Early repeat ablation strategy in atrial fibrillation patients is associated with lower recurrence rates

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Introduction: Atrial fibrillation (AF) ablation at early stages of AF improves the ablation outcomes in de novo ablations. Whether this is true in repeat ablations is unknown. Therefore, data pertaining the impact of early repeat ablation on AF recurrence in large, unselected cohorts is highly warranted.

Purpose: To examine AF recurrence after repeat ablation by time from recurrent AF to repeat ablation.

Method: Using Danish nationwide registries, all Danish patients above 18 years who underwent repeat AF ablation from January 1st 2010 to December 31st 2018 were identified and included at the date of repeat ablation. Exposure of interest was time from recurrent AF after de novo ablation to repeat ablation. The primary outcome was recurrent AF, defined from using a composite endpoint comprising claimed prescriptions of AAD, hospital admissions due to AF, re-ablation, or electrical cardioversions. The cumulative incidence of recurrent AF by time from recurrent AF to repeat ablation at 5-year follow-up after a blanking period of 90 days, was estimated using the Aalen-Johansen estimator, taking death as a competing risk into account. The Hazard Ratios of recurrent AF by time from recurrent AF to repeat ablation were examined using Cox models adjusted for sex, age, procedure-year, heart failure, ischemic heart disease, chronic obstructive pulmonary disease, and hypertension. Sub-group analysis of the impact of procedural year and AF-type (paroxysmal vs persistent) were made.

Results: The study cohort consisted of 2,704 patients. Median age [IQR] was 63 [55, 68] in the early ablation group (repeat ablation within 0.5 year after recurrent AF) and 65 [58, 70] in the late ablation group (repeat ablation at least 0.5 year after recurrent AF). It was predominately males and paroxysmal AF patients accounted for 62% and 59% in early vs late repeat ablations. Patient characteristics regarding left atrium size, left ventricular ejection fraction, and body mass index were relatively similar. Prior use of amiodarone was slightly higher in the early ablation group, while use of class 1C antiarrhythmics was highest in the late ablation group.

A total of 1,625 (60%) patients had recurrent AF within 5 years after the blanking period. The mean follow-up time was 874 days. The cumulative incidence (95% CI) of recurrent AF was 54.8% (52.4%, 57.2%) and 67.3% (64.5%, 70.2%) in the early and late repeat ablation groups respectively. (Figure 1)

The HR (95% CI) for the late repeat ablation group was 1.25 (1.10, 1.41) with the early repeat ablation group as reference. (Figure 2)

Conclusion: Among 2,704 patients undergoing repeat AF ablations from 2010-2018, we found that early repeat ablation was associated with significantly lower recurrence rates. Therefore, early repeat ablation could potentially provide substantial benefits and improve outcomes, indicating repeat ablation as first-line therapy might be ideal.