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Impact of focal ablation versus isolation of the coronary sinus in patients undergoing repeat radiofrequency catheter ablation of persistent atrial fibrillation

D.G. Della Rocca¹, L. Di Biase¹, S. Mohanty¹, C. Trivedi¹, V.N. Natale¹, Q. Chen¹, A. Al-Ahmad¹, M. Bassiouny¹, A. Gasperetti², R.P. Horton¹, C. Gianni¹, M. Casella², A. Dello Russo², C. Tondo², A. Natale¹

¹St. David's Medical Center, Austin, United States of America; ²Cardiology Center Monzino IRCCS, Milan, Italy

Introduction: Non-pulmonary vein (PV) triggers originating from the coronary sinus (CS) are a common finding in atrial fibrillation (AF) patients. To date, no studies have investigated the clinical impact of focal ablation versus isolation of the CS in patients presenting triggers from this area.

Purpose: This study analyzed the effectiveness of two different approaches for CS ablation (total isolation vs focal ablation) in persistent AF patients undergoing repeat AF ablation.

Methods: Consecutive persistent AF patients undergoing repeat ablation were enrolled in this prospective analysis. All patients had triggers from the CS documented during high-dose isoproterenol. Pulmonary vein antrum isolation (PVAI) extended to the posterior wall (PW) plus superior vena cava (SVC) isolation was performed in all patients at first procedure. At repeat procedure, PV, PW, and SVC were re-isolated, if needed. Focal ablation or isolation of the CS was performed based on operator's choice either at first and/or repeat procedure, along with ablation of other non-PV triggers. Patients with triggers from left atrial appendage were excluded from the study.

Results: Overall, 628 consecutive patients (73.4% male, age 66.9±9.0 years) were enrolled. On the basis of the CS ablation strategy, patients were categorized into two groups: Group I received CS isolation (n=389) and Group II received CS focal ablation (n=239). Major clinical characteristics were not different between groups. PV reconnection was documented in 55 (14.1%) patients of Group I and 33 (13.8%) of Group II. The incidence of procedure-related complications was similar between the two groups (10 [2.6%] in Group I vs 6 [2.5%] in Group II; p=0.9). After a follow-up of 18±8 months, 276 (71%) patients in Group I and 115 (48%) in Group II remained arrhythmia-free (p<0.001, figure.1). After adjusting for age, gender and clinically relevant variables, CS isolation was associated with a significantly higher arrhythmia-free survival rate (HR: 0.47; 95% CI: 0.37–0.61, p-value<0.001).

Conclusions: In patients with documented triggers from the CS undergoing repeat ablation of persistent AF, isolation rather than focal ablation of the CS significantly increased freedom from atrial tachyarrhythmias in the long term.