Leadless cardiac pacemaker as alternative in case of congenital vascular abnormality and pocket infection

Christophe Garweg*, Joris Ector, and Rik Willems

Department of Cardiovascular Sciences, KU Leuven, Leuven, Belgium

* Corresponding author. *E-mail address*: christophe.garweg@uzleuven.be

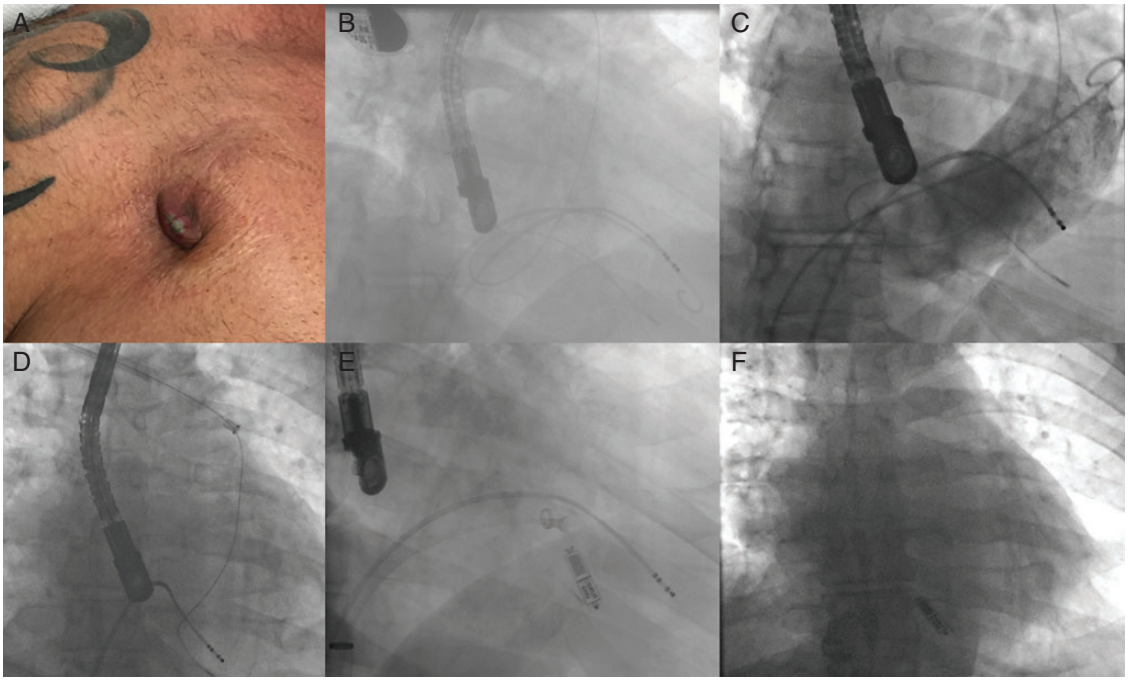
Pacemaker implantation in the presence of congenital venous abnormalities can be challenging even more if associated with an infection of a previously implanted cardiac device. We report the case of a 60-year-old man with locally infected skin erosion of a single-chamber pacemaker pocket after recent battery replacement.

A 60-year-old man presented to the outpatient pacemaker clinic with locally infected skin erosion of a single-chamber pacemaker pocket (*Panel A*) after recent battery replacement. Laboratory tests showed no sign of systemic infection (no leukocytosis, CRP: 3.1 mg/l—normal value $<$5.0 mg/l). In 1994, the patient underwent pacemaker implantation followed by His-bundle ablation for rate control of permanent atrial fibrillation (AF). Adequate right ventricular lead implantation was challenging due to the absence of a right superior vena cava (*Panels B* and *C*). The right brachiocephalic vein drained directly into a left persistent superior vena cava that drained directly into the coronary sinus.

A standard left-sided single-lead pacemaker was not preferred by the patient because of weightlifting practice. Therefore, we decided to re-implant a leadless pacemaker [Micra™ transcatheter pacing system (TPS), Model MC1VR01, Medtronic, Inc., Minneapolis, MN, USA] to avoid both potential difficulties of lead positioning and new complications at the site of the device implantation associated with fitness activities.[1]

Under general anaesthesia, after placement of a temporary pacemaker via the left femoral vein, the infected material was first removed via a subclavian approach using an Evolution RL active sheath (Cook Medical, Bloomington, IN, USA) (*Panel D*). A minor lead rest remained.

Thereafter, a TPS was implanted via the right femoral vein. After sequential dilatation, the large 27 French introducer was advanced over a stiff guidewire to the right atrium. The delivery catheter was then advanced and manipulated to implant the pacing capsule at the apex of the right ventricle (*Panel E*). The first position was mechanically stable (confirmed by the 'pull and hold' testing) associated with excellent electrical measurements: sensing $>$20 mV, pacing impedance 780 Ω, and pacing thresholds 0.5V@0.5 ms.



The TPS was released from its tether (*Panel F*), the delivery tools were removed, and the skin was closed using a figure 8 stitch. The implantation procedure was uncomplicated and uneventful. Total implantation time lasted 25 min. Electrical measurements of the device were stable at 3-month follow-up.

In conclusion, leadless cardiac pacing was here a practical alternative for a conventional pacemaker system after device-related infection and in the presence of compromised venous access due to a congenital venous abnormality.

Reference

1. Reynolds D, Duray GZ, Omar R, Soejima D, Neuzil P, Zhang S *et al. A leadless intracardiac pacing system. N Engl J Med.* 2015.DOI: 10.1056/NEJMoa1511643.