

Effect of Left Atrial Function Index on Late Atrial Fibrillation Recurrence after Pulmonary Vein Isolation

Mayank Sardana¹, MBBS, Owusu Asamoah¹, MD, Glenn Stokken¹, MD, Matthew Spring¹, Amir Shaikh¹, MD, Adedotun Ogunsua¹, MD, Barinder Hansra¹, MD, Deejo Mohamud¹, MD, Michael Gagnier¹, MD, Summer Aldrugh¹, MD, Nada Esa¹, MD, Kevin C. Floyd¹, MD, Clifford Browning¹, MD, Cynthia Ennis¹, DO, J. Kevin Donahue¹, MD, Lawrence S. Rosenthal¹, MD, Gerard P Aurigemma¹, MD, Dave D McManus¹, MD

¹University of Massachusetts Medical School

Background: Although the rates of catheter ablation (CA) for atrial fibrillation (AF) are rapidly increasing, there are few predictors of outcome to help inform appropriate patient selection for this procedure. Traditional echocardiographic measures of atrial structure do not significantly reclassify risk of AF recurrence over and above the clinical risk factors. Left Atrial Function Index (LAFI) is a rhythm-independent measure of atrial function. We hypothesized that baseline LAFI would relate to AF recurrence after CA.

Methods: Pre-procedural echocardiograms from 170 participants, who underwent CA for AF and were enrolled in the UMMC AF Treatment Registry, were analyzed. LAFI was calculated by a previously validated formula. Primary outcome was late or clinically significant AF recurrence 3-12 months after CA. Baseline clinical, laboratory and echocardiographic variables were compared between the recurrence and non-recurrence groups.

Results: Study participants were middle aged (60±10 years) and had a moderate-to-severe burden of cardiovascular comorbidities. 78 participants (46%) experienced late AF recurrence. Mean LAFI was 0.26±0.18. In multivariate analysis, lower LAFI was independently associated with the risk of recurrence (0.23 in recurrence group vs 0.29 in non-recurrence group, $p<0.01$). Predictive value of LAFI for AF recurrence was similar to CHADS2 score (c-statistic 0.60 vs 0.58, $p=0.76$). In subgroup of patients with persistent AF, LAFI predicted AF recurrence more strongly than CHADS2 score (c-statistic: 0.79 vs 0.58, $p=0.02$).

Conclusions: In our cohort of 170 participants with AF undergoing index CA ablation, we observed that LAFI related to late AF recurrence after CA, independent of the traditional risk factors. Since LAFI can be calculated from almost any traditional echocardiographic recording, our findings suggest that LAFI may help guide therapeutic decision-making regarding application of CA, particularly among challenging patients with symptomatic persistent AF.