

Correlation of ventricular tachycardia exit and preprocedural image-based substrate reconstruction - ischemic vs non ischemic cardiomyopathy

Ante Lisičić¹, Ana Jordan¹, Sanda Sokol Tomić¹, Nikša Bušić¹, Ivan Zeljković¹, Šime Manola¹, Nikola Pavlović¹
¹ University Hospital Dubrava

INTRODUCTION



Ventricular tachycardia (VT) poses a significant challenge in patients with both ischemic and non-ischemic cardiomyopathy, requiring precise localization of VT exit sites for effective ablation. The use of preprocedural image-based substrate reconstruction with inHEART software has become integral in identifying scar and fibrosis patterns that correlate with VT exit sites. This study examines the correlation between inHEART-based imaging and the actual ablation zones in patients with ischemic versus non-ischemic cardiomyopathy.

METHODS



This retrospective analysis included 40 patients (mean age 50 ±25, female: 5 (N)) undergoing VT ablation. (Figure1) Out of the 40 patients, 31 had ischemic cardiomyopathy and 9 had non-ischemic cardiomyopathy. Preprocedural imaging (computed tomography (CT)), was processed using inHEART software to reconstruct myocardial substrates and identify potential VT exit sites. These predicted exit sites were then compared with the actual ablation zones to assess the accuracy of the inHEART-based substrate reconstruction

Figure 1



Baseline characteristics	inHEART supported VT ablation; n= 41
Age	58.18±3.3
Sex, male, n	20
BMI (kg/m ²)	27.8 ± 0.7
Ischemic cardiomyopathy, n	30
Ischemic cardiomyopathy + LVAD, n	1
Dilatative cardiomyopathy, n	7
Arrhythmogenic right ventricular dysplasia, n	2
LVEF (%)	40,3±16
VT storm, n	10
Use of antiarrhythmic drugs, (%)	100
Previous ablation, n	4

RESULTS



The ablations were executed utilizing a 3D mapping system CARTO after merging with the inHEART model. In 6 patients, all from the non-ischemic cardiomyopathy group, the predicted VT exit zones based on inHEART imaging did not correlate with the areas targeted during ablation.

DISCUSSION



These results underscores the effectiveness of inHEART software for preprocedural planning in ischemic cardiomyopathy, where scar patterns are typically well-defined and align closely with VT exit sites. However, the lack of correlation in non-ischemic cardiomyopathy patients highlights the complexity of diffuse fibrosis and other substrate characteristics that may not be fully captured by imaging alone. These findings suggest the need for further refinement in imaging protocols and possibly integrating functional mapping to enhance ablation strategies for non-ischemic cardiomyopathy.

