Irrigated-tip magnetic catheter ablation of AF: A long-term prospective study in 130 patients

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Background. Non-irrigated magnetic ablation may result in potential char, ineffective lesions and longer procedure times. **Objective**. To report the safety and long-term efficacy of irrigated tip magnetic ablation of atrial fibrillation. **Methods.** Catheter ablation was remotely performed using a new irrigated-tip magnetic catheter (ThermoCool NaviStar-RMT, Biosense Webster) in 130 consecutive patients (mean age 59.7±10.5 years) with symptomatic paroxysmal (81 patients) or persistent (49 patients) AF. The RF generator was set to fixed power of 30 W. Primary endpoint of the study was freedom from AT/AF off antiarrhythmic drugs. **Results.** The procedure was safely performed in all conventional ablation targets, but crossover to manual catheters was required in 12 patients to complete the mitral isthmus line. The total procedure time was 94.6±15.3 min. Impedance values significantly decreased during RF applications (p<0.001) and the maximum temperature on the catheter tip was 36.4±0.8 °C. The follow-up duration was 15.3±4.9 months. The primary endpoint was achieved in 66/81(81.4%) patients with paroxysmal AF and in 33/49 (67.3%) with persistent AF (p=0.035, by log-rank test). Patients with paroxysmal AF had higher late AF recurrence (p=0.044). Overall, post-ablation incessant left AT developed in 7/130 (5.4%) patients. Major complications were not observed. Left atrial diameter (p<0.001) and heart failure (p= 0.032) predicted arrhythmia recurrence after remote irrigated-tip ablation. **Conclusions.** Remote ablation with irrigated-tip magnetic catheters can be safely and effectively performed in patients with AF, but longer follow-up periods are required to evaluate late AF recurrences.

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Key Take-Aways

- Evaluation of the magnetic navigation system (MNS) for atrial fibrillation (AF) ablation using the NaviStar RMT ThermoCool irrigated –tip catheter in a large consecutive series (n = 130). The ablation strategy included pulmonary vein (PV) isolation, mitral, roof and posterior lines.

- 66/81 (81.4%) patients with paroxysmal AF and 33/49 (67.3%) patients with persistent AF were free of AF at 15.3 ± 4.9 month follow-up (p = 0.035).
    - The authors report that these rates are similar to what has been previously reported for manual AF ablation.

- Fluoroscopy time was 15.2 ± 10.2 minutes. T he authors describe this level of radiation exposure as "minimal".

- The total procedure time was 94.6 ± 15.3 minutes. This included:
    - *Left-sided PV isolation:* 14.9 ± 3.6 minutes
    - *Right-sided PV isolation:* 10.8 ± 3.5 minutes
    - *Roof line (RSPV to LSPV):* 4.4±0.8 minutes
    - *Posterior line:* 14.1 ± 3.2 minutes
    - *Mitral isthmus line:* 14.1 ± 3.2 minutes

- No major complications (including steam pop and tamponade) or catheter tip charring was observed. Three (2.3%) minor complications occurred (two arterio-venous fistulas, one haematoma) occurred.

- A multivariate analysis showed that large left atrial diameter and the presence of HF were independent predictors of recurrence. This is similar to other studies of non-magnetic AF ablation.

- The authors report that magnetic catheters enable "precise positioning and manipulation of the catheter tip minimizing the manual skill required and limiting radiation exposure". This contrasts with manual catheters which "have limited flexibility", resulting in AF ablation procedures that are "technically complex, challenging and time consuming with high levels of radiation exposure".