Unique feature of novel activation mapping to identify the successful ablation site of atrial tachycardia

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A 49-year-old man was referred to our hospital for catheter ablation of atrial tachycardia (AT; cycle length 360 ms). He previously underwent pulmonary vein isolation and cavo-tricuspid isthmus ablation for paroxysmal atrial fibrillation (AF). Conventional activation mapping with the high-density Rhythmia mapping system (Boston Scientific, Marlborough, MA) revealed the following features: (1) activation breaking out at the inferior wall below the left inferior pulmonary vein in a centrifugal pattern (Online Supplemental Figure 1) and (2) AF was observed inside the left pulmonary vein (LPV) (Figure 1A, a). Several radiofrequency applications to the earliest activation site at the inferior wall below the left inferior pulmonary vein did not terminate AT. Using the “Lumipoint” (Boston Scientific, Marlborough, MA) activation mapping, we identified a high-frequency, long-duration multicomponent electrogram (Figure 1A, b) arising from the left atrial appendage (LAA) ridge to the inferior wall below the left inferior pulmonary vein (Figure 1A; Online Supplemental Movie 1). The timing of this signal preceded the site of the earliest breakout obtained by conventional activation mapping. AT was successfully terminated by radiofrequency application (35 W, 13 seconds) at the LAA ridge site, which was the earliest activation site obtained by Lumipoint activation mapping (Figure 1A, red tag) despite persistent fibrillation inside the LPV. These findings indicated the presence of an AT involving the ridge between the LAA and the LPV, concurrent with ongoing AF in an LPV that still had exit and entrance block as a result of prior ablation.

Appendix

Supplementary data

Supplementary data associated with this article can be found in the online version at https://doi.org/10.1016/j.hrthm.2020.12.024.
The Lumipoint activation mapping revealed that the earliest activation site of atrial tachycardia was the left atrial appendage ridge. LIPV = left inferior pulmonary vein; LSPV = left superior pulmonary vein.