

INVITED EDITORIAL

The Last Exit Before the Bridge to Epicardium in Ventricular Tachycardia Ablations: Coronary Venous System

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Note

See related article, Bhalia et al. 2023;1(2): pages 32-38.

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Catheter ablation is a recognized therapy for patients with scar-related ventricular tachycardia (VT), but recurrence of the arrhythmia occurs in a significant proportion of patients.^{1,2} Epicardial access is often necessary either after a first endocardial ablation failure or as a first-line approach in certain substrates.^{3,4} However, epicardial ablation carries certain risks like coronary artery damage, RV rupture, phrenic nerve injury, and etc. Therefore, to avoid collateral damage during epicardial ablation other strategies should be kept in mind. Coronary venous system is an epicardial structure, which can offer epicardial ablation before attempting epicardial puncture.

In the current issue of the Journal of Arrhythmia and Electrophysiology, Bhalia and colleagues, summarized three case reports of incessant VT, which required catheter ablation via the coronary venous system before attempting true epicardial access.⁵ Although first case showed successful elimination of VT storm while ablating from the coronary venous system, other two cases required extra ablations from the epicardial space because failed elimination of VT via the coronary venous system. In their report, they emphasized the role of stepwise approach involving all layers of myocardium (endocardium, epicardium, and mid-myocardium) to control VT storm. They mentioned that ablation via the coronary venous system can reduce or avoid the need for subxiphoid epicardial access in certain patients.

While the coronary venous system allows for ablation of epicardial VTs, the success of the procedure may be limited by rapid impedance rise and proximity to coronary arteries. In order to avoid epicardial ablation-related complications, the following approaches can be considered:

- Ablation from adjacent anatomical structures
- Utilization of preprocedural imaging modalities like cardiac CT and MRI and integration with 3-D mapping system (ADAS or InHeart imaging modalities)

- Utilization of different energy source such as cryoablation or electroporation. Pulsed field ablation offers almost zero collateral damage, however long-term is still missing to measure the success of the procedure.
- Finally, coronary venous system can be mapped and used to eliminate ventricular arrhythmias.

Operators should also be aware of complications, which can be observed after catheter ablation via coronary venous system. These complications are pericarditis, coronary artery damage, dissection, and perforation of coronary venous system. Operators must have a clear understanding of the anatomy of nearby structures to avoid potential complications when performing ablations for ventricular arrhythmias within the coronary venous system.

Conflict of Interests

None

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