

IMAGE

High-density activation mapping during perimitral atrial tachycardia demonstrates epicardial connection through the vein of Marshall



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A 76-year-old man with a history of multiple catheter ablation procedures for atrial fibrillation was admitted for atrial tachycardia (AT) (cycle length 230 ms) ablation. He had undergone bilateral extensive pulmonary vein isolation, ablation of complex fractionated atrial electrogram, roof line, bottom line, mitral isthmus block line, cavotricuspid isthmus line, and superior vena cava isolation. An endocardial activation map in the left atrium was attempted with the Rhythmia mapping system (Boston Scientific, Marlborough, MA) during AT. The activation map revealed a leap frog pattern in which the

activation signal bypassed the scar to reach its destination along the intended clockwise perimitral AT. Suspecting the vein of Marshall (VOM) to be an epicardial connection, a 2Fr octapolar catheter (EPstar Fixed, Japan Lifeline, Tokyo, Japan) was advanced into the VOM. The activation map was completely constructed and filled the entire reentrant circuit involving the VOM (Figure 1 and Supplemental Video 1). The postpacing interval from distal to the VOM, the bottom of the left atrial appendage, and the 9 o'clock direction from the mitral annulus were equal to the tachycardia cycle length.

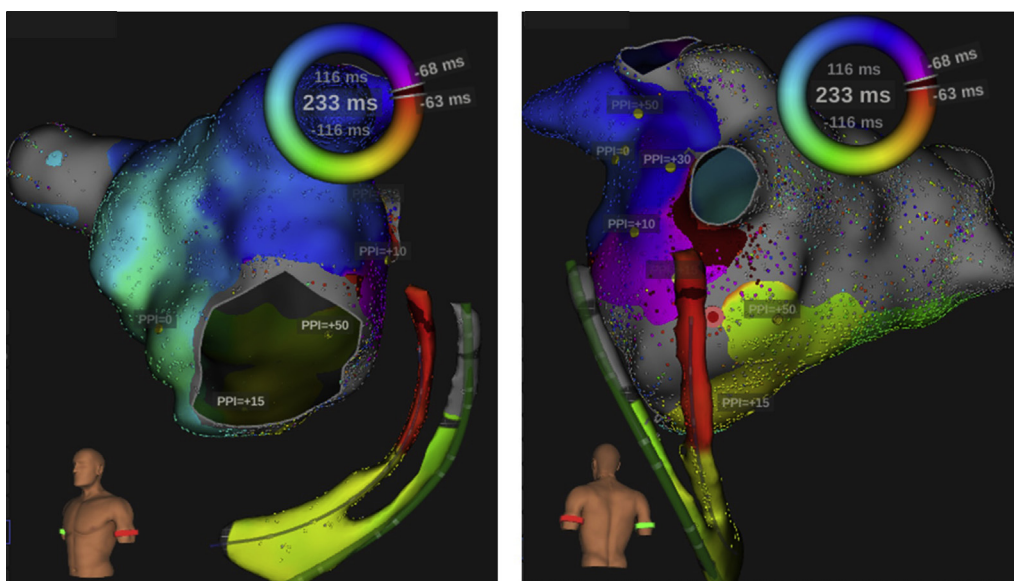


Figure 1

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An ablation catheter was placed on the opposite side of the VOM (red tag in Figure 1), and radiofrequency ablation was performed. During radiofrequency application, AT was terminated. After ablation, bidirectional block was observed, with differential pacing on either side of the mitral isthmus.

Perimitral AT with an epicardial connection involving the VOM has been reported.¹ The role of the VOM was demonstrated during pacing²; however, no activation map during tachycardia previously has been reported.

Appendix Supplementary data

Supplementary data associated with this article can be found in the online version at <https://doi.org/10.1016/j.hrthm.2017.09.040>.

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