A 52-year-old woman without a history of cardiac surgery underwent electrophysiological study for an atrial tachycardia (AT). Echocardiography revealed no evidence of structural heart disease or anatomic abnormalities. At baseline, the AT was incessant and the P waves were upright in lead I and the inferior leads and biphasic (±) P waves in lead V1 (Figure 1). During mapping at the lower posterior right atrium (RA), an unexpected movement of the mapping catheter was observed. A right atriogram performed with a pigtail catheter revealed an aneurysmal structure between the RA and the diaphragm (Figure 2). This structure exhibited a passive expansion and shrinkage with each cardiac cycle. Far-field electrograms were recorded at the sites along the junction between the RA and this structure, and no electrograms were recorded at any other sites within this structure (Figure 3). Activation mapping revealed a centrifugal activation pattern from the site in the middle posterior wall of the RA at its junction with this structure (Figure 3). A nonirrigated radiofrequency application at this site with a target temperature of 55°C and maximum power output of 30 W successfully eliminated the AT. No complications occurred.

In this case, the electroanatomic mapping and right atriography revealed an unusual structure between the RA and the inferior vena cava (IVC). The absence of electrograms within this structure and lack of any active wall motion with the cardiac cycles suggested that this may have been a venous structure without any myocardium. In addition, this structure was located above the diaphragm, excluding the possibility of a suprahepatic aneurysm. Therefore, this was likely to be an IVC diverticulum. Anomalies of the IVC are uncommon, and there have been isolated case studies describing an IVC diverticulum that was located away from the RA. This report described an

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**Figure 1.** Twelve-lead ECGs recorded during atrial tachycardia (left panel) and cardiac tracings exhibiting the successful ablation site (right panel). For ABL (ablation) and HB (His bundle), p and d indicate the distal and proximal electrode pairs of the relevant catheter; CS 1 to 5, the first to fifth electrode pairs of the coronary sinus catheter.
ICV diverticulum that was located at the RA-IVC junction and shown to be associated with the site of an AT origin.

In cases with a normal heart, cardiac imaging such as computed tomography or MRI is not routinely performed before the electrophysiological study and it may be difficult to recognize the presence of this type of IVC diverticulum before electrophysiological study. However, an IVC diverticulum that is located adjacent to the RA-IVC junction may cause trouble during mapping in the RA and pose a potential risk of perforation during the mapping and ablation of cavotricuspid isthmus–dependent atrial flutter or ATs arising from the rim of this structure. An appreciation of this anatomic anomaly may allow the operator to recognize such structures when the catheter is located outside the expected course of the IVC. An unexpected movement of a mapping catheter on a fluoroscopic image may be the first clue for making that recognition. Following electroanatomic mapping and contrast injection into the RA may confirm the presence of these structures. During catheter ablation at sites adjacent to this structure, it should be kept in mind that far-field electrograms may be recorded from within this structure.

**Figure 2.** Fluoroscopic images exhibiting the right atrio gram (RAG) (upper panels) and successful ablation (ABL) site (lower panels). Arrow and arrowheads indicate the inferior vena cava diverticulum and outline of the right atrium, respectively. ABL indicates the ablation catheter; LAO, left anterior oblique. The other abbreviations as in Figure 1.

**Figure 3.** Electroanatomic maps of the right atrium, coronary sinus (CS), and inferior vena cava (IVC) during the atrial tachycardia. In the activation map, red indicates the areas with the earliest endocardial activation and orange, yellow, green, blue, and purple indicate a progressively delayed activation. Red tags in the left panel indicate the successful ablation site. INF indicates inferior; PA, posteroanterior; RAO, right anterior oblique; SVC, superior vena cava; and TA, tricuspid annulus.
and radiofrequency energy delivery within this structure should be avoided.

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**References**


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