

Idiopathic Premature Ventricular Contractions Ablated through a Septal Perforating Branch Vein

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Background: The left ventricular summit is a common origin for idiopathic ventricular arrhythmias. Whereas many of these may be amenable to endocardial ablation through the coronary venous system, others may be inaccessible. We present a case of idiopathic premature ventricular contractions (PVCs) originating from the left ventricular summit that was successfully ablated through a septal perforating branch (SPB) of the anterior interventricular vein (AIV).

Results: A 17-year old healthy, asymptomatic male was found to have frequent PVCs at the dentist and was referred to the electrophysiology clinic. An ECG revealed PVCs in ventricular bigeminy with an inferior axis, a small R-wave in V1 and a precordial R:S transition in V2-V3. A 24-hour Holter monitor revealed a 42% burden of PVCs. The patient was then scheduled for ablation. Activation mapping of the PVCs was achieved with the CARTO 3-D mapping system (Biosense Webster) using a 3.5 mm irrigated tip ablation catheter. Mapping of the right ventricular outflow tract revealed the PVC to be on time with the surface QRS. Mapping of the left ventricular outflow tract revealed the PVC to be earliest at the aorto-mitral continuity, 20 ms ahead of the surface ECG. After advancing the CS catheter, the PVC on the distal CS was 50 ms ahead of the surface ECG. A balloon occlusion coronary sinus venogram revealed a SPB of the AIV, which was cannulated with the ablation catheter. At this location, the PVC was 50 ms ahead of the surface ECG. Radiofrequency energy was delivered at a power output of 5 to 17 W over 157 seconds. Coronary angiogram performed before and after ablation revealed patent coronary arteries. The PVCs were eliminated with no recurrence at three-month follow-up.

Conclusion: The SPB of the AIV allows access to the anterior or mid-septal myocardium for ablation of idiopathic ventricular arrhythmias originating from the left ventricular summit.