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Letter to the Editor: Should we put more emphasis on the functional impact instead of the incidence of postoperative complications to evaluate quality of care in surgical oncology?

Dear Editor,

We would like to add an alternative perspective to the dialogue of the interesting publication by Van der Hulst et al. [1]. The publication offers a nuanced historical perspective of the incidence of postoperative complications in patients who underwent colorectal surgery in the Netherlands. According to the authors, the observed reduction in postoperative complications over time, mainly attributable to non-surgical complications, could be due to the introduction of several healthcare concepts, such as "enhanced recovery after surgery" (ERAS; ~2005), "comprehensive geriatric assessments" (CGA; ~2008), and "prehabilitation" (~2016). Subsequently, the authors discuss that these healthcare concepts may have had a larger effect on non-surgical complications than on surgical complications.

We agree with the authors that this reasoning could be true based on the presented figures. However, this seems only true when solely accounting for the 'incidence' and 'severity' (i.e., Clavien-Dindo Classification; CDC) of postoperative complications from a medical perspective, without accounting for the 'impact' of a postoperative complication from a 'recovery of physical functioning' perspective [2]. For example, if two patients with the same sex, age, comorbidities, tumor type, and tumor stage but different levels of physiological resilience (e.g., physical fitness, nutritional status) have a similar laparoscopic colorectal resection, both might experience an identical surgical complication. However, the impact of this complication on their recovery could be markedly different. That is, even if both patients require admission to the intensive care unit (ICU), the patient with a high physiological resilience may only need one day of ICU stay and swiftly recover to his/her preoperative physical functioning level afterwards. Opposingly, the patient with a low physiological resilience might be admitted to the ICU for a week and might not recover to his/her preoperative level of physical functioning. From a medical perspective, both patients have a similar postoperative complication incidence and severity (CDC IV). However, the impact of this complication on their course of functional recovery is obviously different. Although it can be debated whether length of hospital stay (LoS) is the best outcome to evaluate the impact of a postoperative complication, Fig. 1 shows that there is a large LoS heterogeneity within subgroups of patients with a similar CDC-severity classifications.

Many patients experience more than one complication and surgical and non-surgical complications might be more or less intertwined. Considering this, it could also be true that the incidence

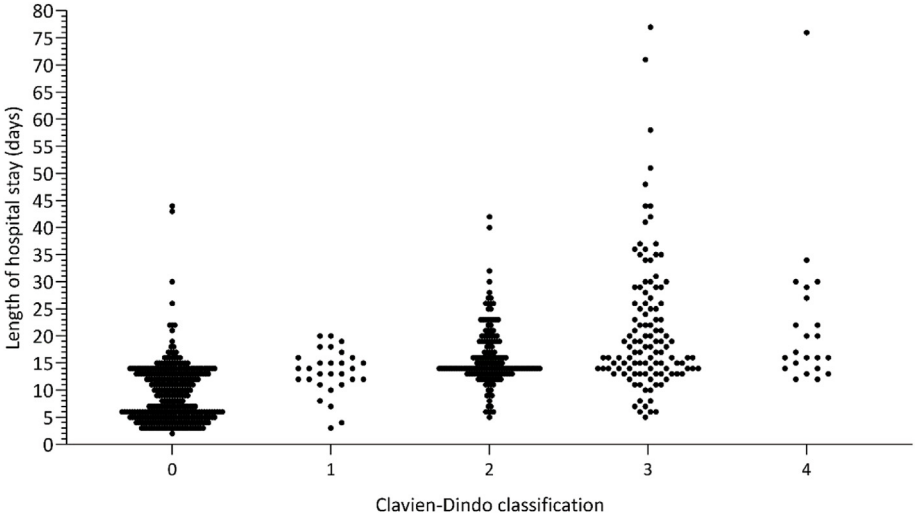

Fig. 1. Length of hospital stay as an example of an indicator of complication impact of patients who underwent oral cavity surgery categorized by Clavien-Dindo classification (postoperative complication severity). Note that there is a wide range in length of hospital stay between patients with a similar Clavien-Dindo classification. This could mean that the impact of a postoperative complication of similar severity is not the same for all patients.

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of non-surgical complications is lower because the introduction of the above mentioned healthcare concepts have led to a lower impact of surgical complications (i.e., the patient is more resilient). This hypothesis is underscored in retrospect by the findings of Hulzebos et al. in which the impact of a postoperative pulmonary complication was significantly lower in the prehabilitation group than in the usual care group [3]. Likewise, in pancreas surgery, patients with higher levels of aerobic fitness preoperatively were more likely to better cope with the consequences of a major postoperative complication by demonstrating a faster time to recovery of physical functioning [4].

Van der Hulst et al. [1] concluded that future care developments should preferably focus on non-surgical complications, especially in patients >75 years. Given the above, we challenge that chronological age is the best method to assess what patients would benefit most from future care-developments. Indeed, physiological resilience decreases with age, but large variety exist within the aging population. Previous research has shown that a patient's aerobic fitness (as a marker of physiological resilience) is a stronger predictor of postoperative complications than chronological age [5].

We acknowledge that the current clinical data registrations are insufficiently equipped to allow for analyses to evaluate the impact of surgical or non-surgical postoperative complications on an individual patient's daily physical functioning. Nevertheless, to evaluate the effectiveness of future care developments on postoperative complications it is eminent that, besides the incidence and severity, also the impact of postoperative complications is considered. Therefore, we propose that in addition to a patient's chronological age, a marker of a patient's physiological age (e.g., aerobic fitness, body composition) is adopted within clinical data registrations. In addition, a composite score that in addition to incidence and severity also accounts for impact on a functional level, as well as patient reported outcome measures (i.e., quality of life), would allow for a more holistic evaluation of the impact of postoperative complications [2].

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