Heart failure after left atrial appendage occlusion: insights from the LAAOS-III randomized trial

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Background: Left atrial appendage removal or occlusion (LAAO) might increase the risk for heart failure (HF) due to the loss of the LAA’s reservoir function, active contraction and neuroendocrine function.

Purpose: To investigate the incidence of HF hospitalizations and/or HF related death after LAAO in the Left Atrial Appendage Occlusion Study (LAAOS III).

Methods: In LAAOS III, 4811 patients with atrial fibrillation (AF) and a CHA2DS2-VASc score ≥2 were randomized to undergo or not undergo surgical LAAO during cardiac surgery for another indication. We compared the incidence of a composite endpoint of HF hospitalizations and HF related death between the two randomized groups (LAAO vs no-LAAO). We also pre-specified subgroups including: sex, age, BMI, surgery type, concomitant AF ablation, prior history of HF, history of hypertension, diabetes, prior myocardial infarction, left ventricular ejection fraction, sinus rhythm and occlusion method.

Results: We included 2379 patients in the LAAO and 2391 patients in the no-LAAO group. Overall, mean age was 71 years, 67% were male and 57% had prior HF. Baseline characteristics including drug treatment were balanced between the groups. Over a mean follow-up of 3.8 years, 395 (8.3%) patients met the primary HF endpoint: 209 (8.8%) in the LAAO group and 186 (7.8%) in the no-LAAO group. We did not find a significant difference for the primary endpoint between the randomized groups (Hazard ratio [95% confidence intervals] 1.13 [0.93-1.37], p=0.233) (Figure). The only significant subgroup interaction was for concomitant AF ablation (p for interaction = 0.004). Patients in the LAAO group without concomitant AF ablation had a higher risk for the primary endpoint (HR [95% CI] 1.37 [1.08-1.74], p=0.009) than patients with ablation (HR [95% CI] 0.74 [0.51-1.06], p=0.097).

Conclusion: LAAO did not increase the risk for a combined endpoint of HF hospitalizations and HF related death in patients with AF. Patients with concomitant AF ablation might have lower risk for the combined endpoint.
Figure