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Percutaneous Ablation and Retrieval of a Right Atrial Myxoma

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We report the first case of percutaneous myxoma ablation and retrieval from the right atrium. This novel procedure may reduce the need for repeat surgical excisions in patients with Carney Complex and other recurrent myxoma syndromes.

Keywords Myxoma • Ablation • Snare removal • Carneys Complex • Percutaneous

Introduction

The Carney Complex (CC) is an autosomal recessive disorder marked by recurrent atrial tumours [1–3] requiring repeated surgical excisions. [1,3–5] We report the first case of percutaneous ablation and retrieval of a right atrial myxoma. When performed with all necessary precautions and in the right clinical setting, this procedure could reduce the need for repeated surgical excisions and change the management approach for CC.

Case Presentation

The patient initially presented at age 33 with dyspnoea secondary to an obstructing myxoma in the right ventricular outflow tract, and the mass was surgically excised. At age 44 he suffered a left cerebral hemispheric stroke and was found to have a recurrent left atrial myxoma which was also resected. His life-long freckle-like pigmentation (lentigines) not associated with sun exposure (Figure 1, **Panel A+B**) and mild Cushing's syndrome completed the diagnosis of CC. A strategy of myxoma surveillance with annual transoesophageal echocardiographic (TEE) examinations revealed at age 46 a new mass measuring 1.7 x 1.3 cm (Figure 1**C**) at the junction of the inferior vena cava and the right atrium, without any additional tumours identified by computed tomography (Figure 1**D**). In an effort to avoid a third sternotomy a novel approach for percutaneously retrieving this mass was devised.

Percutaneous Myxoma Ablation and Retrieval

The procedure was performed under general anesthesia in the electrophysiological laboratory with available surgical backup. Access was obtained in the right femoral vein (16-Fr long sheath for the retrieval device, 8-Fr short sheath

Abbreviations: CC, Carney Complex; ICE, Intracardiac echocardiography; TEE, Transoesophageal echocardiography

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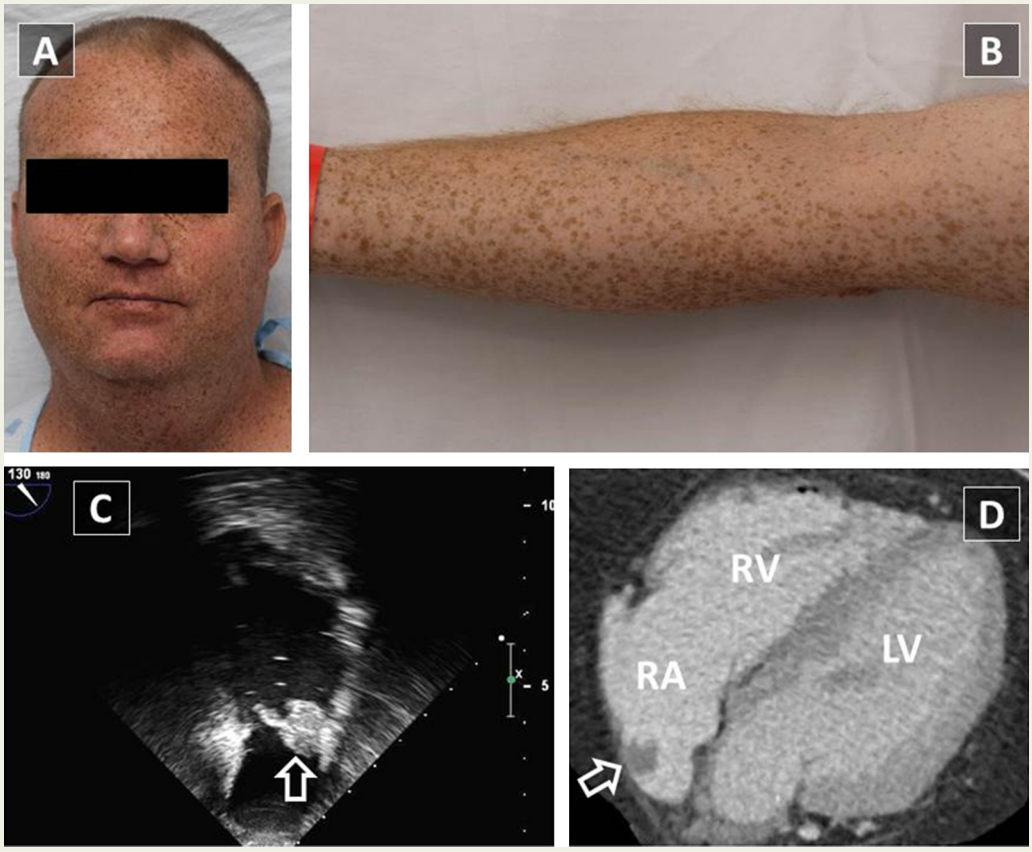

Figure 1 Preoperative evaluation. Panels A and B: skin pigmentation (lentigines). Panel C: transoesophageal echocardiogram showing the right atrial mass (white arrow). Panel D: right atrial mass (white arrow) on a transverse plane of a cardiac computed tomogram.

for intra-cardiac echocardiography probe, 8-Fr long sheath for the ablation catheter), left femoral vein (8-Fr long sheath for the distal embolic protection basket, 8-Fr short sheath for optional additional access), left femoral artery (4-Fr short sheath for monitoring), and ample peripheral intravenous lines were maintained. Under fluoroscopic and intracardiac echocardiographic (ICE) guidance a 25-mm gooseneck snare and a 5-mm tip ablation catheter were positioned into the right atrium (Figure 2, **Panels A and B**). The mass was visualised using ultrasound (Figure 3, **Panel A**) and stabilised with a bioptome. The gooseneck snare was advanced over the bioptome to the neck of the tumour in order to control the movement of the mass. A series of ablation lesions were delivered at the base of the tumour under fluoroscopic and ultrasound guidance (Figures 2 and 3), allowing for an extraction of the mass via the 16-Fr femoral sheath. Approximately 10 passes of the snare over the tumour were needed to secure its movement, which resulted in retrieving two separate portions of the mass back through the large sheath. Some associated thrombus was disrupted during manipulation, a portion of which was captured by a distal protection basket positioned in the pulmonary artery (Figure 2, **Panel C and D**). Additional radiofrequency ablation was delivered at the attachment site of the mass, further reducing its size to a stump measuring 0.4 x 0.1 cm (Figure 3, **Panel C**), and producing an area around the stalk with no near-field intracardiac electrical activation signals. Low dose heparin was used throughout the procedure (total of 3500 units). Pathological analysis of both retrieved specimens revealed cardiac myxoma with organising thrombus. The patient recovered from the procedure without haemodynamic or ventilatory complications. Computed tomogram performed on the first post-operative day showed no residual cardiac mass, and a small segmental filling defect in the left upper pulmonary lobe consistent with tumour debris was noted. The patient was dismissed from the hospital on the