


Remote monitoring in a patient with multiple leadless pacemakers

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1 | INTRODUCTION

The implant of leadless pacemaker (LPM) has rapidly expanded as an alternative to conventional pacing. After several years of LPM implantation, we began to have patients requiring a second device. Remote monitoring (RM) has become part of the standard follow-up in these patients. We describe through a clinical case some of the challenges we can face when remotely monitoring a patient with two devices.

2 | CASE REPORT

A 90-year-old woman with complete AV block underwent a leadless pacemaker (LPM1) implantation (Micra VR, Medtronic Inc.) in August 2016. Sensing and pacing parameters were adequate at implantation (R-wave 15 mV, impedance 670 Ω , and threshold 0.38 V at 0.24 ms). An increase in the pacing threshold was detected at 3 months of follow-up (R-wave of 12 mV, impedance of 560 Ω , and threshold 2.5 V at 0.24 ms) with an expected battery longevity of 38 months. Follow-up was performed by RM (Medtronic MyCareLink® Model 249562). The device reached the elective replacement time (ERI) in July 2019. A new LPM (LPM2) was implanted at a higher septal position with appropriate pacing parameters (R-wave 20 mV, impedance 1010 Ω , and pacing threshold of 0.5 V at 0.24 ms) (Figure 1, Panel

A). The LPM1 was abandoned and programmed in "OFF" (mode 000). Unexpectedly, in the first programmed RM follow-up, no data from the LPM2 were received. Therefore, the patient was scheduled for in-hospital face-to-face evaluation. Positioning of the transmitter head of patient in-home monitor over the left pectoral region ("regular position") get communication only with the abandoned LPM1 but no data was transmitted. To obtain communication with LPM2, the transmitter head was moved across the patient's chest and back until satisfactory data transmission was achieved in the left scapular region (Figure 1, Panel B).

3 | DISCUSSION

In this case, we face the challenge of remotely monitoring a patient with two LPMs. The first issue we want to remark is that by programming one device OFF, the sensing and pacing functions are inhibited but importantly, the device can perform telemetry and communications throughout the lifespan of the device. On the other hand, for RM of a patient with multiple LPM, it is important to take into account the orientation and position of the device. In our case, probably, the reason why the in-home monitor transmitter head positioned in the usual left pectoral region only reached the LPM1 could be explained for the orientation of the integrated antenna and the proximity to the anterior chest.

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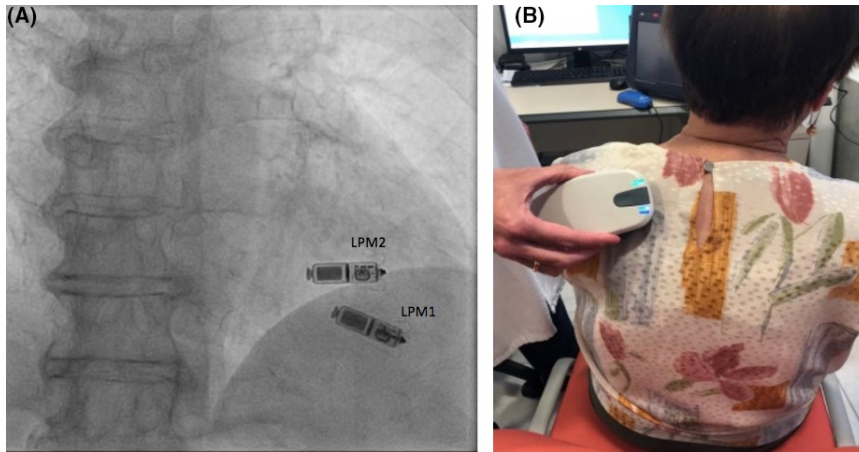



FIGURE 1 Panel A, posteroanterior chest X-ray imaging showing the implanted leadless pacemaker (LPM) devices. Panel B, green light on the transmitter head of in-home monitoring indicating data transmission

As the use of LPM spreads, RM units may face similar situations in the coming years. The case reported adds a new observation to consider when remotely monitoring patients with multiple devices and emphasizes the importance of meticulous testing before starting RM.

CONFLICT OF INTEREST

F. Méndez-Zurita has received honoraria from Medtronic. X. Viñolas is a member of the Micra advisory Board, Medtronic. All other authors declare they have no conflict of interest.

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