

EP CASE REPORT

How we met the vein of Marshall in the mirror

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A 48-year-old man was referred for catheter ablation of a symptomatic atrial tachycardia (AT). He had a history of hypertrophic cardiomyopathy with a septum thickness of 14 mm and situs inversus. First diagnosis of paroxysmal atrial fibrillation was in 1986. Initial procedure was isolation of all four pulmonary veins and electrogram (EGM)-guided ablation that recurred in AT requiring mitral and roof line ablation.

Preprocedural computed tomography was performed to appreciate the anatomy of the heart, and rule out intracardiac thrombus. At the beginning, a decapolar catheter was positioned within the coronary sinus (CS) via a right femoral approach and showed an AT with cycle length (CL) of 256 ms and activation from CS distal to CS proximal. Left atrial

access was through the patent foramen ovale. The procedure was performed with Rhythmia HDX system and Intellimap Orion basket catheter (Boston Scientific, USA) for mapping. Initial map of the tachycardia demonstrated a perimitral circuit using a persistent gap in a previously performed mitral line. Based on the map, we hypothesized that the remaining gap was using the vein of Marshall (VOM) as an epicardial bridge over the line (Figure 1A). We therefore, decided to attempt VOM catheterization and ethanol infusion. We cannulated the CS

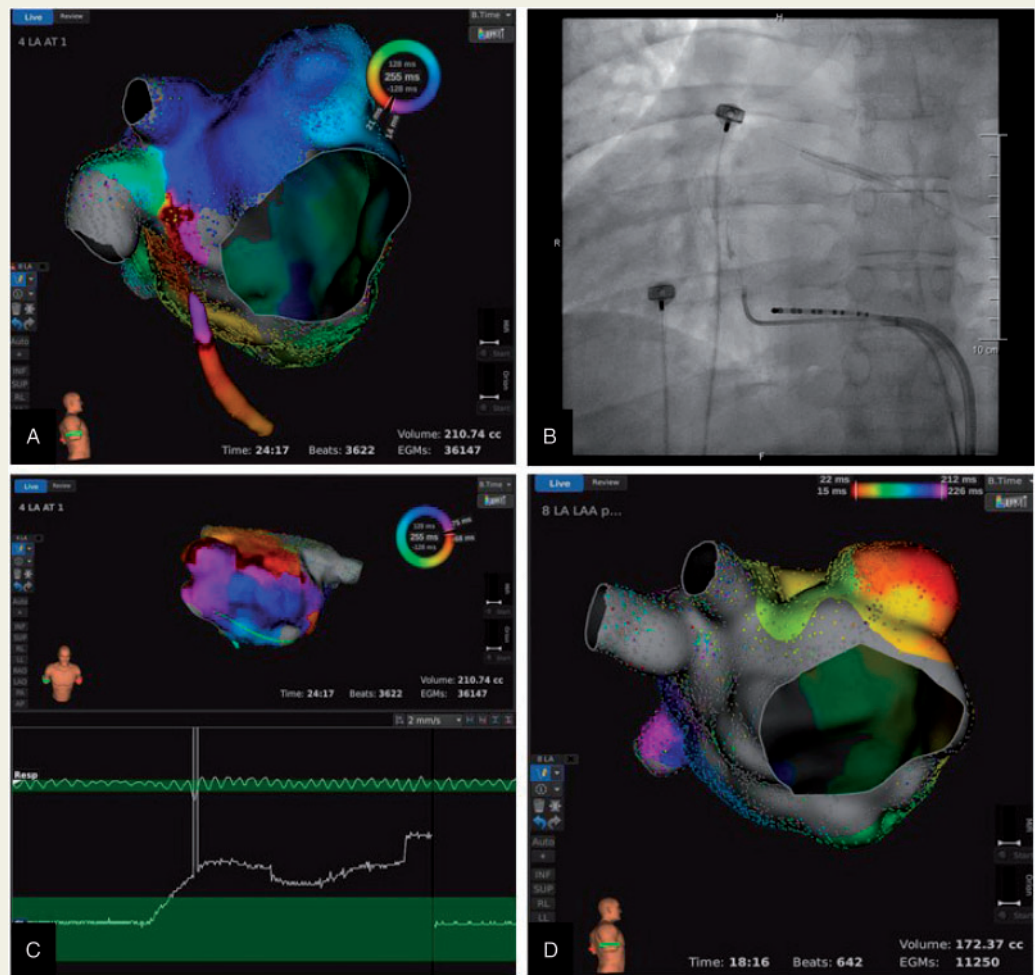


Figure 1 (A) Baseline activation map. (B) Angiography of vein of Marshall (VOM) arborization, PA view. (C) Behaviour of the atrial tachycardia cycle length during ethanol infusion in VOM. (D) Activation map after ethanol infusion in VOM.

with a steerable sheath (Agilis, Abbott, St Paul, MN, USA) and inserted a left internal mammary artery catheter. The angiography showed the VOM arborization (Figure 1B). An angioplasty guide wire with a preloaded angioplasty balloon (Mini Trek) was positioned in the proximal VOM. Three millilitre of 100% ethanol was injected into the VOM during 1 min. The injection was repeated three times. Atrial tachycardia CL prolonged after each injection (Figure 1C) and converted to sinus rhythm 2 min after the first injection. Re-map confirmed mitral isthmus block (Figure 1D) and AT was no longer inducible. Procedure for VOM lasted 26 min with 3 min fluoroscopy and radiofrequency (RF) time for roof line was 215 s.

Catheter and sheath manipulations are challenging in cases of heart inversion because the positions of the tools are opposite to those with common anatomy. There are few case reports of catheter ablation in a patient with situs inversus, using RF energy¹ or cryoenergy.² Case series reporting Marshall bundles elimination by ethanol infusion were published previously.³ To our knowledge, this is the first case report about this new ablation strategy in a patient with situs inversus.

Conflict of interest: none declared.

References

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