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SCAR-RELATED VENTRICULAR TACHYCARDIA ABLATION USING A DUAL ENERGY LATTICE-TIP ABLATION SYSTEM GUIDED BY PRE-PROCEDURAL IMAGING

Introduction

Catheter ablation for scar-related ventricular tachycardia (VT) remains challenging due to **limitations in ventricular mapping** and **the need for deeper lesions to eliminate intramural conduction channels**.

Aim

To evaluate the **feasibility, safety, and acute efficacy** of a **structured multimodal planning strategy** combined with a **hybrid high-energy ablation protocol** for scar-related VT.

Methods

Prospective study of consecutive patients undergoing endocardial VT ablation.

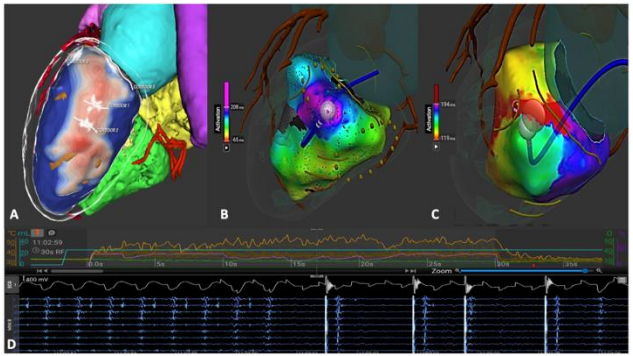
Multidetector computed tomography (MDCT) and Late gadolinium enhancement cardiac magnetic resonance (LGE-CMR) were segmented and co-registered into the mapping system

Standardized hybrid protocol: radiofrequency followed by pulsed-field ablation at each site

Acute success: Complete elimination of local abnormal ventricular activity (LAVA) and VT non-inducibility.

Results

19 patients. Mean age 68±8 years. 74% ischemic cardiomyopathy. 63% VT storm.



Patient with schemic cardiomyopathy in the context of an inferior acute myocardial infarction. MCDT analyzed with ADAS 3D revealed wall thinning in the inferior wall and three predicted arrhythmogenic channels in the basal and mid segments (panel A). Late activation map with corrected annotations showing LAVA collected during right ventricular pacing (panel B). Panel C shows the clinical VT activation map with a dual-loop circuit using the basal corridor predicted by ADAS 3D analysis. After the first radiofrequency application, conversion to sinus rhythm was observed (panels C and D).

Imaging Performance		
	Sensitivity	**Specificity**
MDCT	80%	85%
LGE-CMR	67%	75%

Complete LAVA abolition: 94.7%

VT non-inducibility: 73.7%

Follow-up (106 days): VT recurrence rate **10.5%**

Safety: One major vascular complication. No deaths or cardiac perforations.

Conclusion A structured imaging-guided workflow combined with hybrid RF–PFA ablation is **feasible and safe, achieving high acute success rates in scar-related VT**.