Leadless Pacemaker Implant After Heart Transplant

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Conduction abnormalities are known to occur after heart transplantation. In some cases, a permanent pacemaker is required. Conventional transvenous pacemakers can result in several complications, mainly related to the leads and device pocket. Leadless pacemaker technology was developed to overcome these issues. We report what we believe is the first US case of a leadless pacemaker implant (specifically in a heart transplant recipient) with the longest reported duration of follow-up. **(Am J Cardiol 2019;124:455−456)**

Pacemaker implant is needed in approximately 2% of patients late after heart transplant.[1] Conventional transvenous pacemakers can result in several complications, mainly related to the leads and device pocket.[2] Leadless pacemaker technology was developed to overcome these issues. We hereby report what we believe is the first US case of a leadless pacemaker implant in a heart transplant recipient, with the longest reported duration of follow-up.

A 73-year-old man with a history of bicaval orthotopic heart transplantation (OHT) 5 years prior, and recent complaints of paroxysmal dizziness and presyncope, sought medical attention due to headache. In the Emergency Department, he was noted to have high grade AV block. As a result he underwent evaluation of the cardiac allograft. Transthoracic echocardiogram revealed preserved systolic function, and right heart catheterization showed normal resting hemodynamics. There were no detectable donor specific antibodies, and endomyocardial biopsy showed no evidence of either acute cellular or antibody mediated rejection. Since he had a prior left-sided cardiac device extracted at the time of transplant, and was right hand dominant, he underwent leadless pacemaker (Micra- Medtronic Inc.) implant (Figure 1) without complication. He was continued on maintenance immunosuppression (Myfortic and Neoral). Diagnostic coronary angiography performed after discharge showed no angiographic coronary artery disease. He has had no complications (infective or otherwise) related to the leadless pacemaker, and stable pacing thresholds at 1 year follow-up.

The Micra leadless pacemaker is approximately the size of a Nickel, with a mean battery life of ∼12.5 years and a lower overall complication rate compared with conventional pacemakers.[2] It is implanted percutaneously through the femoral vein, and requires a 27 Fr (outer diameter) sheath. The pacemaker is deployed in the right ventricle, and therefore only provides right ventricular (RV) pacing. Advantages include its availability for patients with occluded upper extremity veins, open/infected chest wounds and complex upper extremity anatomy, and in patients in whom there is a desire to preserve upper extremity vascular access. Device complications include access site bleeding, device dislodgement, and pericardial effusion. It does, however, avoid the morbidity associated with pocket infections and hematomas (which increase the risk of device infection) and worsening tricuspid regurgitation.[2] The lower device infection rate is important in an immunocompromised host such as a heart transplant recipient. Additionally, tricuspid valve regurgitation is the most commonly occurring valve lesion post-OHT, with an incidence of anywhere between 18% and 84%, and is associated with increasing severity and morbidity in the long term.[3,4] As both conventional pacemakers and endomyocardial biopsy are causes of iatrogenic tricuspid regurgitation[3,4] in the appropriate patient, a leadless pacemaker may help reduce progression of this valve lesion over time.

Disclosures

We the authors declare that we have no financial disclosures or conflicts of interest.

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See page 455 for disclosure information.

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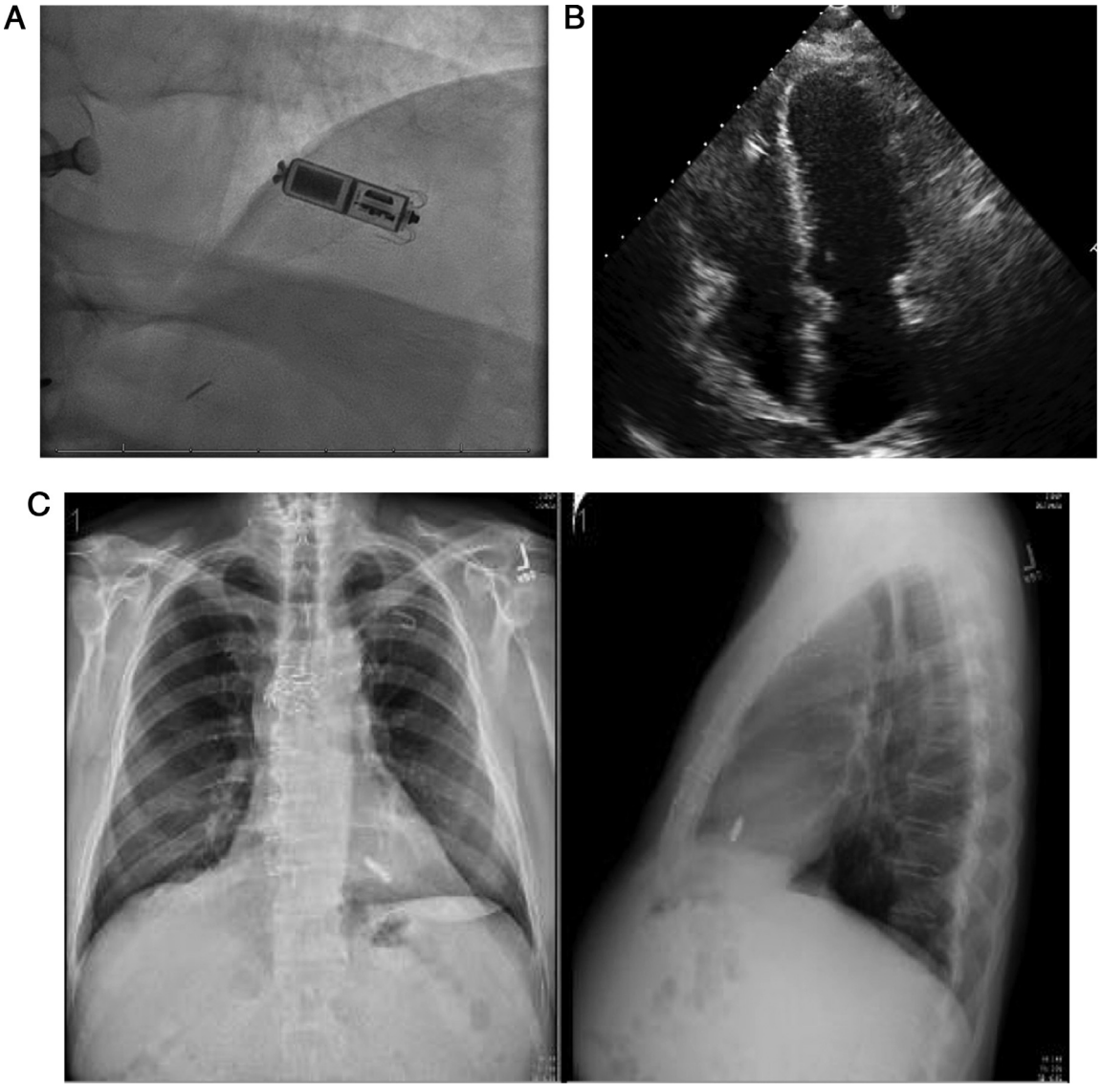

Figure 1. The Micra leadless pacemaker (A) at deployment (B) echocardiographic appearance at the RV apical septum (C) radiographic appearance.

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