



Relationship between frailty and mortality in TAVI population



Established surgical scores have limitations in delineating risk among candidates for transcatheter aortic valve implantation (TAVI). A novel 8-element geriatric assessment (GA) frailty score, developed by a team of researchers from Norway, Switzerland and the U.S., may be a useful tool for heart teams in selecting patients who will benefit most from the intervention.

"The purpose of the score is not to screen all TAVI candidates, as this will be too time-consuming. Rather it should be used in patients in whom a simpler screening has revealed potential obstacles for TAVI," the research team says. "The decision to offer TAVI should in the end be made by the interventional cardiologist or cardiac surgeon performing TAVI, based on an analysis of benefit vs. risk, taking into account symptoms, comorbidity, patient perspective, procedural risk, and frailty."

The team of international researchers conducted a prospective observational study in patients ≥ 70 years referred for TAVI during 2011–15. A Heart Team – consisting of a cardiac surgeon, an interventional cardiologist and an imaging specialist – had declined the patients for open heart surgery due to high risk but accepted them for TAVI. Prior to the procedure, a geriatric assessment (GA) was performed. Based on this, an 8-element frailty score with a 0–9 (least frail–most frail) scale was developed.

The GA frailty score was developed based on a comprehensive GA which includes cognition, instrumental activity of daily living, nutrition, physical frailty, comorbidity, and psychological health. By comparison, commonly used risk scores for mortality and morbidity in coronary heart surgery, like the Society of Thoracic Surgeons risk score (STS score) and European System for Cardiac Operative Risk Evaluation (EuroSCORE), are based on age and comorbidity.

For this study, severe aortic stenosis was defined as maximal Doppler velocity across the aortic valve ≥ 4 m/s, a mean gradient ≥ 40 mmHg or an aortic valve area < 1 cm² (indexed area < 0.6 cm²/m²) and concomitant clinical symptoms indicating severe aortic stenosis.

A total of 142 patients, 54% women, mean age 83 (standard deviation 4) years, with severe and symptomatic aortic stenosis were assessed. All-cause 2 year mortality was 11%. The novel GA frailty score predicted 2-year mortality in Cox analyses, also when adjusted for age, gender, and logistic EuroSCORE [hazard ratio (HR) 1.75, 95% confidence interval (CI): 1.28–2.42, $P < 0.001$]. A receiver operating characteristic (ROC) curve analysis indicated that a GA frailty score cut-off at ≥ 4 predicted 2-year mortality with a specificity of 80% (95% CI: 73–86%) and a sensitivity of 60% (95% CI: 36–80%). The area under the curve was 0.81 (95% CI 0.71–0.90).

Standard risk scores like EuroSCORE and STS score are insufficient for predicting adverse events in the older adult, according to the research team, and a frailty assessment adds information which increases predictability.

This study confirms the clinical relevance of frailty assessment prior to TAVI. While a high GA frailty score ≥ 4 indicates a reduced 2-year survival, the research team emphasises that they do not advocate a strict cutoff where TAVI is not offered.

"Knowledge of the (0–9 based) GA frailty score should lead to a careful final evaluation by the TAVI team, and should involve weighting frailty, technical challenges, exploring patient preferences, and symptom burden before offering TAVI. The geriatrician can contribute to the heart team as a frailty expert," according to the study published in the European Heart Journal - Quality of Care and Clinical Outcomes.

Source: [European Society of Cardiology](#)

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