Mom or Dad

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“If I were your mother or father, Doctor, would you recommend this surgery to me?” How often have we as surgeons been asked that question? For most patients undergoing specific cardiac surgical procedures, the Society of Thoracic Surgeons (STS) predicted risk of mortality and morbidity can provide sufficient information to guide us in this conversation. But how often do we hesitate for even a nanosecond while we modify our “calculations” according to our personal assessment of other social, mental, and physical patient characteristics, particularly when some degree of “frailty” comes into play?

Frail individuals have a diminished physiologic or psychologic reserve to cope adequately with stressors, including major illnesses or surgery, resulting in higher morbidity and mortality.¹ For cardiac surgeons, interest in measuring frailty has come largely from the rapid growth of transcatheter aortic valve replacement (TAVR) procedures for patients deemed to be at “high risk” for open surgical repair. A number of measures of frailty have been applied to surgical and transcatheter valve cohorts. In the Placement of Aortic Transcatheter Valve (PARTNER) trial, frailty, as a composite of serum albumin, dominant hand grip strength, gait speed, and a survey assessing activities of daily living, was associated with around double the mortality and poor outcome rates at 1 year after TAVR compared with patients not considered frail.² One measure of frailty, a 5-m walk test, is included in the STS and American College of Cardiology Transcatheter Valve Therapy Registry (v2.0) for patients undergoing TAVR. Most measures of frailty have focused on functional assessments of muscle strength, activities of daily living, gait speed, balance, and mental state, and most of these assessments are time and labor intensive to acquire and have generally been shown to be an independent predictor of adverse outcomes after open surgical and transcatheter cardiac surgical procedures.³

In their article in this issue of the *Journal*, Paknikar and colleagues⁴ propose the use of a morphometric measure, sex-standardized total psoas muscle cross-sectional area at the

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Central Message

A morphometric measure of sarcopenia, lower than normal CT scan–derived psoas muscle area, independently predicts higher surgical risk.

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level of the inferior border of the fourth lumbar vertebrae derived from preoperative computed tomographic scans, to determine the presence or absence of sarcopenia (defined as “reduction in psoas muscle area”) as a measure for frailty. Measurements were obtained retrospectively from a cohort of patients who had undergone either surgical aortic valve replacement or TAVR. They have shown that sarcopenia was an independent predictor of poor early and 2-year survivals for both patients undergoing open surgical aortic valve replacement and those undergoing TAVR. In addition, high resource use was seen for patients with higher (>4%) STS risk and worse sarcopenia relative to patients with lower STS risk and without sarcopenia.

The definition of sarcopenia is somewhat unclear. In this study, only the measurements for patients in the cohort were included; measurements for a “normal” reference range or a broader range of those for whom abdominal computed tomographic scans had been obtained were not included. Total psoas muscle area was used as a continuous variable in several figures and analyses; the term *sarcopenic*, as a dichotomous variable, was applied to patients for whom total psoas muscle area was less than the mean for the cohort.

Frailty and sarcopenia are generally described as two overlapping geriatric syndromes.¹ Whether a more robust definition of sarcopenia can be applied to a cardiac surgery risk model remains to be seen. Furthermore, although interventions to improve frailty or sarcopenia can improve patient status, it is unclear whether postsurgical outcomes

can be improved significantly, particularly when urgency to proceed is an issue.¹

The notion that a morphometric measure could replace time- and-labor intensive functional measures of frailty or sarcopenia is appealing, but it remains to be proven in larger clinical studies. Additionally, which of the functional or morphometric measures might be “most predictive” of poor outcomes is yet to be determined; likely a combination of both measurement types may become a valuable tool. Until then, we as surgeons will still have to do that somewhat subjective calculation to modify, or not, the STS risk prediction for patients for whom complexity is not represented in current risk models. Our informed consent discussion will include pros and cons of a proposed

procedure. And for those patients and families who ask, “If I were your mother or father,” the answer will require a dichotomous “yes” or “no.”

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