

Magnetic resonance imaging of endocardial exits from epicardial ventricular tachycardia substrates in left ventricular nonischemic cardiomyopathy

Christopher Reithmann¹, Bernhard Herkommer¹, Theresia Kling¹, Cordula Brauns¹, Michael Fiek¹, and Michael Ulbrich¹

¹Helios Clinic Munich West

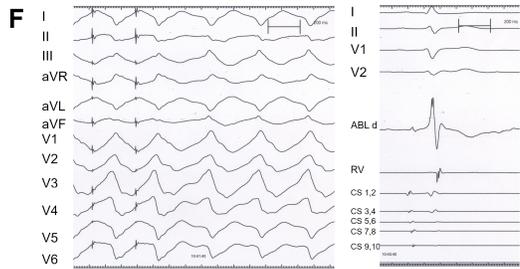
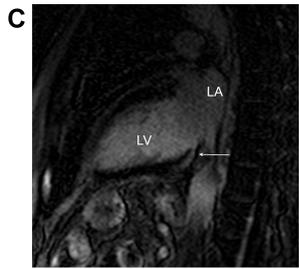
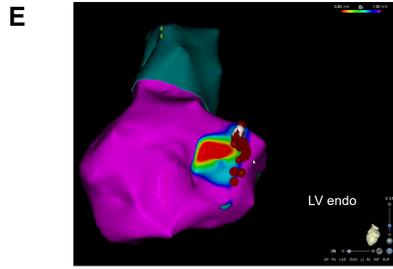
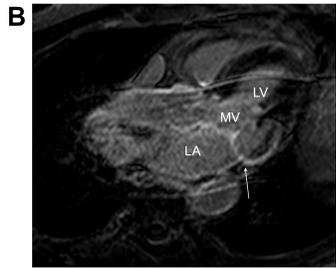
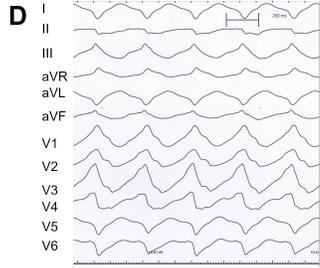
April 3, 2021

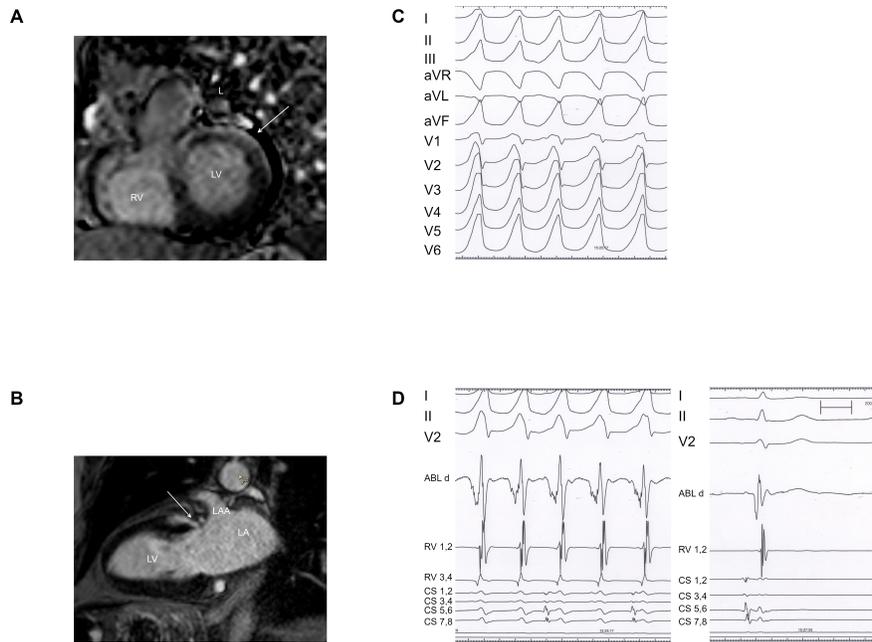
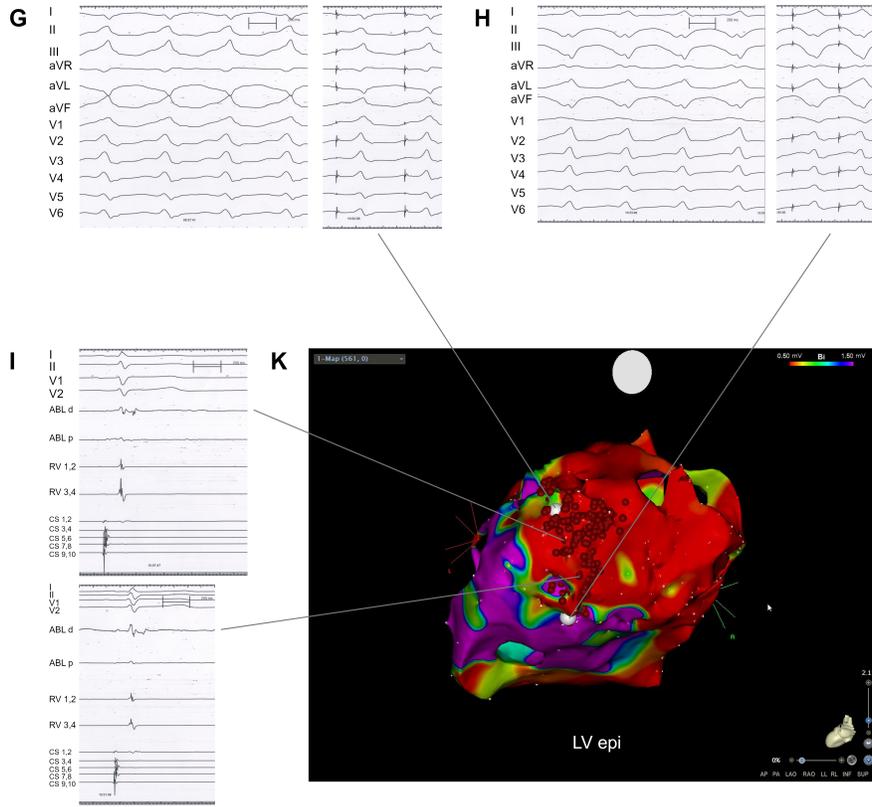
Abstract

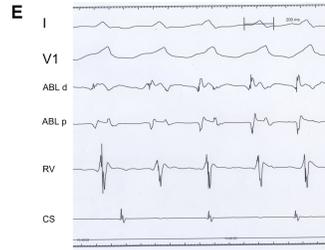
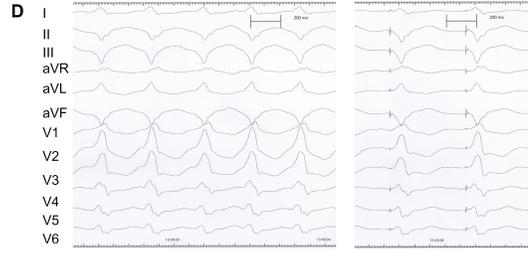
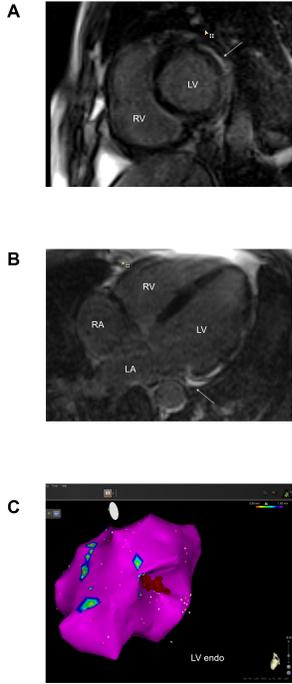
Introduction: In patients with left ventricular (LV) nonischemic cardiomyopathy and monomorphic ventricular tachycardia (VT), midmyocardial and epicardial substrates are often involved but endocardial structures may also be affected. Delayed enhancement – magnetic resonance imaging (DE-MRI) was used to characterize the substrates of predominantly epicardial VT to improve identification of target sites for ablation. **Methods and Results:** 12 patients with LV nonischemic cardiomyopathy and monomorphic VT (prior myocarditis in 9) had a predominantly epicardial (n = 8) or epicardial-only DE-MRI substrate (n = 4). Modest-sized endocardial involvement in predominantly epicardial substrates was identified by DE-MRI in 8 patients. Mapping of 22 VTs was performed in 12 patients using an endo-epicardial approach in 6 patients and an endocardial-only approach in 6 patients. Endocardial VT reentry circuit exit sites as defined by entrainment and pace mapping criteria corresponded to endocardial breakthroughs from predominantly epicardial DE-MRI substrates in 7 patients. The endocardial VT exits were located at the ventricular base near the mitral annulus in 6 patients. Successful endocardial ablation of at least one VT was accomplished in 5 patients. Epicardial ablation as a part of an endo-epicardial approach or as epicardial-only ablation was performed in 6 patients and was successful in 4 patients. **Conclusion:** Endocardial breakthroughs from predominantly epicardial DE-MRI substrates are often located near the ventricular base in the perivalvular region and correlate with endocardial VT reentry circuit exit sites amenable to ablation.

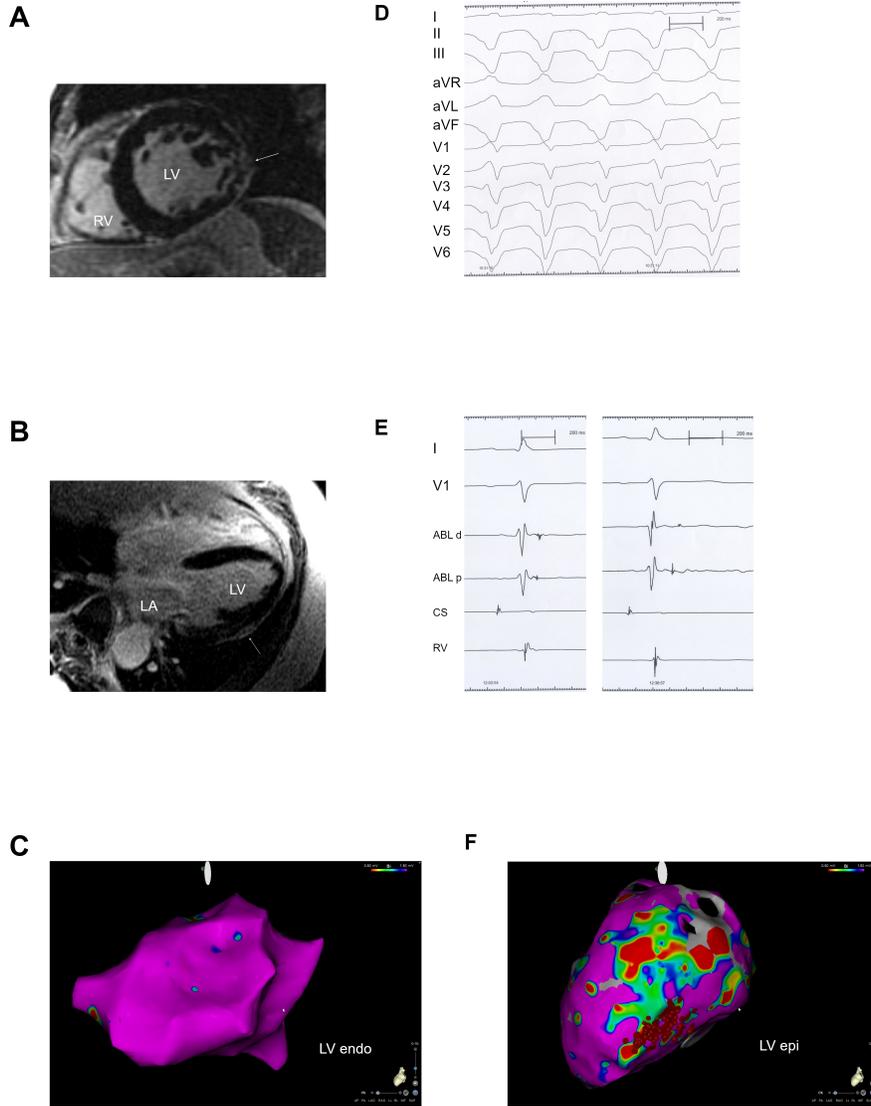
Hosted file

breakthroughs MRI.pdf available at <https://authorea.com/users/405652/articles/516567-magnetic-resonance-imaging-of-endocardial-exits-from-epicardial-ventricular-tachycardia-substrates-in-left-ventricular-nonischemic-cardiomyopathy>









Hosted file

breakthroughs table 1.pdf available at <https://authorea.com/users/405652/articles/516567-magnetic-resonance-imaging-of-endocardial-exits-from-epicardial-ventricular-tachycardia-substrates-in-left-ventricular-nonischemic-cardiomyopathy>