

Usefulness of remote magnetic navigation for ablation of ventricular arrhythmias originating from outflow regions

B.K.R. Schwagten, T. Szili-Torok, M. Rivero-Ayerza, E. Jessurun, S. Valk, L.J.L.M. Jordaens

Monomorphic ventricular tachycardia (VT) and symptomatic monomorphic PVCs originating from the region of the right and left outflow tracts are increasingly treated by radiofrequency (RF) catheter ablation. Technical difficulties in catheter manipulation to access these outflow tract areas, very accurate mapping and reliable catheter stability are key issues for a successful treatment in this vulnerable region. VT ablation from the aortic sinus cusp (ASC) in particular carries a significant risk of perforation, of creating left coronary artery injury and of damage to the aorta and the aortic valve.

This case series describes RF ablation of VT originating in the outflow region using the remote magnetic navigation system (MNS). Potential advantages of the MNS are catheter flexibility, steering accuracy and reproducibility to navigate to a desired location with a low probability of perforating the myocardium. This report supports the idea of using advanced MNS technology during RF ablation in regions which are difficult to reach and thin walled, such as parts of the outflow tract and the ASC. (*Neth Heart J* 2009;17:245-9.)

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Key Messages

- Reports 3 case studies for outflow tract VT ablations using the Stereotaxis Magnetic Navigation System (MNS).
 - Case 1: 16 y/o female with frequent ventricular ectopy. Retrograde access was used to reach the LOVT where earliest activation at the left coronary cusp (3 mm from the left main coronary artery) was found. RF ablations were applied and the VT was non-inducible. The patient reported no episodes of palpitations during 6 months of follow up without use of beta-blockers.
 - Case 2: 60 y/o female with frequent palpitations and near-syncope. Earliest activation was located at the RVOT. RF ablations eliminated the PVCs during the procedure. During 6 months of follow up the patient reported no fatigue, fainting or palpitations while remaining off of beta-blocker drugs.
 - Case 3: 69 y/o male with frequent palpitations could not tolerate beta-blocker therapy due to a preexisting lung condition. The earliest activation was located at the LVOT and was ablated in a retrograde fashion. This patient also reported no palpitations in the 6 months following the procedure.
- Potential advantages of MNS include:
 - Flexible catheters allow easier navigation to difficult-to-reach areas as well as a decreased risk of perforating the myocardial wall.
 - Precise targeting can be achieved by 1mm or 1° catheter movements via the Navigant™ software.
 - Location can be stored in the software which allow navigation back to an area of interest
- Authors conclude that MNS offers a low probability of myocardial perforation to treat VTs in areas where perforation is at greater risk.