CHAPTER 2

Aims and outline of thesis
CHAPTER 2

Part 1. The value of frailty screening instruments as risk assessment tools in oncological abdominal surgery

‘Old age does not come alone’. We know that advancing age predisposes us to illness, functional deterioration and cognitive decline. However, this aging-associated decline (which can be described with the blanket term frailty) has a varying prevalence and presentation in the extremely heterogeneous cohort of older individuals. In surgical oncology, this heterogeneity in the older patient population needs to be taken into account. In the first part of this thesis, we aimed to determine whether frailty screening can improve preoperative risk prediction in older patients undergoing surgery for (colo)rectal cancer. In Chapter 3, we performed a retrospective multicenter cohort study in nine Dutch hospitals to explore the value of preoperative frailty screening in older patients undergoing rectal cancer surgery. In a cohort of patients >70 years, we measured six geriatric risk factors (malnutrition risk, fall risk, delirium risk, functional impairment, polypharmacy and use of mobility aid) in addition to standard preoperative risk factors (e.g., age, sex, tumor stage, ASA-score, comorbidities) before surgery. We determined whether the addition of geriatric parameters to a prediction model with only standard preoperative parameters increases the model performance for negative postoperative outcomes. In Chapter 4, we focused on the Groningen Frailty Indicator (GFI), a 15-item frailty screening instrument designed to identify frail older patients. In a cohort of patients >70 years undergoing surgery for colorectal cancer, we investigated whether GFI has the potential to be implemented as a risk prediction tool for adverse postoperative outcomes.

Part 2. Evaluation of modifiable patient- and surgery-related risk factors in older patients undergoing oncological abdominal surgery

Preoperative informed decision-making in major oncological surgery relies on addressing patient-related and surgery-related risks for negative outcomes. Focus on modifiable risk factors is of additional value as they provide opportunities for adjustment. The aim of the second part of this thesis is to evaluate some of these opportunities, starting with patient-related risk factors (Chapters 5, 6 and 7), and following with the surgical procedure (Chapter 8).

Poor physical fitness is an important determinant of frailty, and older patients with inadequate physical reserves are at risk for adverse health outcomes. We address different approaches to measure physical fitness in older patients (physical tests, sarcopenia, and physical activity) and their role as risk assessment methods in oncological abdominal surgery. In Chapter 5, we performed a systematic review to identify the objective physical assessment instruments currently used to measure preoperative physical fitness in older patients undergoing oncological abdominal surgery. We also evaluated their
ability to predict adverse postoperative outcomes. In the multicenter prospective cohort study presented in Chapter 6 we used accelerometry to measure older patients’ physical activity levels before oncological colorectal or gynecological surgery. We investigated associations between objective physical activity levels, patient characteristics, other physical performance measures and subjective patient-reported physical activities. Chapter 7, we focused on progressive muscle wasting as a predictor of survival outcomes. In a retrospective cohort study in older patients who had undergone surgery for colorectal cancer, we obtained abdominal CT-scans before surgery and one year after surgery. We measured the area of abdominal muscles at the level of 3rd lumbar vertebra on both scans, and investigated whether decreasing muscle mass was associated with long-term survival outcomes.

In Chapter 8, we performed a risk assessment from a surgical perspective for older patients diagnosed with potentially resectable gastric cancer. The goal was to facilitate informed decision-making by evaluating the available evidence regarding the optimal surgical treatment strategy for gastric cancer. A systematic review and meta-analysis of current literature was performed to determine whether gastrectomy leads to better outcomes compared to conservative (non-surgical) treatment, whether minimally invasive gastrectomy is a safe alternative to open gastrectomy, and whether extended lymph node dissection as opposed to limited dissection is required in older patients. Next to standard surgical outcomes such as complications and survival, we aimed to collect data on quality of life and functional outcomes.

Part 3. Considerations for preoperative optimization of older patients undergoing major abdominal cancer surgery

Preoperative risk assessment identifies targets for risk alleviation. Although physically frail older patients may have the most to gain from prehabilitation, studies addressing this patient group are still scarce. In the third part of this thesis, we take first steps towards prehabilitation of older patients undergoing colorectal cancer surgery. In Chapter 9, we performed a systematic review and meta-analysis to evaluate the evidence for preoperative oral nutrition interventions in preventing adverse outcomes in patients undergoing colorectal cancer surgery. In Chapter 10, we present the results of a prospective feasibility study for at home-prehabilitation (Fit4Surgery-TV) where fourteen older frail patients participated in a 4-week home-based exercise and nutritional intervention to optimize their physical status before colorectal cancer surgery.

Finally, the implications and future perspectives of this thesis are discussed in Chapter 11.
PART 1.

The value of frailty screening instruments as risk assessment tools in oncological abdominal surgery