

# Isolated Left Ventricular Non Compaction Cardiomyopathy and Ventricular Tachycardia Ablation: Always an Endocardial Left Ventricular Origin?

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**Background:**

Isolated Left Ventricular Non Compaction (LVNC) is a rare cardiomyopathy characterized by an excessively prominent trabecular meshwork and deep intertrabecular recesses of the LV, possibly caused by an incomplete myocardial morphogenesis. Clinical presentation highly varies, and both ventricular and supraventricular arrhythmias have been described. However, the mechanism and site of origin of life-threatening ventricular tachycardia (VT) have only rarely been clarified.

**Purpose:**

Demonstrate the efficacy of multimodal approach to ablation of VT in Isolated LVNC.

**Methods:**

Retrospective analysis of 3 patients (1 female, mean age 53+/-14 years) diagnosed with isolated LVNC according to current criteria, with a left ventricular ejection fraction (LVEF) of 40-44%, who underwent catheter ablation. A 3D map was acquired using cardiac magnetic resonance (CMR) scan, remote magnetic navigation and electroanatomical mapping (*Table*). Follow-up was assessed by serial ECGs and ECG-Holter recordings since November 2012 to December 2016.

**Results and discussion:**

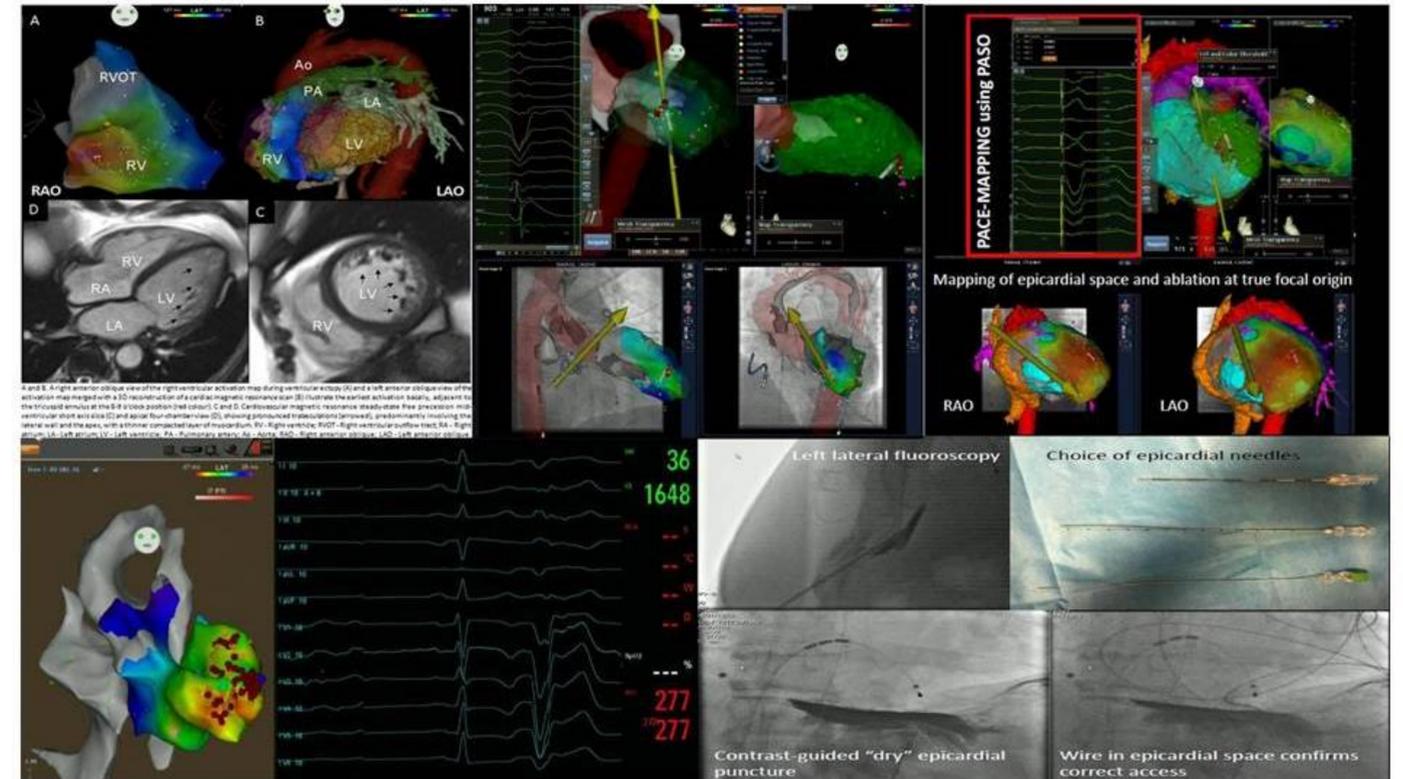
Basal ECG was abnormal in all cases. Patients presented with sustained-VT, non sustained-VT and frequent ventricular ectopies. During the invasive studies, VTs were always induced. In one patient the VT origin was localized at the infero-lateral aspect of the tricuspid annulus, whereas in the remaining cases it originated from the LV. Interestingly, one patient had a VT origin from the antero-septal wall of the LV which, after two endocardial RF ablations, required an epicardial approach to finally suppress the focus. These findings suggest a more complex involvement of the entire myocardium by the disease. CMR and 3Dmapping information allowed to accurately define both ventricles' anatomy and arrhythmogenic foci (*Figure*). All patients were successfully ablated and discharged on bisoprolol. During the follow-up period, none had recurrence of the previous clinically evident VT.

Table: Procedural data

	LE	MW	RT	RT(2)	RT(3)
<b>Date of Procedure</b>	14/11/2012	01/10/2012	15/06/2016	16/06/2016	08/09/2016
<b>Indication</b>	Sustained VT	NS-VT	VEs	NS-VT	VEs
<b>Approach</b>	LV-trans-aortic/trans-septal/epicardial from CS RV-femoral vein	RV-femoral vein	LV-trans-aortic RV-femoral vein	LV-trans-aortic RV-femoral vein	LV-epicardial RV-femoral vein
<b>Software</b>	CARTO+Remote Magnetic Navigation	CARTO	CARTO	CARTO+Remote Magnetic Navigation	CARTO+Remote Magnetic Navigation
<b>Site of Ablation</b>	LV antero-lateral basal area	RV base, at the infero-lateral tricuspid annulus	RV antero-septal LV anterior septal wall	LV anterior septal wall – more extensive ablation	LV antero-septal wall from epicardium

Disclosures: Dr S Ernst is Consultant for Biosense Webster and Stereotaxis

Figure



**Conclusion:**

Arrhythmogenic substrate in isolated LVNC seems to be not limited to the LV. Combination of pre-acquired roadmap imaging and 3D mapping is feasible in order to successfully suppress life-threatening arrhythmias, using endo- but also epicardial ablation if necessary.