

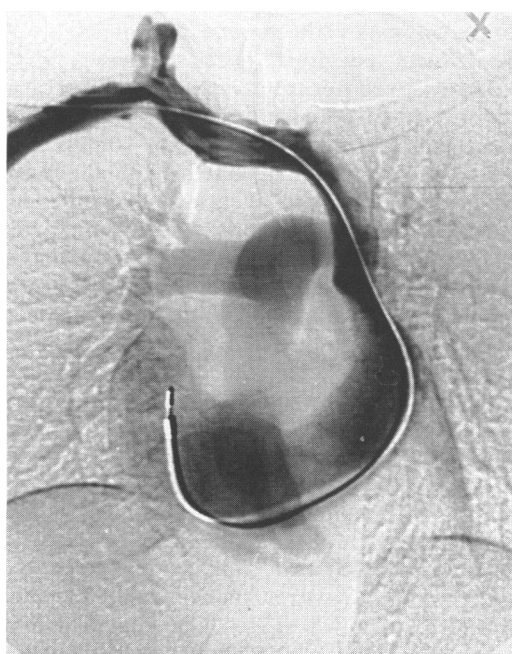
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SHORT CASES IN CARDIOLOGY

Persistent left sided and absent right sided superior vena cava complicating permanent pacemaker insertion

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The radiographic image (figure) shows a venogram after insertion of an antitachycardia pacemaker in a patient with atrioventricular (AV) nodal re-entrant tachycardia. Two previous attempts at radiofrequency ablation of the slow AV nodal pathway had failed but a persistent left sided superior vena cava (SVC) was identified at electrophysiology study. The pacemaker was therefore implanted on the right. The cephalic vein was sought but was not large enough so a right subclavian approach was used. The active fixation, non-preshaped electrode passed along the right subclavian vein, across the midline into the persistent left sided SVC, down the coronary sinus into the right atrium. The right SVC was absent. A satisfactory threshold and stable position were achieved in the superior part of the right atrium.



Venogram showing the path taken by the pacemaker electrode. There is a persistent left superior vena cava and an absent right superior vena cava.

A persistent left sided SVC is the commonest anomaly of the major veins. It occurs in 0.1 to 0.2% of the general population and between 3 and 8% in those with congenital cardiac malformations.¹ An associated absent right SVC is much less common and fewer than 150 cases in patients with situs solitus have been reported. It is most likely to result from flow reversal between the left and right anterior cardinal and innominate veins during early development but the cause is not known.² Associations with conduction system abnormalities also remain unclear. Fragmentation and stretching of the atrioventricular node over a large coronary sinus have been reported.³ The slow atrioventricular nodal pathway is usually situated close to the coronary sinus os. Presumably the very large os in this case reduced the distance between the fast and slow pathways and this made selective ablation of one pathway difficult. Variation in the venous drainage system is not usually physiologically important and is probably often unrecognised during life. However, recognition is important if the patient requires, for example, cardiopulmonary bypass, surgery involving the systemic veins, radiofrequency ablation, or permanent pacemaker insertion. Primary elective epicardial electrode implantation has been recommended for those with a persistent left sided SVC in association with an absent right SVC requiring pacemaker insertion.⁴ The circuitous path taken by the pacemaker lead here explains the difficulty of transvenously obtaining a stable electrode position and sustained capture. The problems were circumvented in this case by the use of an active fixation, screw-in electrode.

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