INFLUENCE OF VENTRICULAR PACING WAVEFRONTS ON MYOCARDIAL SCAR DETECTION DURING ELECTROANATOMIC VOLTAGE MAPPING

Poster Contributions
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Background: The effects of varying pacing wavefronts on left ventricular scar characterization has not been systematically assessed.

Methods: Patients referred for ablation of scar-related ventricular tachycardia underwent substrate-based ablation where bipolar voltage maps were first created during sinus rhythm or RV pacing. A second wavefront from left ventricular pacing using a quadripolar catheter retrogradely or transeptally was performed and voltage mapping was repeated. The scar areas were compared and electrograms were analyzed in regions where discrepancies were seen. Standard bipolar voltage settings (0.5-1.5mV) were used for low voltage and dense scar.

Results: 10 patients underwent voltage mapping (360±147 points) to delineate left ventricular scar with two paced wavefronts. In all patients, low voltage areas were detected although differences in scar regions and areas were seen when comparing LV paced (37±30 cm², range 7-96 cm²) and RV paced maps (30±24 cm², range 7-85 cm²). Analysis of electrograms demonstrated voltage changes of up to 2 mV from the same site with different paced wavefronts.

Conclusion: Significant differences in scar characterization are seen with different pacing wavefronts. In patients with minimal or no low voltage regions seen during substrate mapping, a second wavefront may increase the sensitivity to detect scar. Further studies are needed to determine the optimal wavefront for scar detection.