Optimized Transseptal Approach for Left Ventricular Tachycardia Ablation in a Patient With a Mechanical Prosthetic Aortic Valve

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INTRODUCTION

Prosthetic valves may make ventricular access difficult in radiofrequency catheter ablation. This case report describes an optimized atrial transseptal approach to access the ventricle in a patient with left ventricular tachycardia and a mechanical prosthetic aortic valve.

Key words: Ventricular tachycardia. Catheter ablation. Valvular prosthesis.

CASE STUDY

A 61-year-old man with a history of aortic stenosis, implantation of a disc MAVR at age 45, and chronic atrial fibrillation was seen for chest pain, in which incessant VT was observed (Figure 1). The coronary angiography was normal, although an echocardiogram revealed concentric hypertrophy of the left ventricle with normal systolic function and a disc MAVR that was functioning normally.

Ventricular tachycardia ablation by the atrial transseptal approach was decided, and a protocol was designed for programmed ventricular stimulation, with negative results. Isoproterenol was then administered, inducing incessant sustained monomorphic ventricular tachycardia equivalent to that observed clinically and with good hemodynamic tolerance. In order to facilitate LV access using a transseptal approach, a preformed guiding introducer designed for the right atrium was chosen (Fast-Cath SR3®, St. Jude Medical) and the transseptal puncture was guided toward the anterior region of the ovale foramen by intracardiac echocardiography (ICE®, Boston Scientific) (Figure 2).

An irrigated catheter with electroanatomic navigation (CARTO®, Biosense-Webster) was used for the mapping and ablation. An LV activation map was obtained during VT, showing a pattern of focal activation originating in the middle segment of the anterolateral wall of the LV (Figure 3). No mid-diastolic potentials or low-voltage areas were observed.
Ablation was done at the earliest point, using increasing power up to 50 W while maintaining a maximum temperature of 38°C at all times. The VT was interrupted 6 s after application, with no subsequent recurrence.

DISCUSSION

The retroaortic route is the conventional approach for left VT ablation. In the case of severe aortic stenosis, mechanical aortic valve replacement, intracavitary thrombi, or severe arteriopathy, however, this approach may be contraindicated.

In our case we decided to use an optimized transseptal approach with intracardiac echocardiography to safely perform puncture in the anterior region of the septum and thus facilitate access to the LV. In this case, we also chose a preformed transseptal introducer which, although commercially recommended for other anatomical regions, appeared to be morphologically...
The use of this introducer allowed easy access to the entire LV, particularly the area of interest, providing the ablation catheter with extraordinary stability.

The use of navigating systems in electrophysiology has facilitated ablation in “difficult cases.” In this patient, the CARTO® system allowed us to establish the focal origin of the VT, as well as to rule out the presence of scar regions and mid-diastolic potentials. Apart from these data, other factors, such as the inducibility of VT with isoproterenol but not with programmed stimulation, make a reentrant origin unlikely.

REFERENCES