Complete extrusion of an implantable cardiac defibrillator

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A 66-year-old man with type 2 diabetes mellitus, permanent atrial fibrillation on warfarin therapy, and severe ischaemic cardiomyopathy had an uncomplicated insertion of a single-lead implantable cardiac defibrillator (ICD) for primary prophylaxis of ventricular fibrillation. Device check 6 weeks after insertion revealed no evidence of wound dehiscence or local skin infection. Fourteen months later, the man presented to hospital with complete extrusion of his ICD below the original insertion point (Figure 1). He denied scratching the overlying skin, but did admit to feeling the generator move under the skin during the lifting of light furniture in the preceding month prior to complete extrusion. He presented afebrile, and his leucocyte count, ESR, and C-reactive protein were all within normal limits. Wound swabs grew skin flora only, and one out of three blood culture bottles grew coagulase negative Staphylococcus, thought to represent bacterial contamination. Transoesophageal echocardiography excluded lead vegetations. He was transferred to a nearby hospital and underwent successful device and lead extraction. This was performed under a general anaesthetic. The generator was disconnected and removed from the pocket, and the lead was dissected down to the left subclavian vein. After gentle traction failed to result in successful lead removal, the patient underwent successful lead extraction via the countertraction method. He made an uneventful recovery.

Skin erosion over permanent pacemaker (PPM) or ICD generators is a rare consequence of infection, with a reported incidence of 1% among late complications after PPM implantation. Total generator extrusion is also a rare consequence of skin erosion and is considered to be an even greater risk for potentially life-threatening bacterial contamination of the inner side of the generator pocket, with less than five reported cases in the literature, one of which involved an ICD generator extrusion 15 months after insertion. Risk factors contributing towards poor wound healing and subsequent skin erosion include poor hygiene, local irritation and infection, low socio-economic status, suppressed patient immunity, anticoagulation therapy, and type 2 diabetes mellitus. In the absence of sepsis or gross infection, some experts have proposed a lead-preserving strategy in

Figure 1 Complete ICD generator extrusion below the original insertion point.

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the setting of early (<48 h) PPM/ICD exposure. However, the treatment of infected PPM/ICD generators remains a challenging clinical entity, with complete extraction of such devices carrying a 5% mortality rate. However, complication rates for device and lead extraction vary according to operator experience. With the worldwide exponential rise in device implantation rates, more and more clinicians will be faced with this challenging and life-threatening clinical scenario in the future. At present, there are no known clinical guidelines for the management of complete device extrusion, with a limited availability of clinicians suitably trained in device extraction.