A 44-year-old man presented with an out-of-hospital ventricular fibrillation (VF) arrest and subsequently experienced more than 50 external defibrillator shocks despite intravenous lidocaine and amiodarone. Twelve-lead electrocardiography did not show early repolarization. Results of coronary angiography and echocardiography were normal. VF episodes were triggered by unifocal, tightly coupled premature ventricular contractions with left bundle branch block configuration, late precordial transition, and left superior axis (Figure 1A). Using intracardiac echocardiography, a PENTARAY catheter (Biosense Webster, Diamond Bar, California) was placed on top of the moderator band (MB)–papillary muscle complex, where it recorded multiple Purkinje potentials (Figure 1B, white arrows). A THERMOCOOL SMARTTOUCH ablation catheter (Biosense Webster) positioned on the MB alongside the PENTARAY catheter recorded a sharp Purkinje potential during sinus rhythm that preceded premature ventricular contraction onset by 103 ms (Figure 1C, black arrows). Radiofrequency energy application to this site and along the MB abolished all Purkinje potentials. Complete right bundle branch block developed. The patient underwent insertion of an implantable cardioverter-defibrillator but has had no VF since ablation.

Idiopathic VF due to tightly coupled premature ventricular contractions arising from the MB is a rare cause of sudden death in patients with structurally normal hearts (1). In this case, high-resolution PENTARAY mapping of the MB as it crossed the cavity of the right ventricle from septum to lateral margin facilitated successful ablation.