients

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Abstract

Aim: Enhanced recovery after surgery (ERAS) is a multimodal approach that aims to optimize perioperative treatment. Whether elderly patients receiving colorectal surgery can adhere to and benefit from an ERAS approach is uncertain. The aim of this study was to compare patients in different age groups participating in an ERAS program. **Method:** In this substudy of a randomized controlled trial, we analyzed the interventional ERAS arm of adult patients eligible for laparoscopic or open colorectal resection with regard to the importance of age. Patients were divided into three groups based on age: ≤65 years (n = 79), 66-79 years (n = 56), and ≥80 years (n = 19). The primary end point was total postoperative hospital stay (THS). Secondary end points were postoperative hospital stay, postoperative complications, postoperative C-reactive protein levels, readmission rate, mortality, and patient adherence to the different ERAS elements. All parameters and measuring the adherence to the ERAS protocol were recorded before surgery, on the day of the operation, and daily until discharge. **Results:** There were no significant differences in length of THS between age groups (≤65 years, median 5 [range 2-47] days; 66-79 years, median 5.5 [range 2-36] days; ≥80 years, median 7 [range 3-50] days; p = .53). All secondary outcomes were similar between age groups. Patient adherence to the ERAS protocol was as good in the elderly as it was in the younger patients. **Conclusion:** Elderly patients adhered to and benefited from an ERAS program, similar to their younger counterparts.

Keywords
ERAS, colorectal surgery, age groups, complications

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Introduction

Standard elective colorectal resection is usually associated with a postoperative length of hospital stay of 6 to 12 days, and complication rate varies between 10% and 50% (Bokey et al., 1995; Schoetz et al., 1997; Vlug et al., 2011). Important factors for late recovery and discharge are postoperative pain, paralytic ileus, and organ dysfunction related to surgical stress, but many other factors also play a role, such as immobilization, postoperative cognitive dysfunction, and local hospital traditions such as nasogastric tubes, drain, and urinary catheter postoperatively. Perioperative care has been improved in the last 20 years with development of minimally invasive surgery, newer anesthetic and analgesic techniques, and other factors to reduce the surgical stress (Kehlet & Dahl, 2003; White et al., 2007). Enhanced recovery after surgery (ERAS) is a multimodal approach that aims to optimize perioperative management (Fearon et al., 2005). The ERAS program is a package of evidence-based changes in preoperative, intraoperative, and postoperative care to reduce organ dysfunction and surgical stress response to promote rapid recovery (Kehlet, 2008; Ren et al., 2012). ERAS guidelines were first published for colorectal surgery and in recent years also for other major procedures in gastrointestinal surgery, urology, and gynecology, and include mostly around 15 to 20 perioperative elements. The key elements

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of an enhanced recovery pathway are (a) extended patient information, (b) preservation of gastrointestinal function (carbohydrate solution before surgery, early enteral feeding), (c) minimizing organ dysfunction (omission of mechanical bowel preparation, goal-directed fluid therapy, avoidance of drains and nasogastric tube, minimally invasive surgery), (d) active pain control (opioid-sparing anesthesia and analgesia, local anesthetic infiltration of incisions), and (e) promotion of patient autonomy with early mobilization (Adamina, Kehlet, Tomlinson, Senagore, & Delaney, 2011). The more ERAS elements are implemented, the more frequently the postoperative course is improved (Gustafsson et al., 2011). Studies have demonstrated that ERAS is safe and shortens the length of the hospital stay (Adamina et al., 2011; Varadhan et al., 2010). However, elderly patients have either been excluded or the sample size has been too small to perform subgroup analyses (Bagnall et al., 2014). There is also uncertainty as to whether elderly patients can comply with the implementation of this multidisciplinary program and whether they have better or worse outcomes in such a program than younger patients.

We have earlier conducted a controlled, randomized trial in which we compared patients treated with an ERAS approach with patients treated with a standard of care pathway (Forsmo et al., 2016). In this substudy of this prospective trial, the main objective was to evaluate patients in different age groups in the ERAS care pathway and to see whether elderly patients achieved the same outcomes as younger patients. We also wanted to evaluate elderly patients' adherence to an ERAS program compared with younger patients.

Method

Study Design

The present study was based on data from a prospective clinical trial, which was undertaken at Haukeland University Hospital in Bergen, Norway, between January 5, 2012, and March 4, 2015. The aim of the study was to assess whether it was possible to decrease the length of total hospital stay (THS), mainly as a result of reduced morbidity. Detailed information regarding the study design and perioperative care is described elsewhere (Forsmo et al., 2016) . In brief, patients aged ≥18 years who were scheduled for elective laparoscopic or open colorectal surgery for malignant or benign disease, with or without stoma, were eligible for inclusion in the study. One to 3 weeks before surgery, patients were informed about the study both orally and in writing, and written consent was obtained. Patients undergoing a planned multivisceral resection or with American Association of Anesthesiologist (ASA) score IV were excluded. Additional exclusion criteria were emergency operations, impaired mental capacity with difficulty providing informed consent, or inability to adapt to the ERAS criteria as evaluated by the study surgeons. If the intended colonic or rectal surgery was not performed for any reason, the randomized patients were excluded from the analysis. Patients were randomized to ERAS or standard of care, and a randomization list with an allocation ratio of 1:1 was generated with block randomization.

Table 1. Numbers of ERAS Items.

	ERAS care
Preoperative	
Preoperative counseling	√
Preoperative feeding	√
Carbohydrate loading	√
No bowel preparation	
No premedication	√
Antimicrobial prophylaxis	√
Perioperative	
Fluid restriction	√
Anesthetic protocol	TIVA
Prevention of hypothermia	√
Epidural anesthesia	√
Minimal invasive incisions	
Postoperative	
No routine use of nasogastric tubes	√
No use of drains in colon surgery	√
Enforced postoperative mobilization	√
Enforced postoperative feeding	√
No systemic morphine use	√
Standard laxative	√
Early removal of urine catheter	√
Total number	16

Note. ERAS = enhanced recovery after surgery; TIVA = total intravenous anesthesia; √ = ERAS item completed.

In this substudy, we focus on patients in the intervention arm (ERAS group) of this randomized, controlled trial and the influence of age on the ERAS program. Patients were divided into three groups based on age: ≤65 years (n = 79), 66-79 years (n = 56), and ≥80 years (n = 19). The numbers of ERAS items used are shown in Table 1. Adherence to all these items is dependent on physicians (surgeons, anesthesiologists), nurses, physical therapists, and the patients themselves. The ERAS pathway intends to provide all ERAS elements to all patients as far as possible. The same physicians and nurses treated all patients, and thus, provider-depending differences between the age groups are highly unlikely.

Objectives and Endpoints

THS, measured in days, was the primary end point of this analysis. THS was defined as postoperative hospital stay (PHS) plus any additional days of readmission within the first 30 days after surgery. Equivalent discharge criteria were applied to all age groups. These included bowel function (feces or repeated flatus), mobilized and out of bed more than 6 hr each day, postoperative pain

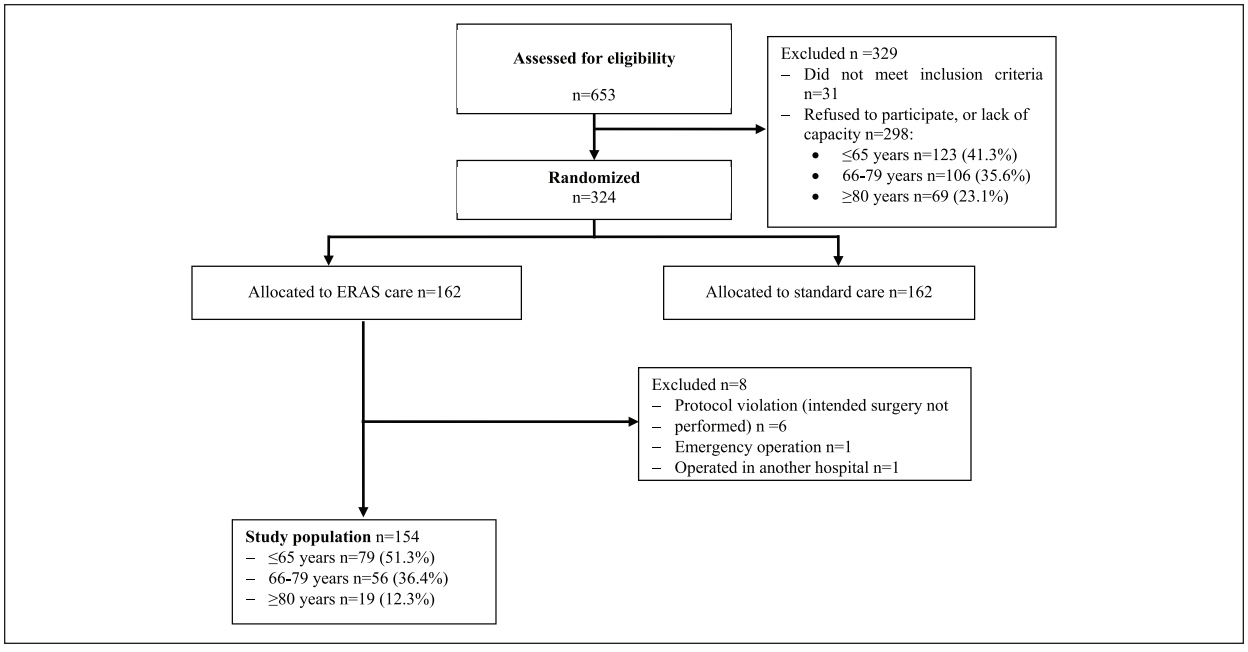

Figure 1. Flow chart of patients considered for inclusion.
Note. ERAS = enhanced recovery after surgery.

adequately controlled with oral medication (Visual Analog Scale < 4), and no complications requiring treatment in hospital. Secondary end points were postoperative complications, PHS, readmission rate, postoperative C-reactive protein (CRP) levels, mortality, and patient adherence to the different ERAS elements. CRP levels reflect the postoperative inflammatory response. Prior to study commencement, the definitions for complications were established and the incidences of complications were recorded in accordance with the Clavien–Dindo classification (Dindo, Demartines, & Clavien, 2004).

All parameters and measurements of adherence to the ERAS protocol were recorded by one study nurse and one surgeon before surgery, on the day of the operation, and daily until discharge. All patients had an outpatient clinic visit on Postoperative Days 10 and 30, which were all performed by one dedicated nurse and the same two surgeons.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics software, version 22. The different age groups in the ERAS care pathway were analyzed using descriptive statistical methods, and the results of continuous variables were presented as the median and range. Discrete variables were compared with the chi-square test. For continuous outcomes, ANOVA and regression analysis (linear, quadratic, cubic, and exponential) were performed.

This study was registered with ClinicalTrials.gov (No. NCT01610726), and the local regional committee of ethics approved this trial (reference no. 2010/2079).

Results

In the main study, 329 of 653 eligible patients were not included, mainly because of a lack of capacity at the ERAS outpatient clinic, and 324 patients were randomly assigned to the ERAS program or standard of care. Among 298 patients not included in the study (Figure 1), the percentage of patients over the age of 80 was higher than those included in the study (23.1% vs. 12.3%, respectively). In the patient group younger than 65 years, this percentage was lower (41.3% vs. 51.3 %, respectively) (Figure 1). The patient characteristics and surgical details for patients included in this analysis are summarized in Table 2. A greater proportion of patients in the two oldest age groups had ASA 3, and the proportion of patients with malignancy was higher. In patients aged <65 years, more rectal operations were performed.

There were no significant differences in THS between age groups treated in the ERAS program (Table 3). The ability to tolerate solid food without nausea did not differ between the groups. There were no differences between groups regarding postoperative CRP levels. Regression analysis with age as a continuous variable did not show any correlation between age and the outcomes variables either.

The age groups exhibited similar outcomes regarding overall, major, and minor morbidity; reoperation rate; readmission rate; and 30-day mortality (Table 4). Complications according to Clavien–Dindo ≥3b did not differ significantly between the groups.

Adherence to the ERAS protocol is summarized in Table 5. Although total oral intake on the day of surgery was somewhat lower in patients aged ≥80 years, there

Table 2. Characteristics and Surgical Details of Patients Assigned to ERAS Care in the Different Age Groups.

	Age group			
	≤65 years	66-79 years	≥80 years	*p* value
Included patients, *n*	79	56	19	
Median age (range), years	58 (23-65)	72 (66-78)	83 (80-89)	
Male/female, *n*/*n*	47/32	25/31	11/8	.22[a]
Malignant/benign, *n*/*n*	58/21	47/9	19/0	.02[a]
ASA, *n* (%)				<.001[a]
I	27 (34.2)	11 (19.6)	0 (0)	
II	48 (60.8)	35 (62.5)	10 (52.6)	
III	4 (5.0)	10 (17.9)	9 (47.4)	
Type of colorectal surgery, *n* (%)				.04[a]
Right-sided	12 (15.2)	20 (35.7)	3 (15.8)	
Left-sided or sigmoid	13 (16.5)	10 (17.8)	5 (26.3)	
Low anterior resection	31 (39.2)	17 (30.4)	5 (26.3)	
Protective ileostomy or colostomy	17	5	2	
Abdominoperineal resection	17 (21.5)	9 (16.1)	6 (31.6)	
(Procto)-colectomy	6 (7.6)	0 (0)	0 (0)	
Laparoscopy, *n* (%)	35 (44.3)	18 (32.1)	9 (47.4)	.37[a]
Open surgery, *n* (%)	44 (55.7)	38 (67.9)	10 (52.6)	
Conversion, *n* (%)	3 (8.6)	4 (22.2)	1 (11.1)	
Median duration of surgery (range), minutes	177 (96-380)	154 (76-292)	172 (104-432)	.14[b]
Median blood loss (range), mL	200 (0-1500)	150 (0-1050)	200 (0-700)	.80[b]

Note. ERAS = enhanced recovery after surgery; ASA = American society of anesthesiologists.
[a]χ^2 test.
[b]ANOVA test.

Table 3. Postoperative Data in Patients Receiving ERAS Care in the Different Age Groups.

	≤65 years (*n* = 79)	66-79 years (*n* = 56)	≥80 years (*n* = 19)	*p* value[a]
Total hospital stay, days	5 (2-47)	5.5 (2-36)	7 (3-50)	.53
Postoperative hospital stay, days	5 (2-30)	5 (2-21)	6.5 (3-50)	.22
Tolerated solid food without nausea, days	2 (0-8)	2 (0-9)	1 (0-6)	.13
Median CRP levels, mg/L				
Preoperative	2 (1-42)	3 (1-18)	3 (1-35)	.44
Day 2 postoperative	110 (19-400)	137 (25-284)	154 (75-499)	.30
Day 10 postoperative	8 (1-136)	13 (1-216)	16 (4-206)	.054

Note. Data are presented as median (range). ERAS = enhanced recovery after surgery; CRP = C- reactive protein.
[a]ANOVA test.

were no significant differences in intraoperative fluid load, intravenous fluid, total oral intake, or mobilization after surgery. Furthermore, there were no differences in the number of patients with preoperative counseling, omission of bowel preparation, intake of carbohydrate-loaded drinks before surgery, omission of preoperative fasting and premedication, postoperative laxative, thoracic epidural analgesia, type of anesthesia, prevention of hypothermia, and days to removal of the urinary tract catheter.

Discussion

The goal of this substudy was to evaluate the short-term outcomes of elderly and younger patients undergoing open and laparoscopic colorectal surgery using an ERAS protocol, and to see whether elderly patients could adhere to an ERAS program. Our main findings were that elderly patients equally adhered well to and benefitted from an ERAS program as younger patients according to the main outcome of reduced length of hospital stay. As the original study was a randomized trial, we believe that our results are based on a representative selection of patients who met the inclusion criteria.

A number of prospective and retrospective studies have demonstrated a similar length of stay when older and younger cohorts are compared (Baek et al., 2013; Kahokehr, Sammour, Sahakian, Zargar-Shoshtari, & Hill, 2011; Keller, Lawrence, Nobel, & Delaney, 2013;

Table 4. Surgical and Nonsurgical Complications in Patients Receiving ERAS Care in the Different Age Groups.

	≤65 years (*n* = 79)	66-79 years (*n* = 56)	≥80 years (*n* = 19)	*p* value[a]
Overall morbidity <30 days, *n* (%)	32 (40.5)	23 (41.2)	10 (52.6)	.62
Patients with one or more major complications, *n* (%)	7 (8.9)	9 (16.1)	2 (10.5)	.30
Major complications, *n* (%)				
Anastomotic leakage/patients with an anastomosis	4/61 (6.6)	5/46 (10.9)	1/10 (10.0)	.65
Colon	2/25 (8.0)	1/29 (3.4)	0/5 (0)	.65
Rectum	2/36 (5.6)	4/17 (23.5)	1/5 (20)	.15
Abdominal wall dehiscence	1 (1.3)	3 (5.4)	1 (5.2)	.36
Other complications requiring reoperation[b]	2 (2.5)	0 (0)	0 (0)	.39
Other major complication[c]	3 (3.8)	2 (3.6)	1 (5.3)	.59
Patient with one or more minor complications, *n* (%)[d]	26 (32.9)	19 (33.9)	8 (42.1)	.65
Reoperations, *n* (%)	7 (8.8)	8 (14.3)	2 (10.5)	.61
Readmission <30 days, *n* (%)	12 (15.2)	14 (25.0)	4 (21.1)	.33
Mortality <30 days, *n* (%)	0 (0)	2 (3.6)	1 (5.3)	.18
Clavien–Dindo ≤ Grade 3b, *n* (%)	25 (31.6)	14 (25.0)	8 (42.1)	.36
Clavien–Dindo ≥ Grade 3b, *n* (%)	7 (8.9)	9 (16.1)	2 (10.5)	.40

Note. ERAS = enhanced recovery after surgery; ICU = intensive care unit.
[a]χ^2-test.
[b]Other complications requiring reoperation: postoperative bleeding, deep abdominal infection, iatrogenic bowel perforation, mechanical ileus requiring reoperation.
[c]Other major complication: cerebral vascular accident, gastrointestinal bleeding requiring endoscopic intervention, respiratory complications requiring ICU, sepsis.
[d]Minor complications: Wound infection (abdominal), wound infection (perineal), intraabdominal infection (antibiotic treated or drainage), prolonged postoperative ileus, pneumonia, pleural effusion requiring drainage, pulmonary embolism, cardiac arrhythmia, urinary infection, urine retention, gastrointestinal bleeding not requiring intervention, renal failure (S-creatinine >100 µmol/L), hyponatremia (s-Sodium <130 mmol/L), postoperative confusion, paresthesia of arm after laparoscopy, port site bleeding, pleuritis, subcutaneous infections, antibiotic treated infection unknown cause, early stoma related complications, transient ischemic attack with normal MRI. There were no significant differences in the subgroups of minor complications in the three groups of age.

Table 5. Adherence to the ERAS Study Protocol in the Different Age Groups.

	≤65 years (*n* = 79)	66-79 years (*n* = 56)	≥80 years (*n* = 19)	*p* value[a]
Day of surgery				
Intraoperative fluid loading, liters[b]	2.9 (1.2-5.7)	2.7 (0.9-5.5)	3.1 (1.8-4.6)	.28
Total oral intake after surgery, liters	0.6 (0-3.0)	0.6 (0-1.7)	0.4 (0-1.9)	.07
Mobilization 24 hr after surgery, minutes	180 (0-360)	180 (5-420)	120 (0-360)	.30
Intravenous fluid, liters				
First 24 hours, included intraoperative	3.8 (1.9-7.6)	3.9 (2.3-9.5)	4.8 (2.6-6.4)	.59
First 7 days, included intraoperative	5.2 (1.9-16.4)	4.9 (2.6-19.2)	6.4 (3.6-11.9)	.80
Total oral intake, liters				
POD 1	1.6 (0.5-3.2)	1.6 (0.8-3.1)	1.4 (0.3-3.0)	.23
POD 2	1.6 (0.5-3.3)	1.5 (0.5-3.5)	1.7 (0.9-2.9)	.39
Removal of urine catheter, days	3 (1-14)	2(1-21)	3 (1-6)	.98
Removal of thoracic epidural analgesia, days	2.5 (0-5)	2 (0-4)	3 (1-4)	.72
Mobilization, minutes				
POD 2	240 (15-540)	225 (30-420)	240 (30-360)	.72
POD 3	300 (30-660)	240 (60-540)	240 (60-360)	.76

Note. Data are presented as median (range). ERAS = enhanced recovery after surgery; POD = postoperative day.
[a]ANOVA test.
[b]Intraoperative fluid loading included 800 ml antibiotics.

Pawa, Cathcart, Arulampalam, Tutton, & Motson, 2012; Senagore et al., 2003; Verheijen, vd Ven, Davids, Vd Wall, & Pronk, 2012; Walter et al., 2011), while other studies found longer length of stay in older patients (Feroci et al., 2013; Hendry et al., 2009; Rumstadt et al., 2009). Two randomized controlled trials comparing ERAS with standard of care in elderly patients found significantly reduced length of hospital stay in patients allocated to ERAS care (Jia et al., 2014; Wang et al., 2012). However, the definition of various age groups

differed widely in all these studies. In our study, there were no significant differences in THS between the age groups. However, THS in the age group ≥80 years was 2 days longer than in the age group <65 years. There were no differences in morbidity or 30-day mortality which could explain this difference. It was not possible to determine other factors contributing to this difference. This may be due to logistical challenges, such as home care situation, or the patient's own wishes. Elderly patients are often living alone which implies that they have to be fit enough to manage their home situation by themselves. Even if discharge criteria are fulfilled, elderly patients may not be fit enough and have to wait for nursing home placement. This is in line with others who found that older patients remained in hospital for further 3 to 5 days after they met the criteria for safe discharge (Rumstadt et al., 2009). It might be a limitation of our study that we did not measure days until discharge criteria were fulfilled, but only THS.

As expected, patients in the oldest cohort in our study had more comorbidities and a higher proportion of malignancies than the younger age groups. Age is the single highest risk factor for developing cancer, and older patients are more likely to have malignant than benign tumors (Parks, Rostoft, Ommundsen, & Cheung, 2015). Decision making regarding surgery in elderly patients is challenging because these patients have more comorbidities as well as functional and cognitive impairments. The proportion of patients aged ≥80 years not included in the study was higher compared with the other age groups. This could represent a selection bias toward inclusion of more fit patients in the oldest age group, and exclusion of those who were considered frail and unable to adapt to the ERAS criteria as assessed by the study surgeons. This might reflect that a subgroup of elderly patients is not suitable for an ERAS program, although this may also be the case in younger frail patients. Interestingly, however, frailty does not necessarily exist in patients with many comorbidities, and some elderly patients with little or no concomitant disease appear to be frail (Fried et al., 2001). We did not apply frailty risk stratification in our analysis, for example, by "Comprehensive Geriatric Assessment" or "Fried criteria," and therefore, we cannot state the proportion of frail patients in the different age groups. The length of stay in the oldest age group may have been favorably influenced by the significantly increased proportion of patients undergoing hemicolectomies and the reduced proportion undergoing rectal resections compared with younger patients (Table 2).

No differences in morbidity and 30-day mortality were found between the age groups. A recently published systematic review of ERAS care after colorectal surgery in elderly patients found 11 studies comparing older and younger cohorts (Bagnall et al., 2014). Seven out of the 11 studies found no difference in mortality (Baek et al., 2013; Hendry et al., 2009; Keller et al., 2013; Naef, Kasemodel, Mouton, & Wagner, 2010; Rumstadt et al., 2009; Senagore et al., 2003; Walter et al., 2011). Two studies did not report on mortality, and two found higher 30-day mortality in patients aged >80 years (Feroci et al., 2013; Pawa et al., 2012). In five studies, the complication rates were similar (Baek et al., 2013; Hendry et al., 2009; Keller et al., 2013; Senagore et al., 2003; Walter et al., 2011); two studies did not report complications; and four studies found more complications in older patients (Feroci et al., 2013; Naef et al., 2010; Pawa et al., 2012; Rumstadt et al., 2009). However, the definitions of the elderly age groups in the studies included in the review varied considerably, ranging from ages >65 to 80 years. We divided the patients into three age groups to see whether there were differences between those aged 65 to 79 years and those aged ≥80 years compared with younger patients. Considering the low number of patients aged ≥80 years, we could have divided the patients in two age groups instead of three. However, we think it would not be appropriate to dichotomize the patients into age groups above or below 65 years, which often is done. On the contrary, we think that our grouping reflects the various age groups who undergo colorectal resections properly with regard to their physical characteristics and different stages of life. This view is supported by regression analysis with age as a continuous variable that did not reveal any correlation between age and the outcomes variables. In elderly patients, there is greater heterogeneity regarding comorbidities and the degree of mobility. Treatment decisions and the choice of surgical intervention should therefore be based on biological characteristics rather than chronological age. Thus, chronological age should not be a determinant in itself. The term *frailty*, which includes decreased reserves in general and deterioration in multiple organ systems, has been introduced. The frailty evaluation is important to avoid over- and undertreatment, which is a well-known pitfall in geriatric oncology (Ommundsen et al., 2014). Currently, there are no simple tests available to predict postoperative outcome for frail elderly patients. The Comprehensive Geriatric Assessment is recognized as the best tool for evaluating elderly patients preoperatively (Feng et al., 2015; Kristjansson et al., 2010). Unfortunately, it is time-consuming and might be difficult to use in a busy surgical clinical practice (Ugolini et al., 2015). It seems, however, reasonable that this extra time spent in identifying and treating correctable conditions in complex patients may decrease postoperative complications and length of hospital stay. As a consequence of this study, in collaboration with our anesthesiologists, we will implement a tool for evaluating frailty in patients.

Adherence to the ERAS approach means to which extent the patients are able to implement the ERAS program. Conducting an ERAS program depends on both the provider (surgeons and nurses) and the patient. Staff must facilitate that patients can implement the program. Adherence is measured by the extent of individual ERAS elements carried out. Previous studies have demonstrated

good compliance with preoperative and intraoperative ERAS elements, but reduced adherence during the postoperative phase (Hendry et al., 2009; Maessen et al., 2007). However, it has been suggested that compliance with postoperative rather than preoperative ERAS elements is likely to be of particular importance for good progress and accelerated postoperative recovery (Maessen et al., 2007). Postoperative variables are markers of recovery and protocol compliance. Early mobilization is central in an enhanced recovery protocol. In a multivariate analysis, Hendry et al. (2009) identified age >80 years and higher ASA score as independent predictors of prolonged mobilization. In our study, we found no differences in compliance to the various ERAS elements between the different age groups. Also, no difference was found in the level of mobilization in contrast to other studies that have reported differences in levels of mobilization (Hendry et al., 2009; Pawa et al., 2012; Rumstadt et al., 2009). This may be related to the strict inclusion criteria among the oldest patients. We feel that it is highly likely that more elderly patients would benefit from special supervision and the guidance of specialist nurses in ERAS, particularly the postoperative ERAS elements, even if it is not possible to implement the entire program.

As expected, the elderly cohort in our study had more comorbidity and more malignancies than the younger age group. Elderly patients with more comorbidities might be expected to have higher rates of mortality and complications and experience longer hospital stays than younger patients. Our results show the safety of the ERAS program in elderly patients who are able to adapt to the ERAS criteria. We believe that more elderly patients should receive such perioperative treatment, and it is highly likely that they will have similar length of stay and the same rate of postoperative readmissions and complications as the younger patients.

Declaration of Conflicting Interests

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