EP CASE REPORT

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# Ethanol ablation via a coronary sinus branch as an effective option in recurrent ventricular tachycardia and epicardial inaccessibility

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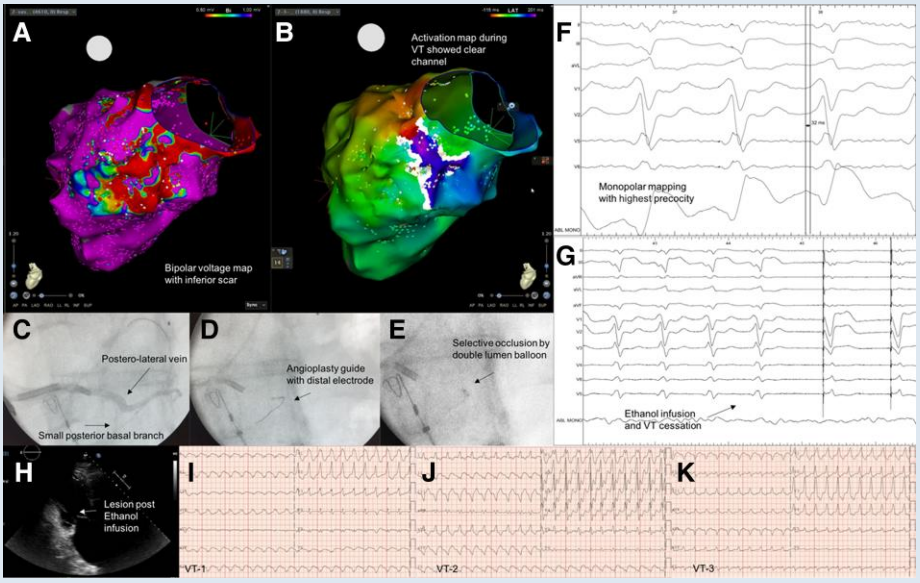


We report a case of a 71-year-old man with history of non-ischaemic dilated cardiomyopathy with moderate ventricular dysfunction (left ventricular ejection fraction 35–40%) who was referred to the emergency department after a recovered sudden death. A single-chamber cardiac defibrillator was implanted in secondary prevention. Echocardiography showed biventricular involvement with global hypokinesia, akinesia of inferolateral segments, and moderate functional mitral regurgitation. Magnetic resonance was attempted but the device artifact prevented a proper substrate assessment. During follow-up, the patient had multiple episodes of different monomorphic ventricular tachycardia (VT) (*Panels I–K*) with several admissions due to electrical storm (*Supplementary figure 1*). Usually, VT had long cycle length with an unpredictable response to anti-tachycardia pacing therapy and often undersensed by the device despite the programming optimization. He was receiving both optimized treatment for heart failure and different antiarrhythmic drugs with limited effectiveness. The management was evaluated over the years in up to three different centers. Initially, conventional and substrate endocardial VT ablation were performed up to four times with VT recurrence, showing in bipolar voltage mapping a heterogeneous scar at the basal left ventricular (LV) level with the presence of pathological electrograms (*Panels A* and *B*), also patent on the monopolar map (*Supplementary figure 2*). In the last procedures, epicardial access was attempted, but it failed due to strong fibrosis and pericardial adhesions.[1] Later, the patient underwent an upgrade to cardiac resynchronization therapy and atrioventricular node ablation (permanent atrial fibrillation), optimizing V–V intervals for synchronous pacing at high frequency, with initial electrical stabilization, but subsequent recurrences. Consequently, external ablation with radiotherapy specialized system was performed, focalized to the basal postero-lateral area; although it was fruitless in the short-term. Meanwhile, there was a progressive worsening of the patient's functional class with multiple admissions, procedures, and especially, significant arrhythmic burden. He had a prolonged admission with decompensated heart failure and intercurrent incessant VT. A temporary percutaneous left stellate ganglion block guided by ultrasound was performed, but due to the lack of immediate response of the technique, the definitive sympathetic block was not completed. As a last resort, considering the refractoriness to all therapies and the high comorbidity, the patient underwent an epicardial chemical ablation with ethanol by retrograde transvenous approach, under local anaesthesia.[2] Through right subclavian vein and coronary sinus cannulation, venography showed a long postero-lateral vein, with small-calibre postero-basal branch, superimposed on an area of interest, close to the channel presumably involved in clinical VTs (*Panel C*). Mapping inside it during tachycardia with a *Biotronik* angioplasty guide with a distal electrode, there was an early onset of the ventricular electrogram of –32 ms with monopolar QS pattern. A complete selective occlusion using a 20 × 2 mm double lumen balloon *Boston* (inflation at 7 atm) was achieved; and an infusion of 1 mL of 100% ethanol was done with immediate VT cessation, followed by a progressive infusion of 3 mL of 100% ethanol (*Panels D–G*).[3] The presence of 'staining' in the application area was noticed by echocardiography (*Panel H*). The patient had no recurrences, despite the withdrawal of antiarrhythmic drugs up to 1 year later.

## Supplementary material

Supplementary material is available at *Europace* online.

**Conflict of interest:** None declared.

## Data availability

The data that support the findings of this case report are available from the corresponding author, CGB, upon reasonable request.

## References


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