EARLY FUNCTIONAL IMPROVEMENT POST-TAVR WITH THE EDWARDS SAPIEN TRANSCATHETER HEART VALVE (THV): IS AFTERLOAD REDUCTION ALL THAT MATTERS?

Poster Contributions
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Background: Superiority of TAVR has been demonstrated in inoperable patients with symptomatic severe AS over conservative therapy and is non-inferior to surgical AVR in high-risk operative candidates. Early improvements in NYHA functional class and QOL have been described by 30-days post-TAVR. Mechanical afterload reduction is assumed to be the primary driver. However there is limited published data on changes in other standard clinical echocardiographic (TTE) measurements that may also contribute to this functional recovery. We aimed to perform a detailed comparative analysis of TTE studies pre- and early post-TAVR to define interval variations in routinely measured parameters.

Methods: Between Sep 2008 - Sep 2012, 106 TAVR procedures with the Edwards SAPIEN THV (Edwards Lifesciences) were undertaken. Baseline TTEs were performed in a tertiary referral echocardiography laboratory in accordance with current ASE guidelines. To ensure optimal quality and reproducibility, only patients with their early post-TAVR follow-up TTEs completed in the same laboratory were reviewed.

Results: 67 patients were included (Mean age 83±6 years; 51% Female; Logistic EuroSCORE 30.5±17.9; STS 8.4±5.5). Post-TAVR TTEs were performed within 56±37 days of implantation. Significant reductions in AV PG (Pre 83.7±27.5 vs Post 19.8±9.1mmHg; P<0.005) and MG (52.0±17.2 vs 10.8±5.3mmHg; P<0.005) and increase in EOA (0.61±0.16 vs 1.67±0.45cm2; P<0.005) were observed. Fractional shortening (Pre 31.6±9.7 vs Post 34.5±9.3%; P=0.01), TDI S´ (5.9±1.4 vs 6.6±1.6cm/sec; P<0.005), SVI (36.3±10.0 vs 42.2±13.6mL/m2, P<0.005) and CI (2.4±0.6 vs 2.8±0.9L/min/m2; P<0.005) also improved but with minimal change in LVEF (55.0±12.5 vs 56.3±9.9%; P=0.13). LVMI, E/E´, LAVI, RVSP and PVR post-TAVR were not different.

Conclusions: Substantial afterload reduction post-TAVR is primarily responsible for early improvement in functional status. Changes in standard LV systolic performance indices provide alternative mechanistic insights at the myocardial contractile level. Regression of LVH, diastolic dysfunction and pulmonary hypertension may be more latent effects potentially contributing to longer-term outcomes.