

‘... And now what to do?’ Direct surgical trans-atrial endocardial pacing electrode implantation in a very complex situation

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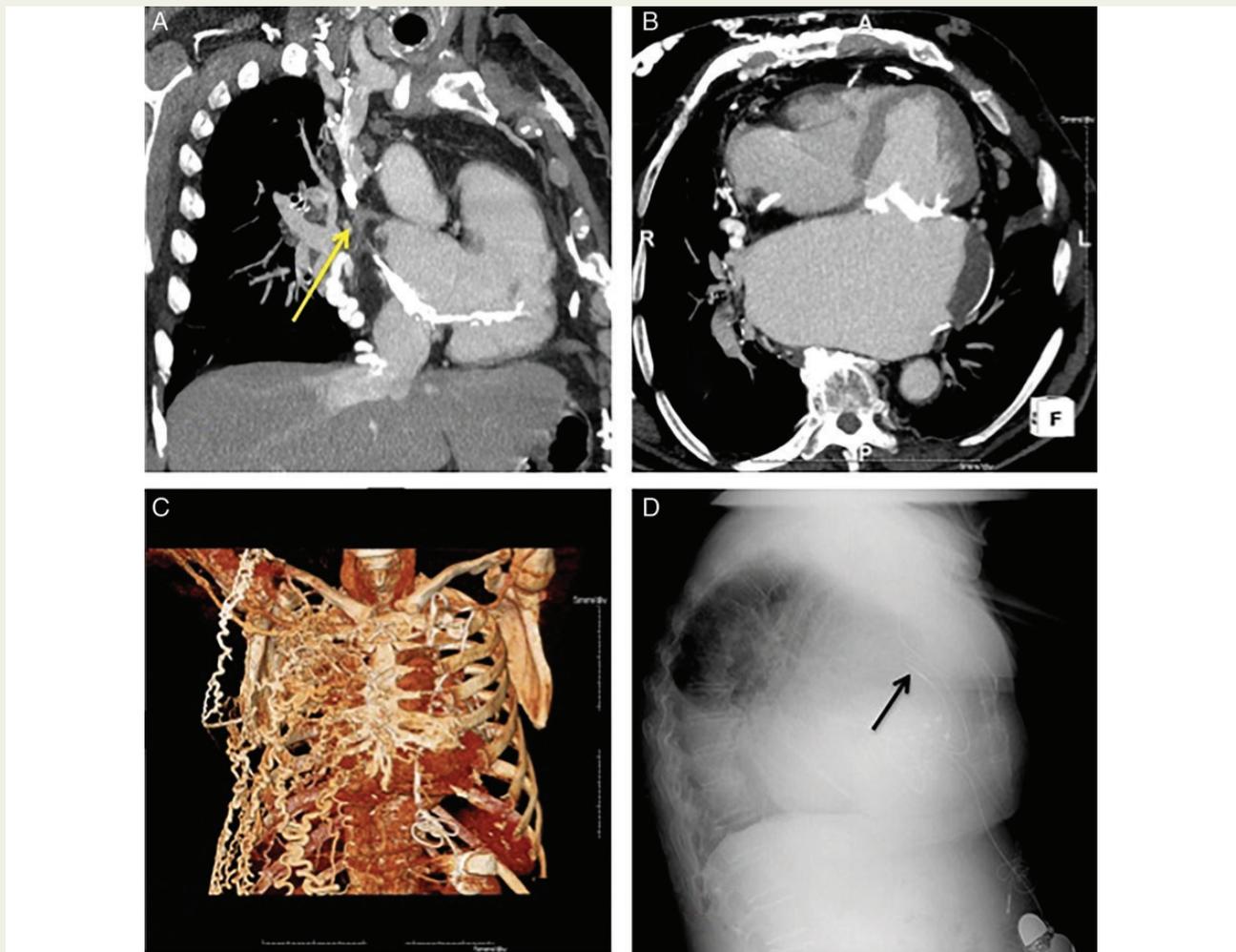
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Transvenous implantation for pectoral pacemaker can be compromised by total venous pathways occlusion. Surgical epicardial lead implantation is a common indication as alternative approach in the case of absence of vascular access for standard electrodes implantation. We report here a patient who required ventricular pacing in the context of rheumatic valvular disease with failure of transvenous and epicardial pacing system.

Case report

A 66-year-old man, who had a 20-year-old history of mechanical mitral valve replacement for rheumatic valve disease and concomitant epicardial monopolar lead implantation for symptomatic bradycardic atrial fibrillation, was diagnosed with significant increase in pacing threshold. Therefore, a novel endocardial ventricular lead was successfully placed via left subclavian vein.

Four years later, pocket infection and subsequent endocarditis occurred, with removal of the pulse generator and lead. An attempt of contralateral transvenous implantation failed because of superior vena cava thrombotic occlusion; thus, an epicardial lead was implanted, with a left-sided abdominal pocket pulse generator (A).



Six years later, the patient complained of syncope and worsening dyspnoea, and at a follow-up visit, an increase in pacing threshold and stimulation impedance were observed. A diagnostic work-up identified capture failure with prolonged asystole at 24-h ECG recording, as well as a total chronic thrombotic occlusion of superior vena cava at enhanced chest CT scan (*Panel A*: yellow arrow indicates superior vena cava occlusion), with accompanying dilatation of mediastinal and chest wall superficial veins, huge left atrial dilation with calcified wall (*Panel B*: see huge atrial dilatation and extensive wall and annular calcification; *Panel C*: angioCT, tridimensional reconstruction of thorax and upper abdominal part. Note huge collateral venous circulation in the right hemithorax and double epicardial leads tunneled in left abdominal pocket where pulse generator is implanted).

A hybrid surgical pacing electrode implantation was then performed with a direct right trans-atrial access via minithoracotomy. After surgical access preparation, a standard screw-in lead was fixed in the right ventricular outflow tract, under transoesophageal echocardiography guidance (*Panel D*: thoracic X-rays of right laterale view; black arrow indicates tip of screw-in catheter fixed in right outflow tract. See new lead tunneled in right abdominal pocket and connected with a new pulse generator). Lead was tunneled in a right abdominal pocket and connected to the pulse generator. No perioperative complications were observed. The patient is now doing well without symptoms after 3 years of follow-up period.

Discussion

Direct atrial approach has been described in 1990¹ for ventricular leads implantation and even leads removal, but it is not a standard approach used in general practice due to surgical risk. In the literature, we found just one recent interesting case of biventricular defibrillator implantation via direct trans-atrial approach in a patient without vascular access due to complete occlusion for mediastinal and retroperitoneal fibrosis secondary to histoplasmosis.²

In our report, a hybrid technique with mini-invasive surgical-endocardial ventricular pacing catheter implantation may be a valid alternative when transvenous or epicardial approach is unsuitable.

Conflict of interest: None declared.

References

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