

EP CASE REPORT

Pacemaker lead implantation in a patient with transcatheter bicaval prosthesis

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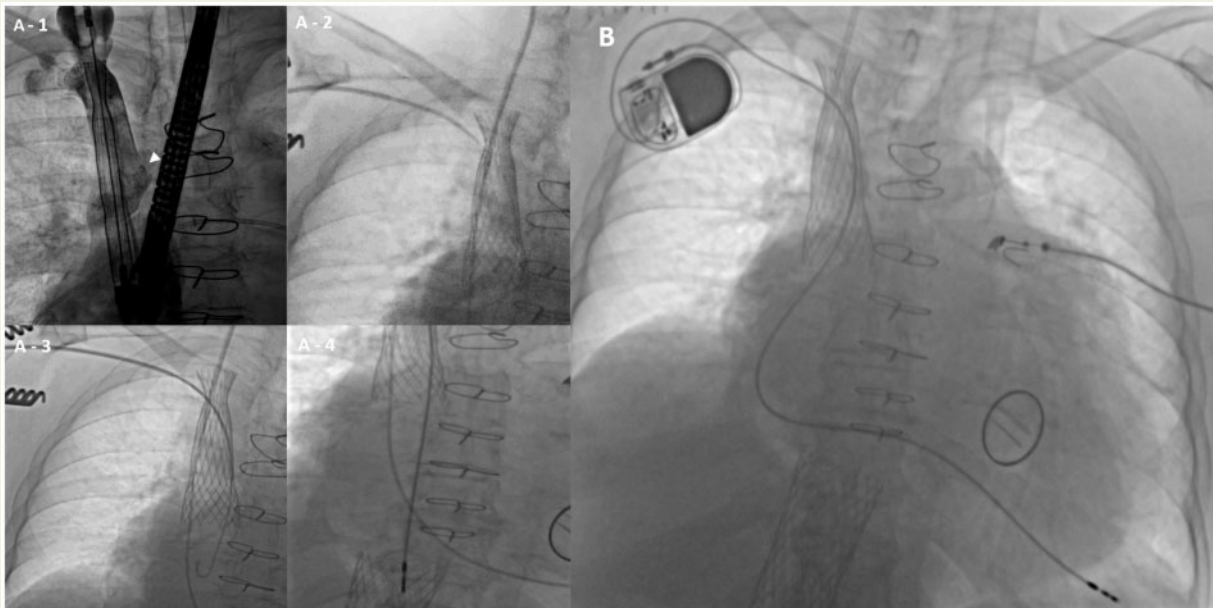


Figure 1. Pacemaker implantation procedure (A) and final view of the implant (B).

Transcatheter tricuspid valve intervention (TTVI) is an emerging therapeutic alternative for high-risk patients with severe tricuspid regurgitation.¹ Several devices and procedures are currently available. Transcatheter tricuspid valve intervention in heterotopic position (TricValve[®], P&F—Products & Features) is one of them.² It consists of two self-expanding biological prosthetic valves deployed at superior vena cava (SVC) and inferior vena cava (IVC).³ Pacemaker leads implantation can be challenging in this setting since the leads may have to cross the frame of the upper prosthetic valve due to its location in the SVC.

We present the case of an 80-year-old woman referred for percutaneous implantation of bicaval valve prosthesis TricValve[®]. She had undergone mechanical mitral valve replacement surgery 10 years ago. She had a history of permanent atrial fibrillation (AF) and incomplete right bundle branch block.

The TricValve[®] implantation procedure was uncomplicated. The patient remained asymptomatic on AF until the 6th day after implantation, when she developed symptomatic atrioventricular block (AVB) with prolonged pauses (up to 14 s) (Supplementary material online, Figure). Temporary stimulation with a transjugular lead was required.

Angiography was performed to assess the permeability of the right upper limb venous system (Figure 1A-1 shows an image obtained during valve implantation). The left innominate vein drainage into the SVC was very close to the valvulated structure of the TricValve[®] (white arrowhead), and therefore pacemaker implantation on the left side was discarded. The right cephalic vein was accessed and a straight tip hydrophilic guidewire introduced in order to go through the upper frame of the SVC prosthetic valve. A 6-Fr sheath failed to cross the frame of the prosthesis, but a 10.5-Fr sheath managed (Figure 1A-2). The hydrophilic wire was then exchanged by a 0.035-inch J-shaped tip guidewire so as to cross the valve structure and the sheath was advanced over it (Figure 1A-3). Finally, an active fixation ventricular lead was placed in the apex of the right ventricle (Figure 1A-4 and B).

This is the first reported case of pacemaker lead implantation after TTVI in heterotopic position. We believe there is no direct relationship between the implantation procedure with the development of AVB. Nevertheless, some patients might need cardiac pacing due to pre-existing or new rhythm disturbances. The insertion of ventricular pacing leads may be challenging in patients having undergone percutaneous caval techniques. If required, lead placement through the frame of the prosthesis can be performed without causing damage to the prosthetic valve, although the lead needs close monitoring. Venous angiography is essential for procedure planning. Leadless pacemaker could be another valid option, but special care should be taken to avoid damaging the IVC prosthesis.

Supplementary material

Supplementary material is available at *Europace* online.

Conflict of interest: The authors declare that they have no conflict of interest and have not received any financing.

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