

Mechanism of Acute Pacing Threshold Elevation During Simultaneous Micra Leadless Pacemaker Implantation and AV Node Ablation

Racine HP¹, Nicolas Dognin¹, Yanzhu Zhao², Benoit Plourde¹, Christian Steinberg¹, Teresa Whitman², and François Philippon¹

¹Institut universitaire de cardiologie et de pneumologie de Quebec

²Medtronic Inc

March 31, 2023

Abstract

Background In patients with refractory atrial fibrillation (AF), atrioventricular nodal (AVN) ablation and permanent pacemaker implantation is recommended. The Micra Transcatheter Pacing System (Micra) is a single chamber leadless pacemaker (LPM) and thus offers the possibility of AV node (AVN) ablation in the same procedure. Pacing threshold (PT) elevation after radiofrequency (RF) ablation is a potential complication. **Methods** We conducted a single center retrospective cohort study. All patients implanted with a Micra (n=84) and concomitant or delayed AVN ablation (n=12) from 2014 to 2022 were included. We describe two cases of acute Micra PT elevation immediately following RF AVN ablation requiring device retrieval and implantation of a new Micra. Procedural characteristics and electrophysiological parameters were analyzed, and computer modelling was performed to determine factors responsible for acute PT elevations. **Results** A total of 84 patients were included. Mean age was 74±10 and 48% were women. Twelve patients (14%) underwent AVN ablation. Two patients had acute PT elevation requiring device retrieval despite no direct contact of the ablation catheter with the Micra. Computer modelling shows that significant dissipated power due to electrical field coupling can occur at the tip or ring electrode if the catheter is not kept at a safe distance ([?]15 mm) from the Micra. **Conclusion** Concurrent AVN ablation and Micra implantation is safe in most patients. To prevent acute PT elevation, keeping a safe distance of [?]15 mm from the tip and ring electrodes of the Micra and using lower power output may prevent this complication.

Hosted file

MicraIUCPQmarch28FINAL.docx available at <https://authorea.com/users/601881/articles/632885-mechanism-of-acute-pacing-threshold-elevation-during-simultaneous-micra-leadless-pacemaker-implantation-and-av-node-ablation>