Pulmonary vein isolation durability after very high-power short-duration ablation utilizing a very-close protocol

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Background: Very high-power short-duration (vHP-SD) radiofrequency (RF) ablation of atrial fibrillation (AF) treatment by pulmonary vein isolation (PVI) aims for safer, more effective and faster procedures. The lesion formation of vHP-SD ablation creates wider but shallower lesions. Utilizing an individualized "very close-protocol" of 3-4mm inter-lesion distance (ILD) at the anterior and 5-6mm at the posterior aspect of the left atrium using vHP-SD only the close-protocol was adapted. Although acute efficacy for PVI was recently shown no data on chronic PVI durability has been assessed up to date. Here chronic PVI durability was evaluated during repeat electrophysiological procedures in patients after initial vHP-SD based PVI and recurrence of AF, atrial tachycardia or left atrial appendage closure.

Methods and Results: A total of 25 consecutive patients with repeat left atrial procedures after initial vHP-SD based PVI were included in this study. The median time to the repeat procedure was 5 (IQR 2, 10) months. The patients received a repeat procedure and verification of PVI due to recurrence of AF (n=8), atrial tachycardia (n=12), typical flutter (n=1) or left atrial appendage closure (n=4). During repeat procedures 3D electroanatomical mapping of the left atrium was conducted. Verified PVI durability of all PVs was found in 16/25 (64%) patients. In 1/25 (4%) patient PVI reconduction was found in 1 PV, in 6/25 (24%) patients PVI reconduction was found in 2 PVs and in 1/25 (4%) patient PVI reconduction was found in 3 PVs. A total of 81/100 PVs (81%) were found to be chronically isolated. For right sided PVs 42/50 PVs (84%) were isolated while for left sided PVs 39/50 PVs (78%) were isolated. All PVs were reisolated utilizing radiofrequency energy.

Conclusions: PVI solely utilizing vHP-SD via a very close-protocol provides high rates of chronically isolated pulmonary veins.