Ablation of VT and associated LAVAs in a patient with ischemic heart disease on ICD device

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Introduction: Ischemic ventricular tachycardia (VT) is still a life-threatening arrhythmia caused by the scar of previous ischemic insult. The ablation of this VT remains to be a challenging procedure in the electrophysiology lab. Scars may act as a slow conduction area that will sustain the arrhythmia. Therefore detailed definition of the channels and identification of abnormal potentials are critical for success of substrate ablation. This effort of defining the lesion can be achieved with high density 3D mapping techniques.

Methods: Herein, we report a 50-year-old male cardiac arrest survivor with ischemic heart disease on ICD and underwent ablation therapy due to a VT storm, with excessive appropriate ICD shocks. EF was 44% with akinetic inferior- and posterior segment. High density voltage mapping in sinus rhythm using Pentaray catheter and the Carto 3 version 6 system revealed large scar area in the inferior segment spanning from basal- to apical area. We identified a significant low voltage area exhibiting channels in the scar areas. In addition, several type of LAVAs (fractionated potential, late potential and split potential) were found in those areas, spread across the inferoseptal- up to posterior area. Next, we induced the clinical VT under sedation. The VT was RBBB-type, superior axis, and negative lead I. Activation mapping indicated that the VT exit was in the basal posterior segment.

Result: The exit area and LAVAs were successfully ablated. Subsequently, the VT became non-inducible and the patient remained free of VT during follow up.

Conclusion: This report shows the importance of VT and LAVA ablation in the patient with ICD-implanted ischemic VT storm. To achieve that, high density mapping are important in identifying the exit site and VT channels for effective ablation site, which will permanently terminate the VT storm.