

## Peak atrial longitudinal strain as an independent predictor of composite endpoint in patients received aortic valve replacement for severe aortic stenosis: a prospective cohort study

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**Objective:** Severe aortic stenosis (AS) is the primary valvular heart disease, treatable only by aortic valve replacement (AVR). The prognostic value of pre-operative left atrial (LA) function on post-AVR clinical outcomes is uncertain. The study aims to evaluate the prognostic value of pre-operative peak atrial longitudinal strain (PALS) as a surrogate of LA function on post AVR all-cause mortality and heart failure hospitalisation.

**Methods:** Patients aged 18 years old or above with severe AS were recruited and assessed using speckle-tracking echocardiography pre-operatively. Severe AS was defined according to 2014 AHA/ACC Guideline for the Management of Patients with Valvular Heart Disease. PALS was measured. Based on the median value of PALS, patients were stratified into PALS <15.94% and PALS >15.94%. Patients with underlying pre-operative atrial fibrillation, other moderate to severe valvular heart diseases and cancers were excluded. Patients were followed up until death, heart failure hospitalisation or end of the study. The primary outcome is a composite endpoint of all-cause mortality and heart failure hospitalisation. The

association of PALS with the composite endpoint was evaluated by Cox Proportional Hazards analysis.

**Results:** A total of 128 patients (mean age 65.32±9.42 years, 56.3% male) were prospectively analyzed. Patients were followed up for a mean period of 3.9±2.4 years. A total of 65 of 128 patients (50.8%) belonged to PALS<15.94%. During the study period, 23 patients developed the adverse events. A lower pre-operative PALS, both as a continuous or a categorical variable, were associated with a higher unadjusted risk of adverse events (Continuous; HR, 0.93; 95% CI 0.88–0.98; p=0.011; PALS <15.94%; HR, 4.94; 95% CI, 1.67–14.58; p=0.004).

**Conclusion:** The study demonstrated a lower pre-operative PALS is associated with all-cause mortality and heart failure admission in patients with severe AS undergoing AVR. Evaluation of LA function by assessing speckle tracking derived PALS may aid in prognostication for patients undergoing AVR.