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USE OF RIPPLE MAPPING TO ENHANCE LOCALIZATION AND ABLATION OF OUTFLOW TRACT PREMATURE VENTRICULAR CONTRACTIONS

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Background: Mapping outflow tract (OT) premature ventricular contractions (PVCs) can be difficult given a frequent mid-myocardial origin. Compared to local activation time mapping, Carto®/C210 Ripple Mapping provides visualization of both far field and near field signals independent of local annotation that may enhance PVC localization.

Objective: To evaluate the utility of Ripple mapping to localize OT PVCs.

Methods: Electroanatomic maps for consecutive OT PVC catheter ablation cases (July 2018-December 2020) were analyzed. For each PVC, we identified the earliest local activation point (EA), defined by the point of maximal -dV/dt in the unipolar electrogram (EGM) within each corresponding bipolar EGM, and the earliest Ripple signal (ERS), defined as the earliest point at which 3 grouped simultaneous Ripple bars appeared. Procedural success was defined as full suppression of the targeted PVC.

Results: 57 PVC maps were included. When ERS was in the same chamber (right ventricle, left ventricle, or coronary sinus) as EA, procedural success was 84%, versus 29% when discordant (p<0.01) (Figure). Site discordance had an odds ratio for needing multisite ablation of 7.9 (95% confidence interval 1.4-4.6; p = 0.02) and for unsuccessful procedure of 13.1 (2.2-79.9; p<0.01).

Conclusion: Greater concordance between EA and ERS is associated with higher odds of successful OT PVC ablation. Visualization of far-field signals via Ripple mapping may offer localization information complementary to activation mapping for PVCs of mid-myocardial origin.