Remote Magnetic Navigation-Assisted Catheter Ablation Enhances Catheter Stability and Ablation Success with Lower Catheter Temperatures

DARRYL R. DAVIS, M.D., ANTHONY S.L. TANG, M.D., MICHAEL H. GOLLOB, M.D., ROBERT LEMERY, M.D., MARTIN S. GREEN, M.D., and DAVID H. BIRNIE, M.D.
From the Department of Cardiology, University of Ottawa Heart Institute, Ottawa, Ontario, Canada

Background: *It has been suggested that remote magnetic navigation (RMN) may provide enhanced catheter stability and substrate contact to aid in ablation. To date, no study has examined this claim. Accordingly, we compared the characteristics of the successful ablation of atrioventricular reentry tachycardia (AVNRT) using RMN with a matched population ablated using a conventional (CON) manual approach.*

Methods: *Sixteen patients who underwent RMN-assisted ablation of typical AVNRT were matched with 16 patients who had a CON-AVNRT ablation.*

Results: *All patients had successful slow pathway modification without complication. The mean catheter temperature achieved with the successful ablation was significantly lower with RMN than with CON (42 ± 7°C vs 47 ± 3°C, $P \leq 0.05$). Time to junctional tachycardia (JT) was significantly earlier (5.7 ± 4.1 s vs 11.2 ± 8.9 s, $P \leq 0.05$) and variation in catheter temperature with the successful ablation (0.89 ± 0.45 vs 1.45 ± 0.49, $P < 0.01$) was significantly reduced in the RMN group than in the CON group. There was no significant difference between RMN and CON in terms of the total number of lesions and the mean power achieved during the successful lesion.*

Conclusions: *Although the construction of the ablation catheters is similar, ablations with RMN catheters resulted in a lower mean temperature, earlier time to JT, and less variability of temperature during ablation, suggesting greater catheter stability. This study indicates that ablation with RMN can achieve success with lower catheter temperatures. (PACE 2008; 31:893–898)*

magnetic navigation, RF catheter ablation, atrioventricular nodal reentry tachycardia

Summary:

- This manuscript compared 16 patients who underwent AVNRT ablation with magnetic navigation to 16 matched conventional AVNRT ablation patients.
- While the power delivered was identical between the two groups, the magnetic navigation group had, on average, a 4.6º reduction in tip temperature.
- The standard deviation in tip temperature was also significantly less in the magnetic group when compared to the conventional group.
- The time to achieve junctional tachycardia in the magnetic navigation group was less than half of that in the conventional group.
- The authors suggest that these differences between the treatment groups are indicative of enhanced catheter stability with the magnetically navigated catheter.