

Prevention of self-harm through early detection of depression among the elderly with permanent pacemaker: a case report

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There is consensus regarding the efficacy and safety of permanent pacemakers (PPM) and other cardiac implantable electronic devices. These devices improve the quality of life by relieving symptoms of bradycardia including dizziness, fatigue and exercise intolerance. The decision to implant a PPM is often made at the time of the initial encounter with the patient, such as when symptomatic bradyarrhythmia is first diagnosed. The implantation procedure is usually performed promptly. However, the psychosocial factors related to having a PPM are frequently underestimated by clinicians. Poor psychological adaptation after implantation, particularly among aged patients with undetected psychiatric illness, poses a significant risk to treatment benefit. It is known that both anxiety and depression commonly accompany cardiovascular disease (CVD), leading to reduced quality of life and increased mortality. Depressed elder adults tend to present different symptoms from the young patients, such as somatic symptoms, loss of interest and cognitive changes.^[1] Currently, a psychological evaluation before and after PPM implantation is not generally advocated. In this article, we propose that shared decision-making (SDM), employing psychosocial approaches, is critical for aged patients receiving permanent pacing therapy, if successful outcomes are to be maximized.

An 87-year-old woman was brought to our emergency department with an extensive self-inflicted wound of the left upper chest wall, exposure of a pacemaker generator with damaged leads, and self-lacerations of both wrists. A permanent pacemaker system (DDDR mode, ADAPTA, Medtronic) had been implanted eight years previously with the dia-

gnosis of sick sinus syndrome. Multiple somatic complaints, especially chronic back pain, had impacted the patient's sleep quality and daily life. The patient also had a diagnosis of general anxiety disorder, and she had been regularly visiting a psychiatric clinic for insomnia over the two years preceding this event. The patient occasionally expressed suicidal ideation but her family did not pay much attention to her suicidal verbalizations.

At about 2:00 a.m., during the night immediately prior to emergency department admission, the patient was awoken by general discomfort associating with a feeling of hopelessness. She cut her wrists, for she believed that removing her pacemaker would cause her heart to stop and thereby make her die more quickly. She repeatedly cut into her chest wall, both around and over her pacemaker (Figure 1). In the morning, her family noticed she had not gotten up, and she was found lying in bed, severely injured. The patient was immediately transported to hospital and the pacemaker was safely removed. There was no sign of infection, and no bradycardia was recorded. The cardiologist held a discussion with the patient's family regarding the patient's condition and situation. Following discussion, it was decided that due to the unacceptably high risk for future self-harm due to her mental status and the absence of bradycardia at the time, the PPM would not be re-implanted.

The guidelines of the American College of Cardiology, American Heart Association, and Heart Rhythm Society, stated that pacemaker implantation is not indicated when significant comorbidities far outweigh the clinical benefit.^[2] Psychiatric illness, while not a definitive contraindication, is in-

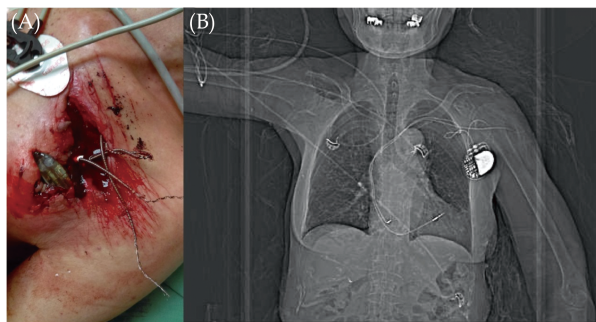


Figure 1 Incisional wound created by the patient with exposed pacemaker generator (A) and computed tomography showed pacemaker lead disconnection but no sign of dislodgement (B).

dicative of additional challenges and risks. Cases of self-mutilation among patients with pacemakers, or patients attempting suicide by destroying their pacemaker, have been sporadically reported in aged patients.^[3] These events have raised concern about the importance of ongoing psychosocial assessment in this population. Self-harm related to PPM can be lethal and bring on severe complications, including infection, vascular injury, chest wall deformity, massive bleeding, or cardiac rupture. Self-harm is also associated with dramatically increased hospital costs. A large study in England, where a scheme of national health insurance take place, found the average expenditure of a single episode of self-harm was reported to be as high as £809. This cost included admission, treatment in intensive care unit and psychosocial assessment.^[4] Depression and anxiety are each considered to be an independent risk factor for suicide and are often related to a patient's feeling of worthlessness. Mlynarski, *et al.*^[5] report patients with atrioventricular block and sinus node dysfunction, anxiety and depression are frequently first diagnosed through use of the Hospital Anxiety and Depression Scale. These findings may reflect that PPM patients are often elderly and present with underlying diseases or comorbid heart disease.

Figure 2 provides a clinical algorithm for early detection and management of depression in older patients qualified for PPM implantation. Requiring these patients to undergo routine Patient Health Questionnaire-2 (PHQ-2) evaluation for depression and comprehensive geriatric assessment (CGA) for functional deficit would be a step towards informed SDM. The PHQ-2 is a brief, validated, questionnaire, composed of 2 items: sad mood and anhedo-

nia. When the PHQ-2 is positive, a more comprehensive test, the Patient Health Questionnaire-9 (PHQ-9), is indicated. The PHQ-9 shows similar effectiveness to Geriatric Depression Scale-15, but it is more attractive among elder Chinese adults due to its shorter form.^[6] A positive screen on a self-reported questionnaire is not equivalent to a formal diagnosis of depression, best ascertained through a work-up and diagnostic interview by a qualified mental health professional. It is suggested referring patients with positive PHQ-9 to psychiatrists and determine the need of prompt intervention.^[7] If the patient is frail or at risk of frailty, hospital-based CGA can be started on admission for a more comprehensive approach, as malnutrition and impaired mobility are associated with higher mortality among older patients with PPM, CGA and subsequent geriatric intervention may improve prognosis in these patients after PPM implantation (Green section of Figure 2).^[8]

SDM, as current guidelines note, allows the flexibility for patients and clinicians to decide treatment based on the best evidence-directed therapy, while attending to the patient's values, preferences, or goals of care.^[2] SDM is optimally envisioned as an ongoing process, especially in the context of preventive medicine. However, this two-way patient-clinician communication often stops after the PPM is implanted. It is reported that few individuals with depression are adequately treated and the rate is lower among depressed patients with CVD.^[9] SDM is best seen as a problem-oriented method with opportunities for fine-tuning of the long-term care plan, including medication for complications, somatic complaints and mental health support (Orange section of Figure 2).^[10] Prior to a PPM implantation, the clinician should also be alert for patients with higher-than-normal risk of suicide or self-harm behaviors. In those relatively uncommon cases, in which the risk of a patient acting so irrationally as to attempt self-removal of a device, the standard indications of pacemaker location are best carefully rethought with consideration given to a deeper implantation site, such as sub-muscular area, the abdomen or a leadless pacemaker, if single chamber pacing is appropriate.

In conclusion, self-harm related to pacemaker implantation is not common, but when it occurs it is associated with significantly endangering patient

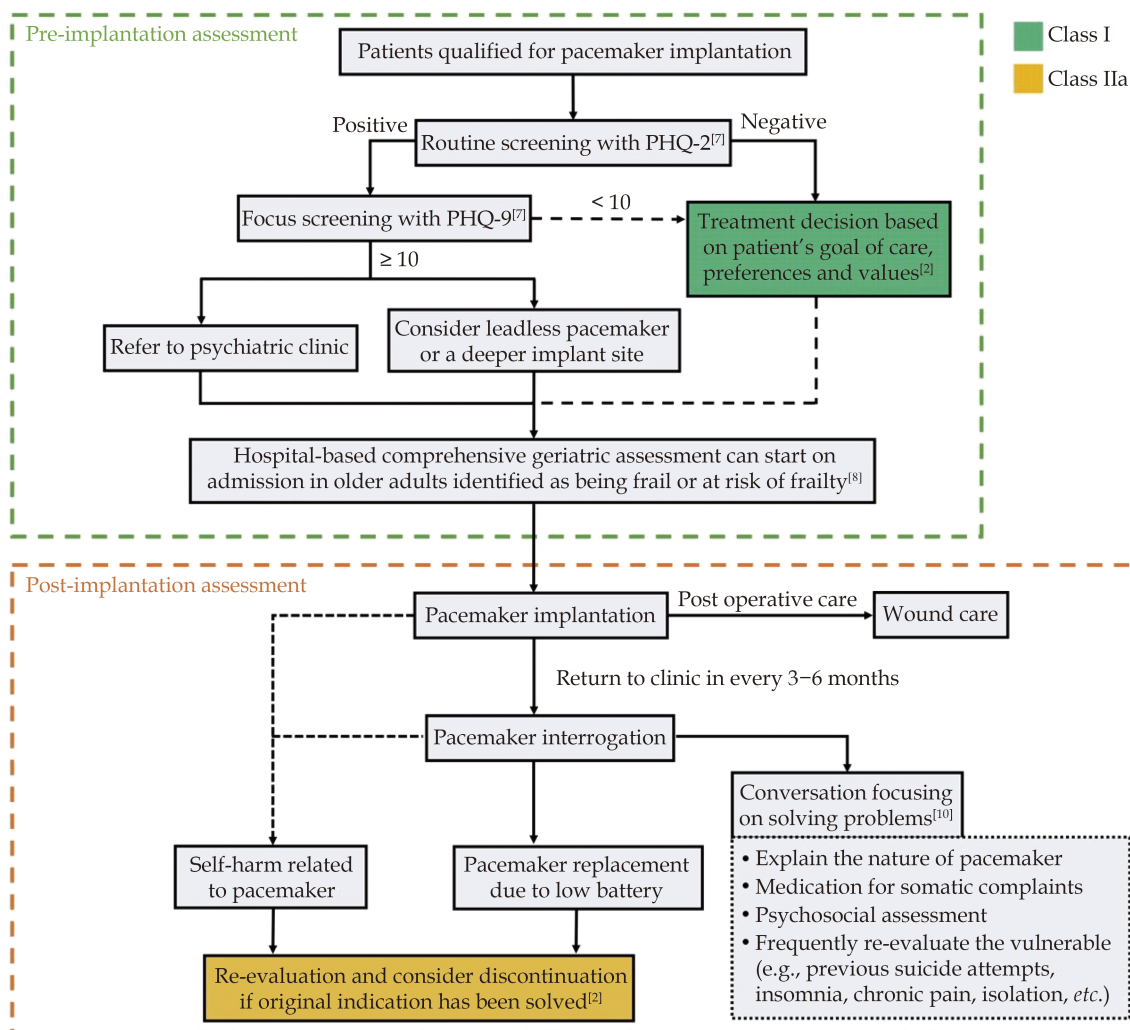


Figure 2 A routine depression screening before pacemaker implantation with an ongoing process of shared decision-making. PHQ: Patient Health Questionnaire.

well-being and often with greatly increased health care costs. It is an indication that the numbers of patients with a PPM who are clinically depressed and anxious has been underestimated. Care of these patients requires a multidisciplinary assessment and a team effort involving the cardiologist, mental health provider, primary caregiver, family members and the patient. For aged patients who are receiving permanent pacing therapy, especially those with a history of mental illness or at increased risk of suicide, both pre-implantation and post-implantation evaluations are advisable. Early detection of depression, using validated questionnaires, followed by ongoing care and SDM, a focus on psychosocial stressors, medication adherence, somatic complaints and attention to any adverse drug reactions, are likely to improve clinical outcomes.

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