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Commentary: Isolated tricuspid valve surgery: It's not for everyone

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Faerber and colleagues¹ show that in patients undergoing isolated tricuspid valve (ITV) surgery for tricuspid regurgitation (TR), the model for end-stage liver disease (MELD) score is a useful risk-stratification tool beyond the commonly used Society of Thoracic Surgeons (STS) Predicted Risk of Mortality and European System for Cardiac Operative Risk Evaluation II. The difference was particularly striking in patients with MELD ≥ 20 , in which mortality was triple that predicted by either existing risk model. Although not technically demanding, ITV surgery comprises only 10% of tricuspid valve procedures, partly due to the high-risk patient population.² Operative mortality in recent series ranges from 3%, at a single-institution cohort, to 10% in a multicenter registry.^{3,4} The 7% mortality in the current series, which certainly represents a hand-selected single-center cohort, highlights the need for further improvement in patient selection for ITV surgery.

The authors are commended for showing that MELD score as an ordinal variable is highly predictive of 30-day mortality. In fact, using only the 4 variables available in MELD (ie, creatinine, international normalized ratio, bilirubin, and sodium), the authors calculate a C-statistic (a measure of a model's ability to predict a given outcome) of 74%, whereas the full model for mortality of the STS risk calculator for isolated valve surgery is only modestly higher at 77%.⁵ This demonstrates how closely renal and liver function are tied to outcomes in this patient population because the risk of mortality due to bleeding or multiorgan failure rises significantly as MELD rises. These data show

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CENTRAL MESSAGE

In patients undergoing ITV surgery, MELD is predictive of operative and long-term mortality in patients with tricuspid regurgitation. In patients with MELD score ≥ 20 , open surgery may be futile.

that with a 30-day mortality of 31% and a median survival of 6 months,¹ ITV surgery in patients with MELD score ≥ 20 may be futile, and these patients may be better served by medical management or, possibly, transcatheter options. Although the retrospective nature of this analysis did not include time of diagnosis of TR to time of surgery, higher MELD score may be indicative of delayed referral or a longer disease progression leading to irreversible hepatic and renal injury. Moving forward, MELD score should be included as not only a tool of risk-stratification at the time of surgery, but also a temporal marker of TR management that guides earlier treatment.

It is tempting to view ITV surgery as low-hanging fruit when it comes to minimally invasive approaches. Nearly all patients in the present series were treated using minimally invasive access on a beating heart, whereas nearly one-third of patients also underwent concomitant procedures such as closure of patent foramen ovale or atrial septal defect. Notably, the rate of stroke was high at 4%, and especially high (8%) in patients with MELD score ≥ 20 . As always, the surgeon is cautioned of the risk of air emboli due to unsuspected intracardiac shunts whenever he or she is performing beating-heart surgery.

The current study by Faerber and colleagues¹ is an important addition to our armamentarium of risk-stratification tools for patients with TR needing ITV surgery. Despite

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limitations as a single-center cohort analysis, its serves as an important signal MELD score should be included in large prospective registries such as the STS Adult Cardiac Surgery Database to inform new iterations of large-scale, validated risk-prediction models.

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