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Right Ventricular Dysfunction Predicts New-Onset Atrial Fibrillation Following Coronary Artery Bypass Surgery

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Background:
Post-operative atrial fibrillation (POAF) is a common complication after coronary artery bypass graft surgery (CABG). Although echocardiography plays a key role in predicting POAF, there has yet to be a study examining the impact of echocardiographic right heart parameters for the prediction of POAF.

Methods:
Consecutive patients undergoing isolated CABG who had preoperative echocardiographic assessment within 30 days of their surgery were included. Patients who had any history of atrial fibrillation were excluded. Echocardiographic parameters were re-measured by independent observers blinded to study outcomes. POAF was defined as any episode of atrial fibrillation requiring treatment during hospitalization.

Results:
POAF occurred in 197 of 768 patients (25.6%). Patients with POAF were older and more likely to have hypertension and chronic kidney disease; they had larger right atrial size (7.6 ± 1.9 vs. 7.1 ± 1.9 cm2/m^2, $p = 0.002$), similar right ventricular (RV) fractional area change ($49.5 \pm 10.2\%$ vs. $50.6 \pm 8.7\%$, $p=0.14$), and worse RV myocardial performance index (RV-MPI: 0.37 ± 0.16 vs. 0.32 ± 0.14, $p<0.001$). After adjustment for clinical and echocardiographic variables, left atrial volume index ≥ 34 mL/m^2 (odd ratio [OR] 1.98, 95% CI 1.36 to 2.87), abnormal RV-MPI (OR 1.50 95% CI 1.01 to 2.24), and age (OR 1.05, 95% CI 1.03 to 1.07), were found to be independent predictors of POAF.

Conclusions:
RV-MPI is an independent predictor for POAF after isolated CABG and appears to be additive to established risk factors such as age and left atrial volume.