Successful Transvenous Pacemaker Implantation via Re-Directed Left Superior Vena Cava

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A male patient in his late 20s with heterotaxia syndrome (persistent left superior vena cava [PLSVC] with absent right superior vena cava; incomplete atrioventricular septal defect; absence of inferior vena cava with azygos continuation; hyparterial bronchus; polysplenia) required a novel pacemaker implantation due to an epicardial lead pacemaker infection. He had a history of intra-arterial repair during childhood. The epicardial pacemaker was implanted after the repair due to the complication of atrioventricular block. To evaluate the feasibility of transvenous pacemaker lead insertion via the PLSVC, we performed contrast-enhanced computed tomography, which showed a wide re-directed PLSVC draining into the right atrium from above (Figure, Left). The image suggested that the re-direction of the PLSVC was performed during the atrio-septoplasty using the new atrial-septum as a baffle (Supplementary Figure; Supplementary Movie). This unique anatomy enabled us to smoothly insert the transvenous pacemaker leads via the PLSVC. The lead insertion required no special techniques such as extra loops within the right atrium (Figure, Right). PLSVC connecting to the right atrium via the coronary sinus is not an uncommon finding during pacemaker implantation and lead insertion via the PLSVC is often challenging.^{1,2} In some rare cases with and without heterotaxy syndrome, however, PLSVC is originally connected to the left atrium and is re-directed

or re-implanted to the right atrium.³ The re-directed PLSVC should be considered as a viable route for transvenous lead pacemaker implantation.

Disclosures

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Supplementary Files

Supplementary Movie. Continuous contrast-enhanced tomography images of the re-directed PLSVC.

Please find supplementary file(s);
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Figure. (Left) Contrast-enhanced computed tomography image of the present case showing a wide re-directed persistent left superior vena cava (PLSVC) draining into the right atrium (RA) from above; (Right) transvenous pacemaker lead insertion via the PLSVC. LA, left atrium; RV, right ventricle.