Radiofrequency Ablation of a Posteroseptal Accessory Pathway Associated With Two Diverticula of the Coronary Sinus

Neil C. Davidson, MD, MRCP; Mark J. Cooper, MB, PhD, FRACP; David L. Ross, MB, FRACP

An electrophysiological study was performed on a 39-year-old woman with recurrent palpitations. She initially presented in 1985 with atrial fibrillation, ventricular preexcitation, and a rapid ventricular response. At that time, she underwent open heart surgery, and mapping demonstrated multiple posteroseptal and left free wall accessory pathways. Accessory pathway conduction was abolished surgically, but a follow-up electrophysiological study demonstrated a residual accessory ventriculoatrial connection. In the current study, coronary sinus angiography was performed through the femoral vein using a support sheath (8 French, SL3, Daig). This revealed a large saccular diverticulum at the coronary sinus os in the posterior septum and a smaller diverticulum next to the posterior cardiac vein (Figure 1). There was retrograde conduction via a left posteroseptal pathway, and orthodromic tachycardia was easily inducible, with the accessory pathway as the retrograde limb. During ventricular pacing, the earliest atrial activation was in the smaller diverticulum (Figure 2), and radiofrequency ablation resulted in loss of retrograde conduction after 3 seconds. It is likely that the diverticula were due to abnormal embryological development of the sinus venosus and that the accessory pathway was a remnant of the muscle sheath that surrounds the proximal coronary sinus. There have been reports of an isolated coronary sinus diverticulum associated with an accessory pathway, but no previous reports of multiple diverticula. This case illustrates the value of coronary sinus angiography in patients with posteroseptal accessory pathways and an additional benefit of the support sheath, which facilitates high-quality coronary sinus imaging.

Figure 1. Left anterior oblique (A) and right anterior oblique (B) views of coronary sinus angiogram, demonstrating 2 separate diverticula, which are labeled D₁ and D₂. PCV indicates posterior cardiac vein.

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Figure 2. Left anterior oblique coronary sinus angiogram. Arrow denotes the position of the ablation catheter at the successful ablation site within the second, smaller diverticulum.
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