

EP CASE REPORT

Left bundle branch pacing in a patient with mirror image dextrocardia and persistent right superior vena cava

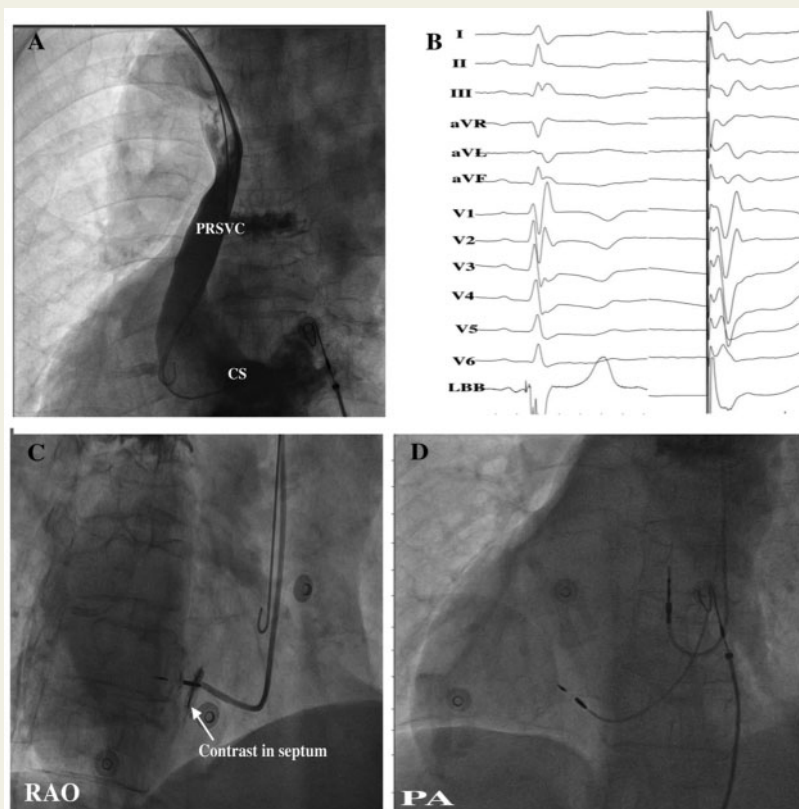
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An 80-year-old female patient was admitted to our hospital with the chief complaint of dizziness and palpitation lasting for 2 years. Findings from the X-ray of the chest and transthoracic echocardiography were consistent with a diagnosis of dextrocardia with situs inversus. A number of ECGs showed sinus bradycardia and right bundle branch block (RBBB) with a heart rate of less than 50 beats per minutes and QRS morphology typical of dextrocardia. Thus, mirror image dextrocardia and sick sinus syndrome were diagnosed and a decision was made to implant a dual-chamber pacemaker in this patient. It might be possible to evolve into atrioventricular block in the future. We intended to place the ventricular lead in the left bundle branch area to deliver physiological pacing.^{1,2}

Under local anaesthesia, vascular access was initiated via the right axillary vein, a common site for such a procedure. However, it was noted that the initial guidewire did not take the anticipated course across the midline but instead repeatedly coursed caudally on the right side of the mediastinum, raising the suspicion of persistent right superior vena cava (PR SVC). Therefore, a venography was performed and PR SVC was confirmed to drain through the dilated coronary sinus (Figure 1A). Therefore, we decided to perform the left side puncture.



Before the access of the left axillary vein, we performed the venography again via the antecubital vein and found the presence of the left superior vena cava, in which the left superior vena cava directly drained into the right atrium (RA).

The left axillary vein was obtained and the guidewire was successfully passed through the inferior vena cava. The delivery sheath (C315HIS, Medtronic Inc., Minneapolis, MN, USA) was reshaped to reverse-curved position (Supplementary material online, *Figure S2*). Then, the delivery sheath and the 3830 lead (SelectSecure, Medtronic Inc., Minneapolis, MN, USA) were inserted via the left axillary vein and moved to the ventricular side inferior to the septal leaflet of tricuspid valves in left anterior oblique (30°) fluoroscopy view. The pacing lead was then screwed towards the left interventricular septum. The pacing lead was successfully placed in the left bundle branch area, and left bundle branch potential was recorded with a low capture threshold of 0.5 V/0.5 ms. The paced QRS morphology presented as RBBB pattern in lead V1 (*Figure 1B*). The depth of the lead inside the ventricular septum was determined by contrast injection through the sheath in right anterior oblique (40°) view (*Figure 1C*). The fluoroscopy after the procedure showed the locations of the left bundle branch pacing and RA leads and an absence of complications arising from the implantation (*Figure 1D*).

The data underlying this article will be shared on reasonable request to the corresponding author.

Supplementary material

Supplementary material is available at *Europace* online.

Conflict of interest: none declared.

References

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2. Vijayaraman P, Subzposh FA, Naperkowski A, Panikkath R, John K, Mascarenhas V et al. Prospective evaluation of feasibility, electrophysiologic and echocardiographic characteristics of left bundle branch area pacing. *Heart Rhythm* 2019;**16**:1774–82.