

A simple risk tool (the OBSERVANT score) for prediction of 30-day mortality after transcatheter aortic valve replacement

Abstract

Risk stratification tools used in patients with severe aortic stenosis have been mostly derived from surgical series.

Although specific predictors of early mortality with transcatheter aortic valve replacement (TAVR) have been identified, the prognostic impact of their combination is unexplored. We sought to develop a simple score, using preprocedural variables, for prediction of 30-day mortality after TAVR. A total of 1,878 patients from a national multicenter registry who underwent TAVR were randomly assigned in a 2:1 manner to development and validation data sets.

Baseline characteristics of the 1,256 patients in the development data set were considered as candidate univariate predictors of 30-day mortality. A bootstrap multivariate logistic regression process was used to select correlates of 30-day mortality that were subsequently weighted and integrated into a scoring system. Seven variables were weighted proportionally to their respective odds ratios for 30-day mortality (glomerular filtration rate <45 ml/min [6 points], critical preoperative state [5 points], New York Heart Association class IV [4 points], pulmonary hypertension [4 points], diabetes mellitus [4 points], previous balloon aortic valvuloplasty [3 points], and left ventricular ejection fraction <40% [3 points]).

The model showed good discrimination in both the development and validation data sets (C statistics 0.73 and 0.71, respectively). Compared with the logistic European System for Cardiac Operative Risk Evaluation in the validation data set, the model showed better discrimination (C statistic 0.71 vs 0.66), goodness of fit (Hosmer-Lemeshow p value 0.81 vs 0.00), and global accuracy (Brier score 0.054 vs 0.073). In conclusion, the risk of 30-day mortality after TAVR may be estimated by combining 7 baseline clinical variables into a simple risk scoring system.