62-year-old man developed pleuritic chest pain, fever, chills, and diaphoresis 3 days after radiofrequency ablation for atrial flutter. He had a history of nonischemic cardiomyopathy and had a biventricular pacemaker-implantable cardiac defibrillator placed 7 months earlier. Within 24 h of the first fever, multiple sets of blood cultures were positive for *Staphylococcus aureus*. A transthoracic echocardiogram did not demonstrate any vegetations on the valves or pacemaker leads. A transesophageal echocardiogram (TEE) with real-time 3-dimensional imaging using a matrix array transducer was performed, which revealed 3 vegetations attached to the pacemaker leads in the right atrium, the largest measuring 2.7 cm in maximal diameter and attached to the atrial J-wire (A, Online Videos 1 and 2). The patient subsequently underwent surgery to remove the vegetations (B), followed by extraction of the pacemaker leads. This case represents a novel use of real-time 3-dimensional TEE in the diagnosis and characterization of pacemaker endocarditis.