

# Pectus Excavatum Deforming Right Heart Causing Difficult Right Ventricular Pacing

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## Abstract

A 93-year-old female was admitted to our emergency medicine department with syncope. Her ECG showed AF with complete heart block. She was haemodynamically stable so was transferred to the coronary care unit. Her echocardiogram identified an abnormally shaped right ventricle due to external compression. Her condition deteriorated due to prolonged periods of asystole. External pacing paddles were applied whilst she was transferred to the pacing room. A single pacing wire was passed towards the right ventricle. The tricuspid valve was navigated easily, but with some difficulty the wire was eventually placed in the right ventricle with a threshold of 1.3 volts. A thoracic CT scan identified a congenital pectus excavatum deformity compressing the right ventricle (see image), obstructing the passage of the pacing wire. The patient was transferred for insertion of VVI pacemaker. This was also reported as being difficult requiring a ventricular screw-in lead at the apex.

## CASE REPORT

A 93-year-old female was admitted to our emergency medicine department with syncope. She had a history of ischaemic heart disease, but no known arrhythmia. Her ECG showed atrial fibrillation with AV dissociation and a wide complex ventricular escape rhythm with a rate of 50 bpm. She was haemodynamically stable so was transferred to the coronary care unit. Her peak troponin T reached 0.77. All electrolyte abnormalities and thyroid dysfunction were ruled out. Her chest x-ray showed pulmonary oedema. Her portable echocardiogram showed well preserved left ventricular function and identified an abnormally shaped right ventricle due to external compression. Her condition deteriorated due to prolonged periods of asystole up to 20 seconds. External pacing paddles were applied whilst she was transferred to the pacing room. The right internal jugular vein was cannulated under ultrasound guidance and a single pacing wire passed towards the right ventricle. The tricuspid valve was navigated easily, but some difficulty was experienced in securing the lead in place. The wire was eventually placed in the right ventricle with a threshold of 1.3 volts. The patient remained unstable throughout the procedure and external pacing was required intermittently. A thoracic CT scan identified a congenital pectus excavatum deformity compressing the right ventricle (see image), obstructing the passage of the pacing wire. The patient remained stable and was transferred for insertion of

permanent VVI pacemaker. This was also reported as being a difficult procedure requiring a ventricular screw-in lead at the apex. She was well at follow up 4 months later.

## Figure 1

Figure 1

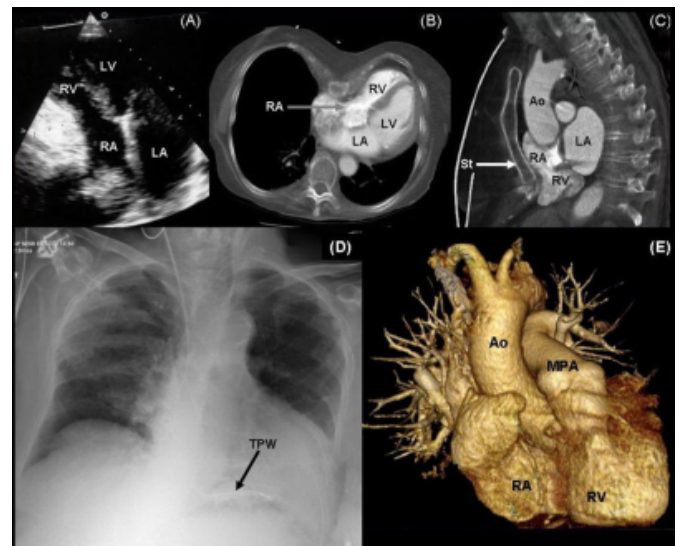


Image A: Transthoracic apical 4 chamber echocardiogram highlighting external compression of the right heart.

Image B: Axial computed tomograph scan showing right atrial and ventricular compression by pectus excavatum.

Image C: Saggital computed tomography revealing sternal

compression of the right heart.

Image D: Chest X-Ray following temporary pacing wire insertion.

Image E: Reconstructed 3D computed tomograph demonstrating compression of the right heart structures from the (digitally removed) sternum.

Key:

RA: Right Atrium

RV: Right Ventricle

LA: Left atrium

LV: Left ventricle

St: Sternum

Ao: Aorta

TPW: Temporary Pacing Wire

MPA: Main Pulmonary Artery

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