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# Left Ventricular Mass Regression and Improvement in Diastolic Function after Transcatheter Aortic Valve Implantation – An Echocardiographic Study

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**Background:**
Aortic stenosis is associated with concentric LV remodeling or hypertrophy and impaired relaxation resulting in elevated left sided filling pressure. These changes lead to clinical symptoms manifestation and contribute to increased risk of mortality. We investigated the changes in: LV geometry, LV filling hemodynamics, and predictors associated with improved diastolic function after transcatheter aortic valve implantation (TAVI).

**Methods:**
Comprehensive diastolic assessment was performed on 50 randomly selected patients with severe aortic stenosis who underwent TAVI at baseline and 6 months post procedure. Patients with any degree of mitral stenosis or more than mild left sided valvular regurgitation were excluded.

**Results:**
The six month follow-up echo showed ventricular reverse remodeling: LV end diastolic diameter increased (42.7± 7 vs. 44.6 ± 6.1, P=0.0005), whereas LV mass and RWT (relative wall thickness) decreased (208.6±63 vs. 190.1±60 and 0.55±0.17 vs. 0.46±0.1, respectively. p=0.0002 for both).
Increased lateral E' (5.9±2 vs. 7.0±3cm/sec, p=0.02) suggested improved LV relaxation and decreased LA volume (86.1±29 vs. 79±25cc; P=0.02), and E/E' ratio (17.2±6.4 vs. 15.5±4.9; P=0.02) suggested reduction in LA pressure.
Increased LV mass and LV diameter before TAVI were associated with improved E/E' after TAVI. Mild aortic regurgitation post TAVI was associated with less mass regression and diastolic improvement (P=0.02 and P=0.05 respectively).

**Conclusions:**
TAVI results in LV and LA reverse remodeling and improved LV relaxation and LA filling pressure. Improvement in diastolic function and LV mass regression were predominantly seen in patients with concentric hypertrophy and less so with concentric remodeling. Mild aortic regurgitation after TAVI is associated with lesser improvement in LV mass and diastolic function.