Dormant conduction revealed by adenosine to guide electrical isolation of the superior vena cava

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The restoration of electrical conduction in injured, pulmonary vein (PV) tissue (dormant conduction) via adenosine-mediated hyperpolarization has been utilized to guide the need for additional ablation. The superior vena cava (SVC) and PVs have similar cardiac muscular extensions. We present a patient with recurrent paroxysmal atrial fibrillation after pulmonary vein isolation. All PVs were found to be electrically isolated, before and after the infusion of isoproterenol and adenosine. Two challenges of isoproterenol failed to demonstrate extra PV triggers or atrial arrhythmias. A decision was made to isolate the SVC despite the absence of non-PV triggers. Phrenic nerve location was defined by high-output pacing (orange dots). The SVC ablation was initiated in the postero-septal aspect of the SVC–right atrium (RA) junction towards the most anterior portion of the vein. The SVC isolation was achieved during RF delivery on the most septal portion of the right atrial appendage (white dots). Four more RF lesions were delivered anterior to this area to extend the lesion set. Adenosine was then administered demonstrating transient reconnection between the SVC and the RA. Additional RF applications were required on the anterior aspect of the SVC closer to the area where the phrenic nerve was located (green dots). Despite this, repeat administration of adenosine resulted in transient reconnection once again and additional lesions were given on the same area of breakthrough (red dots), which resulted in permanent SVC isolation. This report of dormant electrical conduction between the SVC and the RA illustrates the potential role for adenosine injection in our current ablation strategy during SVC isolation.

The full-length version of this report can be viewed at: http://www.escardio.org/communities/EHRA/publications/ep-case-reports/Documents/dormant-conduction-adenosine.pdf

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