

ECHOCARDIOGRAPHIC CHANGES IN LEFT VENTRICULAR SIZE AND MASS AFTER CORONARY ARTERY BYPASS GRAFTING IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION: A PILOT OBSERVATION

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Coronary artery bypass grafting (CABG) may promote reverse left ventricular (LV) remodeling after acute myocardial infarction (AMI). However, data on the statistical robustness of echocardiographic changes remain limited, and reported findings are often based on small samples without control groups.

To evaluate changes in seven echocardiographic parameters of LV structure, mass and function before and after CABG in AMI patients within an available subgroup with paired data, using a conservative statistical approach, and to describe the limitations of the resulting analysis.

Of 176 AMI patients who underwent CABG, paired baseline and follow-up echocardiographic data were available only in a small subgroup ($n = 22$ –35 depending on the parameter) for left ventricular end-diastolic diameter (LVEDD), end-systolic diameter (LVESD), ejection fraction (LVEF), left atrial (LA) diameter, LV mass, LV mass index, and stroke volume. Doppler transmitral flow data (E/A) were excluded due to inconsistent units of measurement across records. Comparisons were performed using the Wilcoxon signed-rank test for paired samples with Bonferroni correction ($p < 0.0071$ for 7 comparisons). 95% confidence intervals (CI) for mean differences were computed by bootstrap resampling (10,000 iterations). The timing of follow-up echocardiography relative to surgery and the index event, the method used to calculate volumetric and mass indices, concomitant therapy, and clinical outcomes in this subgroup were not analyzed. No control group without CABG was available.

LVEDD decreased from 5.48 to 5.10 cm (mean difference -0.38 cm, 95% CI -0.63 to -0.16 ; $p = 0.004$) and remained statistically significant after Bonferroni correction. LVESD decreased from 4.00 to 3.61 cm (mean difference -0.38 cm, 95% CI -0.65 to -0.14 ; $p = 0.011$) — significant at $p < 0.05$ but not after correction. LV mass decreased from 233.8 to 212.2 g ($p = 0.075$), and LV mass index decreased from 116.1 to 103.6 g/m² ($p = 0.053$). LA diameter decreased from 4.48 to 4.34 cm ($p = 0.056$). Stroke volume decreased from 68.8 to 57.0 mL ($p = 0.025$; $n = 22$), a finding that should be interpreted with caution given the small subgroup size and the absence of a corresponding decline in LVEF. LVEF did not change materially (51.8% to 50.0%; $p = 0.623$). Most parameters changed in a direction consistent with reduced LV size and mass, but only one measure withstood strict correction for multiple comparisons. The small subgroup size, possible selection related to availability of paired data, and the absence of a control group substantially limit causal interpretation.

In a small subgroup of AMI patients who underwent CABG, a statistically significant (after correction) reduction in LVEDD was observed, together with directionally consistent but largely non-significant changes in other structural parameters, and a stable ejection fraction. Linear dimensions and mass indices may be sensitive markers of structural change; however, confirming these trends and assessing their clinical significance will require analysis of the full cohort with complete paired data, precise reporting of examination timing, use of volumetric indices, and inclusion of a control group.