



LETTER TO THE EDITOR

Dual chamber permanent pacemaker implantation by femoral approach[☆]



Implantação de *pacemaker* definitivo dupla câmara por via femoral

To the Editor,

We read with great interest the article by Rodrigues et al., entitled “Permanent pacemaker implantation using a femoral approach”, published in the *Journal* in November 2014, which described two cases of single-chamber permanent pacemaker (PPM) implantation, in VVI mode, by a femoral approach.¹ In the second case, the device was implanted due to symptomatic bradycardia, with intermittent periods of Mobitz II and complete atrioventricular block (AVB), with preserved sinus rhythm. We also note the article by Valente et al., entitled “Femoral approach: an exceptional alternative for permanent pacemaker implantation” published in the *Journal* in May 2014, which reported a case of single-chamber PPM implantation, in VVIR mode, by a femoral approach, in a patient with symptomatic 2:1 AVB, with preserved sinus rhythm.² Most operators are unfamiliar with this technique, although it has been known since the 1980s.^{3,4} Against this background, we would like to share one of our cases and to comment on the type of device implanted.

An 86-year-old man, with chronic kidney disease and under regular hemodialysis via a left brachiocephalic arteriovenous fistula, had previously had a PPM implanted in right pectoral position for symptomatic intermittent 2:1 AVB; the device was subsequently removed due to infection. A dual-chamber PPM was then implanted via a right femoral

approach. An incision was made in the right groin, below the inguinal ligament (Figure 1A), followed by a double puncture in the femoral vein. A 110-cm CapSureFix® Novus 4076 bipolar ventricular lead and an 85-cm CapSureFix® Novus 5076 bipolar atrial lead (Medtronic Inc., Minneapolis, MN, US) were then introduced, advanced and positioned with active fixation in the right ventricular apex and right atrial appendage, respectively (Figures 1B–E). Excellent wave amplitude and ventricular and atrial pacing thresholds were obtained (impedance 733 Ω, amplitude 7.4 mV, threshold 0.5 mV and impedance 659 Ω, amplitude 0.9 mV, threshold 1 mV, respectively). A pocket was fashioned in the subcutaneous tissue of the right iliac fossa (Figure 1F). The leads were connected to the generator (Replay D in SafeR mode, Sorin Inc., Milan, Italy), which was then implanted in the pocket (Figure 1G), and the device was programmed in DDDR mode. The procedure was uneventful and during two years of follow-up in pacing consultations, the patient was asymptomatic and the system was functioning normally.

No large-scale randomized clinical trial has shown dual-chamber pacing to be superior to ventricular pacing in patients with AVB in terms of mortality or major morbidity. However, dual-chamber pacing is associated with reduced incidence of pacemaker syndrome, which occurs in 25% of patients with ventricular pacing, and with improved exercise capacity (except compared to VVI-R mode). The 2013 European Society of Cardiology guidelines thus recommend that dual-chamber pacing should be considered in patients with AVB and/or sinus node disease (class IIa recommendation, level of evidence A).⁵ In the two most recent series of pacemaker implantation via the femoral vein, the main complication reported was atrial lead dislodgement, in 21% and 20% of cases, respectively.^{6,7} However, atrial lead dislodgement was reported in only 11% and 0% in the last 19 and 14 implantations of the two series, respectively, suggesting that this complication is related to operator experience.

In conclusion, our center considers the femoral approach to be a valid alternative for PPM implantation when access via the superior vena cava is not possible, and its use should not affect the pacing mode selected for the patient according to international guidelines.

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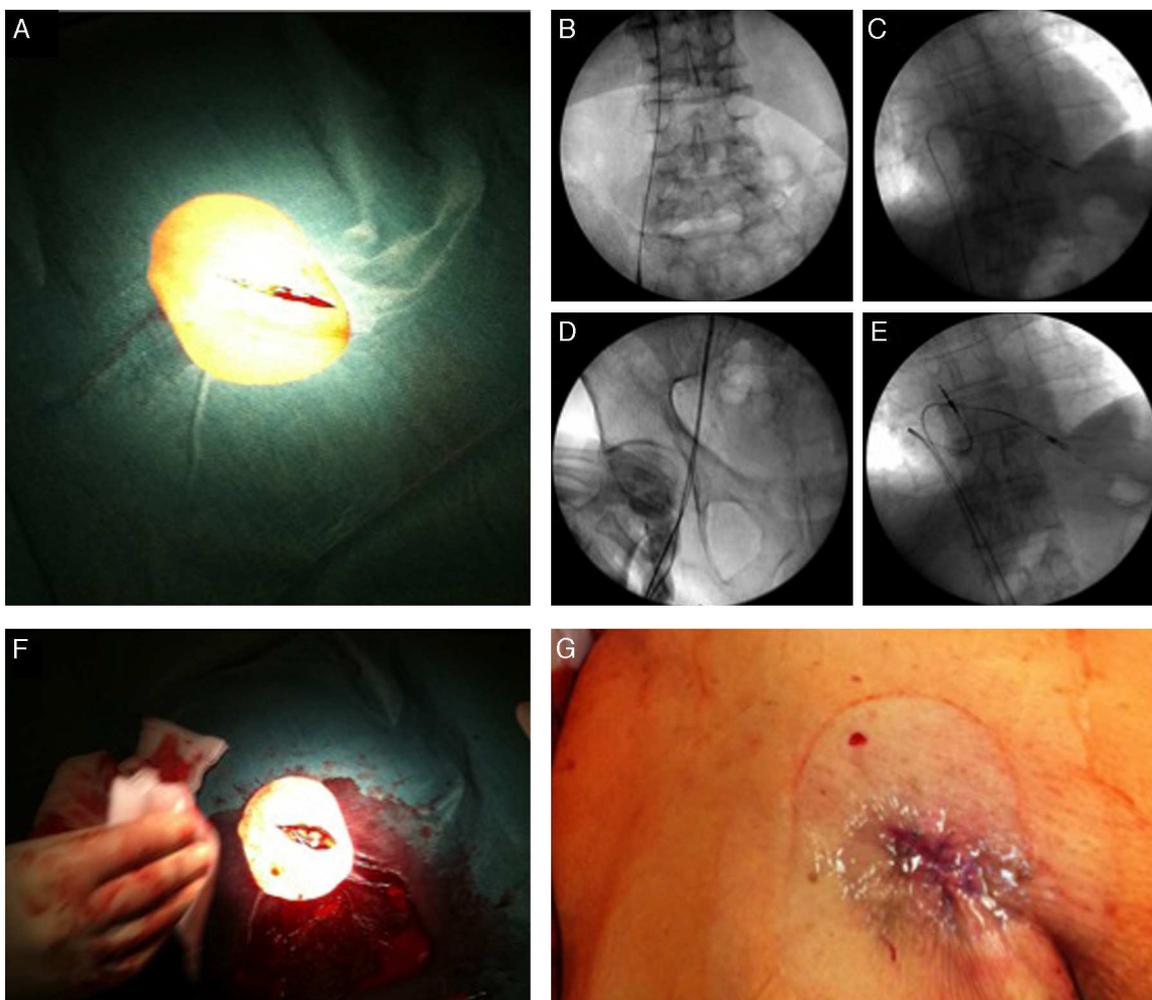


Figure 1 (A) Incision in the right groin, below the inguinal ligament; (B) advancing the 110-cm CapSureFix® Novus 4076 bipolar ventricular lead via the inferior vena cava; (C) positioning and active fixation of the ventricular lead in the right ventricular apex; (D) advancing the 85-cm CapSureFix® Novus 5076 bipolar atrial lead via the inferior vena cava; (E) positioning and active fixation of the atrial lead in the right atrial appendage; (F) implantation of the generator in a pocket in the subcutaneous tissue of the right iliac fossa; (G) right groin after suturing of the pocket.

Conflicts of interest

The authors have no conflicts of interest to declare.

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