

Frailty and Surgical Decision Making

Frailty is a syndrome of aging that increasingly is being recognized as an important predictor of patient outcomes. The geriatrics literature has conceptualized frailty as a loss of physiologic reserve leading to heightened vulnerability to stressors, such as surgery (1-3). Although the approaches used to measure frailty differ, virtually all seek to capture some element that suggests decreased physiologic reserve (2, 3).

After surgery, some older adults quickly return to their presurgical health, whereas others fail to recover at all. As clinicians, we hope to identify frailty in older adults in the preoperative setting to determine which patients are at risk for unfavorable outcomes. Although several systematic reviews reported strong evidence of an association between frailty status and 30-day mortality, we know less about longer-term outcomes important to patients, such as long-term mortality or patient-centered functional outcomes (4, 5).

In their current *Annals* article, Kim and colleagues present a systematic review on preoperative frailty assessment and long-term outcomes in older adults undergoing cardiac surgery. The authors highlight the important association between preoperative frailty status and long-term mortality. They found strong evidence that frailty status predicts mortality at 6 months or later after major cardiac procedures (namely coronary artery bypass grafting and open valve surgery) and functional decline after transcatheter aortic valve replacement. The effect size for mortality varied across studies but generally was large and clinically significant, often more than doubling the mortality risk. Although the authors found that several frailty measures—including mobility, nutritional status, and disability—predicted mortality, the evidence was strongest and most robust for mobility.

The Kim group's review highlights several limitations regarding the application of frailty measurement to surgical risk assessment. The instruments used varied considerably across studies, and few studies compared measures against one another. Also, the authors found remarkably few studies that assessed such outcomes as long-term disability in activities of daily living or quality of life. Some older adults value functional independence more than survival (6). It seems plausible that frailty measures will prove to be particularly powerful predictors of functional status outcomes.

The review also underscores the need for rigorous studies comparing the predictive accuracy of alternative instruments, individually and in combination, for both mortality and patient-centered outcomes across heterogeneous populations. In addition to assessing accuracy, pragmatic issues are important. Clinical practices are much more likely to adopt measurements that can be done in the least amount of time. Therefore, knowing whether a 6-minute walk test provides valuable improvement in prognostic accuracy compared

with a simple test of gait speed, or even just asking a patient whether he or she has difficulty walking or stair climbing, is important. Although frailty in surgical prognostication remains an early area of research, the Kim group's systematic review significantly advances the field. The strong association between frailty and long-term mortality supports the need to assess frailty in the preoperative setting.

Patients who are frail often are unprepared for their prolonged and intensive caregiving needs during the postoperative period, and sometimes these needs remain indefinitely. Preoperative frailty assessments may be used to better prepare patients and their families for these requirements. Anticipatory guidance, a term used in pediatric medicine to describe the understanding of the expected growth and development of children, may be used in the surgical setting to describe the expected clinical trajectory after surgery. Often the clinical trajectory of a frail surgical patient is characterized by an acute loss of function. Although this loss usually is followed by some functional recovery, frail patients often never return to their baseline function (7). Therefore, such questions as "Will she need help with basic activities, such as bathing, dressing, and getting out of bed after surgery?" or "Will she be able to negotiate the stairs to get in and out of her home?" are important to consider preoperatively. Using a frailty assessment to guide postoperative planning and provide anticipatory guidance would help prepare patients and caregivers by providing the information necessary to plan, prepare, and set appropriate expectations.

A sentinel event, such as surgery, also should prompt a discussion about the patient's long-term goals and needs. Recognizing that a frail patient has an increased risk for mortality and disability should elicit a dialogue about the goals of care. In many cases, it will be appropriate to provide symptomatic management and palliative care along with aggressive surgical care (8). In this manner, the patient may have the appropriate and necessary support established preemptively.

In some cases, frailty assessments may affect the decision to proceed with surgery. Cardiac procedures offer the hope of a long-term reduction in cardiac risk, and sometimes an increase in long-term survival, at the expense of a greater mortality risk in the postoperative period. If determining whether to pursue surgery is difficult, the awareness that frailty increases mortality risk in the months after the procedure may help the patient and physician decide against it. Further, patients with frailty have a decreased life expectancy even without surgery (9). The risk for a prolonged and complex postoperative course and increased disability may be particularly relevant to a patient with limited life expectancy.

The review by Kim and colleagues provides evidence that frailty status strongly predicts longer-term

mortality. This important finding supports frailty assessment in older adults considering surgery. In addition, to inform surgical decision making for both patients and clinicians, we must assess the effects of frailty on patient-centered outcomes (such as quality of life, function, and cognition). Once the decision to have surgery is made, we may better prepare patients and their family members for the possible outcomes and provide needed support, possibly including palliative care. By identifying frailty, we can improve care for our older surgical patients.

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