

Left coronary cusp ablation to eliminate epicardial substrates – a novel strategy for left ventricular summit ventricular tachycardia ablation

W. Phanthawimol, Y. Komatsu, M. Hattori, Q.J. Naeemah, S. Shimoo, C. Ota, N. Ichihara, A. Kimata, H. Yamasaki, M. Igarashi, A. Nogami

University of Tsukuba, Ibaraki, Japan

Funding Acknowledgement: Type of funding source: None

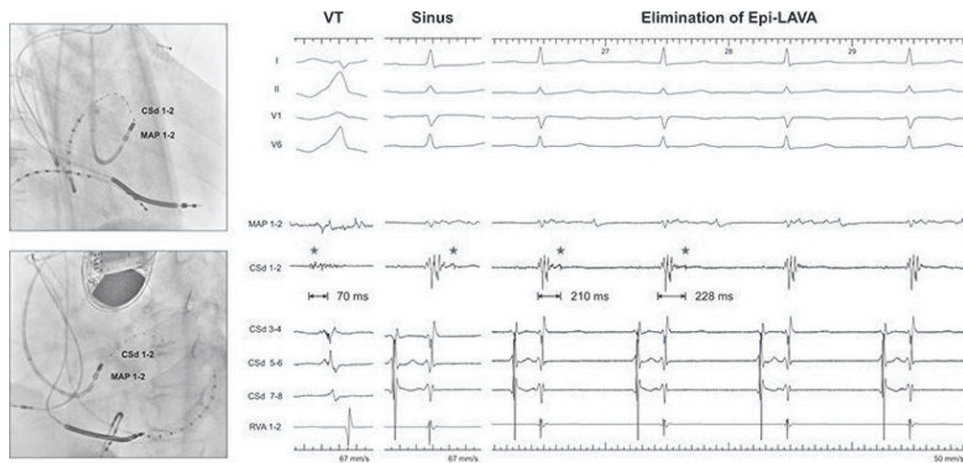
Background: Catheter ablation of LV summit VT can be challenging due to possible subepicardial or intramural site of origin and its close proximity to the major coronary vessels.

Objective: Local electrograms monitoring inside LV summit communicating vein potentially defines arrhythmogenic substrates and facilitates ablation from the adjacent anatomical structures.

Results: We experienced two cases of LV summit VT with epicardial local abnormal ventricular activities (Epi-LAVA) recorded from distal bipolar electrode of the 2F microcatheter in communicating vein close to the superior portion of LV summit. During sinus rhythm, Epi-LAVA displayed isolated late fractionated potentials in the first case but had initial fractionated potentials fused with terminal portion of far-field ventricular signals and late isolated potentials exhibiting 2:1 conduction in the second case. Epi-LAVA represented earliest ventricular signals during VT in both cases. Pace mapping at Epi-LAVA sites yielded single QRS morphology with excellent pacemap

score and induced VT. Our strategy was to perform ablation at the facing site of Epi-LAVA aiming to eliminate the potentials transmurally. Radiofrequency (RF) energy was applied above and under the left coronary cusp opposite to Epi-LAVA sites using 3.5-mm tip open-irrigation catheter with a power of 30–35 W for 60 seconds under real-time intracardiac echocardiographic guidance. VT was slowed and terminated in 1 second. Repeat ablation delayed and completely abolished Epi-LAVA followed by noninducibility of VT. Anatomical proximity of the left coronary cusp semilunar insertion and subepicardial or intramural site of origin possibly dictates successful ablation. Epi-LAVA from coronary vein mapping serve as a new landmark of the ablation target with a measurable procedural endpoint.

Conclusion: Elimination of epicardial substrates with RF energy application at the left coronary cusp can be a novel strategy for LV summit VT ablation.



Position of the distal bipolar electrode of 2F microcatheter (CSd 1-2) inside LV summit communicating vein and tip of ablation catheter (MAP 1-2) placed above the left coronary cusp in 30° right and 60° left anterior oblique fluoroscopic views. Epicardial Local Abnormal Ventricular Activities (Epi-LAVA) preceded QRS onset by 70 ms during VT (red star) and displayed fractionated signals fused with terminal portion of far-field ventricular electrogram during sinus rhythm (blue stars). Epi-LAVA were delayed and abolished after repeat ablation.